CALL NO. 103

CONTRACT ID. 241302

CHRISTIAN COUNTY

FED/STATE PROJECT NUMBER STP 6000 (226)

DESCRIPTION THOMPSONVILLE LANE (KY 911)

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 11/1/2027

LETTING DATE: March 21,2024

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN DAYLIGHT TIME March 21,2024. Bids will be publicly announced at 10:00 AM EASTERN DAYLIGHT TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 8%

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

TABLE OF CONTENTS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 02

CONTRACT ID - 241302

STP 6000 (226)

COUNTY - CHRISTIAN

PCN - DE02409112402
STP 6000 (226)

THOMPSONVILLE LANE (KY 911) WIDEN TO 3-LANES FROM DEPARTMENT OF DEFENSE RAILROAD TO KY 115, A DISTANCE OF 01.52 MILES.GRADE & DRAIN WITH ASPHALT SURFACE SYP NO. 02-00180.20.

GEOGRAPHIC COORDINATES LATITUDE 36:39:53.00 LONGITUDE 87:25:37.00

ADT 8,898

COMPLETION DATE(S):

COMPLETED BY 12/01/2025	UTILITY WORK - SEE SPECIAL NOTE
COMPLETED BY 11/01/2027	APPLIES TO CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website (www.bidx.com) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

JOINT VENTURE BIDDING

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

UNDERGROUND FACILITY DAMAGE PROTECTION

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by KRS 14A.9-010 to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under KRS 14A.9-030 unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in KRS 14A.9-010, the foreign entity should identify the applicable exception. Foreign entity is defined within KRS 14A.1-070.

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at https://secure.kentucky.gov/sos/ftbr/welcome.aspx .

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by email to kytc.projectquestions@ky.gov. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website (www.transportation.ky.gov/construction-procurement). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

HARDWOOD REMOVAL RESTRICTIONS

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and

shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

BOYCOTT PROVISIONS

If applicable, the contractor represents that, pursuant to KRS 45A.607, they are not currently engaged in, and will not for the duration of the contract engage in, the boycott of a person or an entity based in or doing business with a jurisdiction with which Kentucky can enjoy open trade. **Note:** The term Boycott does not include actions taken for bona fide business or economic reasons, or actions specifically required by federal or state law.

If applicable, the contractor verifies that, pursuant to KRS 41.480, they do not engage in, and will not for the duration of the contract engage in, in energy company boycotts as defined by KRS 41.472.

LOBBYING PROHIBITIONS

The contractor represents that they, and any subcontractor performing work under the contract, have not violated the agency restrictions contained in KRS 11A.236 during the previous ten (10) years, and pledges to abide by the restrictions set forth in such statute for the duration of the contract awarded.

The contractor further represents that, pursuant to KRS 45A.328, they have not procured an original, subsequent, or similar contract while employing an executive agency lobbyist who was convicted of a crime related to the original, subsequent, or similar contract within five (5) years of the conviction of the lobbyist.

SPECIAL NOTE – BUY AMERICA REQUIREMENTS AND BUILD AMERICA, BUY AMERICA (BABA) ACT 10/26/2023

1.0 BUY AMERICA REQUIREMENT.

Follow the "Buy America" provisions as required by 23 U.S.C. § 313 and 23 C.F.R. § 635.410. Except as expressly provided herein all manufacturing processes of steel or iron materials including but not limited to structural steel, guardrail materials, corrugated steel, culvert pipe, structural plate, prestressing strands, and steel reinforcing bars shall occur in the United States of America, including the application of:

- Coating,
- Galvanizing,
- Painting, and
- Other coating that protects or enhances the value of steel or iron products.

The following are exempt, unless processed or refined to include substantial amounts of steel or iron material, and may be used regardless of source in the domestic manufacturing process for steel or iron material:

- Pig iron,
- Processed, pelletized, and reduced iron ore material, or
- Processed alloys.

The Contractor shall submit a certification stating that all manufacturing processes involved with the production of steel or iron materials occurred in the United States.

Produce, mill, fabricate, and manufacture in the United States of America all aluminum components of bridges, tunnels, and large sign support systems, for which either shop fabrication, shop inspection, or certified mill test reports are required as the basis of acceptance by the Department.

Use foreign materials only under the following conditions:

1) When the materials are not permanently incorporated into the project; or
2) When the delivered cost of such materials used does not exceed 0.1 percent of the total Contract amount or $2,500.00, whichever is greater.

The Contractor shall submit to the Engineer the origin and value of any foreign material used.

2.0 – BUILD AMERICA, BUY AMERICA (BABA)

Contractor shall comply with the Federal Highway Administration (FHWA) Buy America Requirement in 23 C.F.R. § 635.410 and all relevant provisions of the Build America, Buy America Act (BABA), contained within the Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, §§ 70901-52 enacted November 15, 2021. The BABA requires iron, steel, manufactured products, and construction materials used in infrastructure projects funded by federal financial assistance to be produced in the United States. Comply with 2 C.F.R § 184.

BABA permits FHWA participation in the Contract only if domestic steel and iron will be used on the Project. To be considered domestic, all steel and iron used, and all products manufactured from steel and iron must be produced in the United States and all manufacturing processes, including application of a coating, for these materials must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied. This requirement does not preclude a minimal use of foreign steel and iron materials, provided the cost of such materials does not exceed 0.1% of the total contract amount under the Contract or $2,500.00 whichever is greater.

BABA permits FHWA participation in the Contract only if all "construction materials" as defined in the Act are made in the United States. The Buy America preference applies to the following construction materials

incorporated into infrastructure projects: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); Fiber optic cable; optical fiber; lumber; engineered wood; and drywall. Contractor will be required to use construction materials produced in the United States on this Project. The Contractor shall submit a certification stating that all construction materials are certified to be BABA compliant.

Finally, BABA permits the continuation of FHWA's current general applicability waivers for manufactured products, raw materials, and ferryboat parts, but these waivers are subject to reevaluation, specifically the general applicability waiver for manufactured products.

The Contractor has completed and submitted, or shall complete and submit, to the Cabinet a Buy America/ Build America, Buy America Certificate prior to the Cabinet issuing the notice to proceed, in the format below. After submittal, the Contractor is bound by its original certification.

A false certification is a criminal act in violation of 18 U.S.C. § 1001. The Contractor has the burden of proof to establish that it is in compliance.

At the Contractor's request, the Cabinet may, but is not obligated to, seek a waiver of Buy America requirements if grounds for the waiver exist under 23 C.F.R. § 635.410(c) or will comply with the applicable Buy America requirements if a waiver of those requirements is not available or not pursued by the Cabinet.

Please refer to the Federal Highway Administration's Buy America webpage for more information.

Buy America - Construction Program Guide - Contract Administration - Construction - Federal Highway Administration (dot.gov)

BUY AMERICA / BUILD AMERICA, BUY AMERICA (ACT) MATERIALS CERTIFICATE OF COMPLIANCE

The Contractor hereby certifies that it will comply with all relevant provisions of the Build America, Buy America Act, contained within the Infrastructure Investment and Jobs Act, Pub. L. NO. 117-58, §§ 70901-52, the requirements of 23 U.S.C. § 313, 23 C.F.R. § 635.410 and 2 C.F.R § 184.

Date Submitted:_____

Contractor:_____

Signature:_____

Printed Name:_____

Title:_____

NOTE: THIS CERTIFICATION IS IN ADDITION TO ANY AND ALL REQUIREMENTS OUTLINED IN THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND/OR SPECIAL NOTES CONTAINED IN THE PROJECT PROPOSAL.

FEDERAL CONTRACT NOTES

The Kentucky Department of Highways, in accordance with the Regulations of the United States Department of Transportation 23 CFR 635.112 (h), hereby notifies all bidders that failure by a bidder to comply with all applicable sections of the current Kentucky Standard Specifications, including, but not limited to the following, may result in a bid not being considered responsive and thus not eligible to be considered for award:

102.02 Current Rating
102.13 Irregular Bid Proposals
102.09 Proposal Guaranty
102.08 Preparation and Delivery of Proposals
102.14 Disqualification of Bidders

CIVIL RIGHTS ACT OF 1964

The Kentucky Transportation Cabinet, Department of Highways, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, disability, income- level, or Limited English Proficiency (LEP)in consideration for an award.

NOTICE TO ALL BIDDERS

To report bid rigging activities call: 1-800-424-9071.

The U.S. Department of Transportation (DOT) operates the above toll-free “hotline” Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the “hotline” to report such activities.

The “hotline” is part of the DOT’s continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

SECOND TIER SUBCONTRACTS

Second tier subcontracts are acceptable per Section 108.01 of the Standard Specifications for Road and Bridge Construction. S u b - Contractors fulfilling a disadvantaged business enterprise goal on a project may enter into a 2nd tier subcontract with a Non-DBE Subcontractor. However, in this instance, none of the work subcontracted to the Non-DBE Contractor will count toward fulfilling the established Disadvantaged Goal for the project.

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

It is the policy of the Kentucky Transportation Cabinet ("the Cabinet") that Disadvantaged Business Enterprises ("DBE") shall have the opportunity to participate in the performance of highway construction projects financed in whole or in part by Federal Funds in order to create a level playing field for all businesses who wish to contract with the Cabinet. To that end, the Cabinet will comply with the regulations found in 49 CFR Part 26, and the definitions and requirements contained therein shall be adopted as if set out verbatim herein.

The Cabinet, contractors, subcontractors, and sub-recipients shall not discriminate on the basis of race, color, national origin, or sex in the performance of work performed pursuant to Cabinet contracts. The contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federally assisted highway construction projects. The contractor will include this provision in all its subcontracts and supply agreements pertaining to contracts with the Cabinet.

Failure by the contractor to carry out these requirements is a material breach of its contract with the Cabinet, which may result in the termination of the contract or such other remedy as the Cabinet deems necessary.

DBE GOAL

The Disadvantaged Business Enterprise (DBE) goal established for this contract, as listed on the front page of the proposal, is the percentage of the total value of the contract.

The contractor shall exercise all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises participate in a least the percent of the contract as set forth above as goals for this contract.

OBLIGATION OF CONTRACTORS

Each contractor prequalified to perform work on Cabinet projects shall designate and make known to the Cabinet a liaison officer who is assigned the responsibility of effectively administering and promoting an active program for utilization of DBEs.

If a formal goal has not been designated for the contract, all contractors are encouraged to consider DBEs for subcontract work as well as for the supply of material and services needed to perform this work.

Contractors are encouraged to use the services of banks owned and controlled by minorities and women.

CERTIFICATION OF CONTRACT GOAL

Contractors shall include the following certification in bids for projects for which a DBE goal has been established. BIDS SUBMITTED WHICH DO NOT INCLUDE CERTIFICATION OF DBE PARTICIPATION WILL NOT BE ACCEPTED. These bids will not be considered for award by the Cabinet and they will be returned to the bidder.

"The bidder certifies that it has secured participation by Disadvantaged Business Enterprises ("DBE") in the amount of_____percent of the total value of this contract and that the DBE participation is in compliance with the requirements of 49 CFR 26 and the policies of the Kentucky Transportation Cabinet pertaining to the DBE Program."

The certification statement is located in the electronic bid file. All contractors must certify their DBE participation on that page. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted.

DBE PARTICIPATION PLAN

Lowest responsive bidders must submit the *DBE Plan/ Subcontractor Request*, form TC 14-35 DBE, within 5 days of the letting. This is necessary before the Awards Committee will review and make a recommendation. **The project will not be considered for award prior to submission and approval of the apparent low bidder's DBE Plan/Subcontractor Request.**

The DBE Participation Plan shall include the following:

1. Name and address of DBE Subcontractor(s) and/or supplier(s) intended to be used in the proposed project;
2. Description of the work each is to perform including the work item, unit, quantity, unit price and total amount of the work to be performed by the individual DBE. The Proposal Line Number, Category Number, and the Project Line Number can be found in the "material listing" on the Construction Procurement website under the specific letting;
3. The dollar value of each proposed DBE subcontract and the percentage of total project contract value this represents. DBE participation may be counted as follows;
   a) If DBE suppliers and manufactures assume actual and contractual responsibility, the dollar value of materials to be furnished will be counted toward the goal as follows:
      - The entire expenditure paid to a DBE manufacturer;
      - 60 percent of expenditures to DBE suppliers that are not manufacturers provided the supplier is a regular dealer in the product involved. A regular dealer must be engaged in, as its principal business and in its own name, the sale of products to the public, maintain an inventory and own and operate distribution equipment; and
      - The amount of fees or commissions charged by the DBE firms for a bona fide service, such as professional, technical, consultant, or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials, supplies, delivery of materials and supplies or for furnishing bonds, or insurance, providing such fees or commissions are determined to be reasonable and customary.
   b) The dollar value of services provided by DBEs such as quality control testing, equipment repair and maintenance, engineering, staking, etc.;

c) The dollar value of joint ventures. DBE credit for joint ventures will be limited to the dollar amount of the work actually performed by the DBE in the joint venture;
4. Written and signed documentation of the bidder's commitment to use a DBE contractor whose participation is being utilized to meet the DBE goal; and
5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment.

AFTER PROJECT AWARD AND BEFORE NOTICE TO PROCEED/WORK ORDER IS ISSUED (SEE SECTION 103.06, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

Prime Contractors awarded a federally funded project with a DBE Goal greater than zero will be required to submit DBE Subcontract Agreement Form, TC 14-36, along with the attached FHWA 1273 and Certificate of Liability Insurance for each DBE Firm submitted as part of the previously approved DBE Utilization Plan (TC 14-35). A signed quote or purchase order shall be attached when the DBE subcontractor is a material supplier or broker.

The Certificate of Liability Insurance submitted must meet the requirements outlined in Section 107.18 of the Standard Specifications for Road and Bridge Construction.

Changes to ***APPROVED*** DBE Participation Plans must be approved by the Cabinet. The Cabinet may consider extenuating circumstances including, but not limited to, changes in the nature or scope of the project, the inability or unwillingness of a DBE to perform the work in accordance with the bid, and/or other circumstances beyond the control of the prime contractor.

CONSIDERATION OF GOOD FAITH EFFORTS REQUESTS

If the DBE participation submitted in the bid by the apparent lowest responsive bidder does not meet or exceed the DBE contract goal, the apparent lowest responsive bidder must submit a Good Faith Effort Package to satisfy the Cabinet that sufficient good faith efforts were made to meet the contract goals prior to submission of the bid. Efforts to increase the goal after bid submission will not be considered in justifying the good faith effort, unless the contractor can show that the proposed DBE was solicited prior to the letting date. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted. One complete set (hard copy along with an electronic copy) of this information must be received in the Division of Contract Procurement no later than 12:00 noon of the tenth calendar day after receipt of notification that they are the apparent low bidder.

Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a sample representative letter along with a distribution list of the firms solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the Cabinet considers in judging good faith efforts. This documentation may include written subcontractors' quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The Good Faith Effort Package shall include, but may not be limited to information showing evidence of the following:

1. Whether the bidder attended any pre-bid meetings that were scheduled by the Cabinet to inform DBEs of subcontracting opportunities;
2. Whether the bidder provided solicitations through all reasonable and available means;
3. Whether the bidder provided written notice to all DBEs listed in the DBE directory at the time of the letting who are prequalified in the areas of work that the bidder will be subcontracting;
4. Whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainly whether they were interested. If a reasonable amount of DBEs within the targeted districts do not provide an intent to quote or no DBEs are prequalified in the subcontracted areas, the bidder must notify the Disadvantaged Enterprise Business Liaison Officer (DEBLO) in the Office for Civil Rights and Small Business Development to give notification of the bidder's inability to get DBE quotes;
5. Whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise perform these work items with its own forces;
6. Whether the bidder provided interested DBEs with adequate and timely information about the plans, specifications, and requirements of the contract;
7. Whether the bidder negotiated in good faith with interested DBEs not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached;
8. Whether quotations were received from interested DBE firms but were rejected as unacceptable without sound reasons why the quotations were considered unacceptable. The fact that the DBE firm's quotation for the work is not the lowest quotation received will not in itself be considered as a sound reason for rejecting the quotation as unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a DBE quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy DBE goals;
9. Whether the bidder specifically negotiated with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be subcontracted includes potential DBE participation;
10. Whether the bidder made any efforts and/or offered assistance to interested DBEs in obtaining the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal; and
11. Any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include DBE participation.

FAILURE TO MEET GOOD FAITH REQUIREMENT

Where the apparent lowest responsive bidder fails to submit sufficient participation by DBE firms to meet the contract goal and upon a determination by the Good Faith Committee based upon the information submitted that the apparent lowest responsive bidder failed to make sufficient reasonable efforts to meet the contract goal, the bidder will be offered the opportunity to meet in person for administrative reconsideration. The bidder will be notified of the Committee's decision within 24 hours of its decision. The bidder will have 24 hours to request reconsideration of the Committee's decision. The reconsideration meeting will be held within two days of the receipt of a request by the bidder for reconsideration.

The request for reconsideration will be heard by the Office of the Secretary. The bidder will have the opportunity to present written documentation or argument concerning the issue of whether it met the goal or made an adequate good faith effort. The bidder will receive a written decision on the reconsideration explaining the basis for the finding that the bidder did or did not meet the goal or made adequate Good Faith efforts to do so.

The result of the reconsideration process is not administratively appealable to the Cabinet or to the United States Department of Transportation.

The Cabinet reserves the right to award the contract to the next lowest responsive bidder or to rebid the contract in the event that the contract is not awarded to the low bidder as the result of a failure to meet the good faith requirement.

SANCTIONS FOR FAILURE TO MEET DBE REQUIREMENTS OF THE PROJECT

Failure by the prime contractor to fulfill the DBE requirements of a project under contract or to demonstrate good faith efforts to meet the goal constitutes a breach of contract. When this occurs, the Cabinet will hold the prime contractor accountable, as would be the case with all other contract provisions. Therefore, the contractor's failure to carry out the DBE contract requirements shall constitute a breach of contract and as such the Cabinet reserves the right to exercise all administrative remedies at its disposal including, but not limited to the following:

- Suspension of Prequalification;
- Disallow credit toward the DBE goal;
- Withholding progress payments;
- Withholding payment to the prime in an amount equal to the unmet portion of the contract goal; and/or
- Termination of the contract.

PROMPT PAYMENT

The prime contractor will be required to pay the DBE and Non-DBE Subcontractors within seven (7) working days after he or she has received payment from the Kentucky Transportation Cabinet for work performed or materials furnished.

CONTRACTOR REPORTING

All contractors must keep detailed records and provide reports to the Cabinet on their progress in meeting the DBE requirement on any highway contract. These records may include, but shall not be limited to payroll, lease agreements, cancelled payroll checks, executed subcontracting agreements, etc. Prime contractors will be required to complete and submit a ***signed and notarized*** Affidavit of Subcontractor Payment (TC 18-7) and copies of checks for any monies paid to each DBE subcontractor or supplier utilized to meet a DBE goal. These documents must be completed and signed within 7 days of being paid by the Cabinet.

Payment information that needs to be reported includes date the payment is sent to the DBE, check number, Contract ID, amount of payment and the check date. Before Final Payment is made on this contract, the Prime Contractor will certify that all payments were made to the DBE subcontractor and/or DBE suppliers.

******* IMPORTANT *******

Please mail the original, signed and completed TC (18-7) Affidavit of Subcontractor Payment form and all copies of checks for payments listed above to the following address:

Office for Civil Rights and Small Business Development
6th Floor West 200 Mero Street
Frankfort, KY 40622

The prime contractor should notify the KYTC Office for Civil Rights and Small Business Development seven (7) days prior to DBE contractors commencing work on the project. The contact in this office is Mr. Tony Youssefi. Mr. Youssefi's current contact information is email address – tyousseffi@ky.gov and the telephone number is (502) 564-3601.

DEFAULT OR DECERTIFICATION OF THE DBE

If the DBE subcontractor or supplier is decertified or defaults in the performance of its work, and the overall goal cannot be credited for the uncompleted work, the prime contractor may utilize a substitute DBE or elect to fulfill the DBE goal with another DBE on a different work item. If after exerting good faith effort in accordance with the Cabinet's Good Faith Effort policies and procedures, the prime contractor is unable to replace the DBE, then the unmet portion of the goal may be waived at the discretion of the Cabinet.

PROHIBITION ON TELECOMMUNICATIONS EQUIPMENT OR SERVICES

In accordance with the FY 2019 National Defense Authorization Act (NDAA), 2 CFR 200.216, and 2 CFR 200.471, Federal agencies are prohibited, after August 13, 2020, from obligating or expending financial assistance to obtain certain telecommunications and video surveillance services and equipment from specific producers. As a result of these regulations, contractors and subcontractors are prohibited, on projects with federal funding participation, from providing telecommunication or video surveillance equipment, services, or systems produced by:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities)

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – CARGO PREFERENCE ACT (CPA).

(REV 12-17-15) (1-16)

SECTION 7 is expanded by the following new Article:

102.10 **Cargo Preference Act – Use of United States-flag vessels.**

Pursuant to Title 46CFR Part 381, the Contractor agrees

- To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
- To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph 1 of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
- To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

ASPHALT PAVEMENT RIDE QUALITY CATEGORY B

The Department will apply Pavement Rideability Requirements on this project in accordance with Section 410, Category B.

FUEL AND ASPHALT PAY ADJUSTMENT

The Department has included the Contract items Asphalt Adjustment and Fuel Adjustment for possible future payments at an established Contract unit price of $1.00. The Department will calculate actual adjustment quantities after work is completed. If existing Contract amount is insufficient to pay all items on the contract with the adjustments, the Department will establish additional monies with a change order.

OPTION A

Be advised that the Department will accept compaction of asphalt mixtures furnished for driving lanes and ramps, at 1 inch (25mm) or greater, on this project according to OPTION A in accordance with Section 402 and Section 403 of the current Standard Specifications. The Department will require joint cores as described in Section 402.03.02 for surface mixtures only. The Department will accept compaction of all other asphalt mixtures according to OPTION B.

EASEMENT NO. DACA27-2-23-510

DEPARTMENT OF THE ARMY

EASEMENT FOR PIPELINE RIGHT-OF-WAY

LOCATED ON

FORT CAMPBELL MILITARY RESERVATION

CHRISTIAN COUNTY, KENTUCKY

THE SECRETARY OF THE ARMY, under and by virtue of the authority vested in the Secretary by Title 10, United States Code, Section 2668, having found that the granting of this easement will be in the public interest and will not substantially injure the interests of the United States, hereby grants to: **City of Oak Grove** hereinafter referred to as the grantee, an easement for a 8-inch watermain line approximately 105 feet in length and 20 inches in diameter beneath the Ft. Campbell Railroad at intersection KY911, more or less hereinafter referred to as the facilities, over, across, in and upon lands of the United States as identified in Exhibit(s) A and B, hereinafter referred to as the premises, and which are attached hereto and made a part hereof.

THIS EASEMENT is granted subject to the following conditions.

1. TERM

This easement is hereby granted for a term of 25 years, beginning on 3rd January 2024, and ending on 2nd of January 2049.

2. CONSIDERATION

a. The grantee shall pay in advance to the United States the amount of ONE-THOUSAND AND FIFTY DOLLARS ($1,050.00) in full for the term hereof payable to the order of USAED, Louisville District and delivered to USACE, ATTN: CELRL-RE-M, Room 137, P.O. Box 59, Louisville, KY 40201-0059.

b. All consideration and other payments due under the terms of this easement must be paid on or before the date they are due in order to avoid the mandatory sanctions imposed by the Debt Collection Act of 1982, 31 U.S.C. Section 3717. This statute requires the imposition of an interest charge for the late payment of debts owed to the United States, an administrative charge to cover the costs of processing and handling delinquent debts, and the assessment of an additional penalty charge on any portion of a debt that is more than 90 days past due. The provisions of the statute will be implemented as follows:

(1) The United States will impose an interest charge, the amount to be determined by law or regulation, on late payment of debts. Interest will accrue from the due date. An administrative charge to cover the cost of processing and handling each payment will also be imposed.

(2) In addition to the charges set forth above, the United States will impose a penalty charge of six percent (6%) per annum on any payment, or portion thereof, more than ninety (90) days past due. The penalty shall accrue from the date of the delinquency and will continue to accrue until the debt is paid in full.

3. NOTICES

All notices to be given pursuant to this easement shall be addressed, if to the grantee, to CITY OF OAK GROVE, ATTN: Martin Nuss, 8505 Pembroke Oak Grove Rd, Oak Grove, KY 42262 and, if to the United States, to USACE, ATTN: CELRL-REM, Room 137, P.O. Box 59, Louisville, Kentucky 40201-0059, or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when enclosed in a properly sealed envelope or wrapper addressed as aforesaid, and deposited postage prepaid in a post office regularly maintained by the United States Postal Service.

4. AUTHORIZED REPRESENTATIVES

Except as otherwise specifically provided, any reference herein to "Secretary," "District Engineer," "Installation Commander," or "said officer" shall include their duly authorized representatives. Any reference to "grantee" shall include assignees, transferees and their duly authorized representatives.

5. SUPERVISION BY THE INSTALLATION COMMANDER

The construction, operation, maintenance, repair or replacement of said facilities, including culverts and other drainage facilities, shall be performed at no cost or expense to the United States and subject to the approval of the Installation Commander, Fort Campbell, Kentucky, hereinafter referred to as said officer. Upon the completion of any of the above activities, the Grantee shall immediately restore the premises to the satisfaction of said officer. The use and occupation of the premises for the purposes herein granted shall be subject to such rules and regulations as said officer prescribes in writing from time to time.

6. APPLICABLE LAWS AND REGULATIONS

The grantee shall comply with all applicable Federal, state, county and municipal laws, ordinances and regulations wherein the premises are located.

7. CONDITION OF PREMISES

The grantee acknowledges that it has inspected the premises, knows the condition, and understands that the same is granted without any representation or warranties whatsoever and without any obligation on the part of the United States.

8. INSPECTION AND REPAIRS

The grantee shall inspect the facilities at reasonable intervals and immediately repair any defects found by such inspection or when required by said officer to repair any such defects.

9. PROTECTION OF GOVERNMENT PROPERTY

The grantee shall be responsible for any damage that may be caused to the property of the United States by the activities of the grantee under this easement and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the grantee incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the grantee to a condition satisfactory to said officer, or at the election of said officer, reimbursement made therefor by the grantee in an amount necessary to restore or replace the property to a condition satisfactory to said officer.

10. RIGHT TO ENTER

The right is reserved to the United States, its officers, agents, and employees to enter upon the premises at any time and for any purpose necessary or convenient in connection with government work, to make inspections, to remove timber or other material, except property of the grantee, and/or to make any other use of the lands as may be necessary in connection with government purposes, and the grantee shall have no claim for damages on account thereof against the United States or any officer, agent, or employee thereof.

11. TRANSFERS AND ASSIGNMENTS

Without prior written approval by said District Engineer, the grantee shall neither transfer nor assign this easement or any part thereof nor grant any interest, privilege or license whatsoever in connection with this easement. The provisions and conditions of this easement shall extend to and be binding upon and shall inure to the benefit of the representatives, successors and assigns of the grantee.

12. INDEMNITY

The United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the exercise of the privileges herein granted, or for damages to the property or injuries to the person of the grantee's officers, agents, or employees or others who may be on the premises at their invitation or the invitation of any one of them, and the grantee shall hold the United States harmless from any and all such claims not including damages due to the fault or negligence of the United States or its contractors.

13. SUBJECT TO EASEMENTS

This easement is subject to all other existing easements, or those subsequently granted as well as established access routes for roadways and utilities located, or to be located, on the premises, provided that the proposed grant of any new easement or route will be coordinated with the grantee, and easements will not be granted which will, in the opinion of said officer, interfere with the use of the premises by the grantee.

14. REQUIRED SERVICES

The grantee shall furnish through said facilities such services as may be required from time to time for governmental purposes, provided that payment for such service will be made by the United States at rates which shall be mutually agreeable but which shall never exceed the most favorable rates granted by the grantee for similar service.

15. RELOCATION OF FACILITIES

In the event all or any portion of the premises occupied by the said facilities shall be needed by the United States, or in the event the existence of said facilities is determined to be detrimental to governmental activities, the grantee shall from time to time, upon notice to do so, and as often as so notified, remove said facilities to such other location as may be designated by said officer. In the event said facilities shall not be removed or relocated within ninety (90) days after such notice, the United States may cause such relocation at the sole expense of the grantee.

16. TERMINATION

This easement may be terminated by the Secretary upon 30 days written notice to the grantee if the Secretary shall determine that the right-of-way hereby granted interferes with the use or disposal of said land by the United States, or it may be revoked by the Secretary for failure of the grantee to comply with any or all of the conditions of this easement, or for non-use for a period of two (2) years, or for abandonment.

17. SOIL AND WATER CONSERVATION

The grantee shall maintain, in a manner satisfactory to said officer, all soil and water conservation structures that may be in existence upon said premises at the beginning of or that may be constructed by the grantee during the term of this easement, and the grantee shall take appropriate measures to prevent or control soil erosion within the right-of-way herein granted. Any soil erosion occurring outside the premises resulting from the activities of the grantee shall be corrected by the grantee as directed by said officer.

18. ENVIRONMENTAL PROTECTION

a. Within the limits of their respective legal powers, the parties hereto shall protect the premises against pollution of its air, ground, and water. The grantee shall promptly comply with any laws, regulations, conditions or instructions affecting the activity hereby authorized if and when issued by the Environmental Protection Agency, or any Federal, state, interstate or local governmental agency having jurisdiction to abate or prevent pollution. The disposal of any toxic or hazardous materials within the premises is strictly prohibited. Such regulations, conditions, or instructions in effect or prescribed by the said Environmental Protection Agency or any Federal, state, interstate or local governmental agency are hereby made a condition of this easement. The Grantee shall not discharge waste or effluent from the premises in such a manner that the discharge will contaminate streams or other bodies of water or otherwise become a public nuisance.

b. The use of any pesticides or herbicides within the premises shall be in conformance with all applicable Federal, state and local laws and regulations. The grantee must obtain approval in writing from said officer before any pesticides or herbicides are applied to the premises.

c. The grantee will use all reasonable means available to protect the environment and natural resources, and where damage nonetheless occurs arising from the grantee's activities, the grantee shall be liable to restore the damaged resources.

19. RECORD OF ENVIRONMENTAL CONSIDERATION

A Record of Environmental Consideration (REC) documenting the known history of the property with regard to the storage, release or disposal of hazardous substances thereon, is attached hereto and made a part hereof as Exhibit C. Upon expiration, revocation or termination of this easement, another REC shall be prepared which will document the environmental condition of the property at that time. A comparison of the two assessments will assist the said officer in determining any environmental restoration requirements. Any such requirements will be completed by the grantee in accordance with the condition on **RESTORATION**.

20. HISTORIC PRESERVATION

The grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archeological, architectural or other cultural artifacts, relics, remains or objects of antiquity. In the event such items are discovered on the premises, the grantee shall immediately notify said officer and protect the site and material from further disturbance until said officer gives clearance to proceed. Grantee shall be liable for any and all damages to historical, archeological, architectural or other cultural artifacts, relics, remains or objects of antiquity.

21. NON-DISCRIMINATION

The grantee shall not discriminate against any person or persons because of race, color, age, sex, handicap, national origin, or religion in the conduct of operations on the premises.

22. RESTORATION

On or before the expiration or termination of this easement, the grantee shall, without expense to the United States, and within such time as said officer may indicate, remove said facilities and restore the premises to the satisfaction of said officer. In the event the grantee shall fail to remove said facilities and restore the premises, the United States shall have the option to take over said facilities without compensation, or to remove said facilities and perform the restoration at the expense of the grantee, and the grantee shall have no claim for damages against the United States or its officers or agents for such action.

23. EXECUTIVE ORDER 13658

Any reference in this section to “prime contractor” or “contractor” shall mean the Grantee and any reference to “contract” shall refer to this Easement.

The parties expressly stipulate this contract is subject to Executive Order 13658, the regulations issued by the Secretary of Labor in 29 CFR part 10 pursuant to the Executive Order, and the following provisions.

(a) Minimum Wages

(1) Each worker (as defined in 29 CFR 10.2) engaged in the performance of this contract by the prime contractor or any subcontractor, regardless of any contractual relationship which may be alleged to exist between the contractor and worker, shall be paid not less than the applicable minimum wage under Executive Order 13658.

(2) The minimum wage required to be paid to each worker performing work on or in connection with this contract between January 1, 2015 and December 31, 2015 shall be $10.10 per hour. The minimum wage shall be adjusted each time the Secretary of Labor's annual determination of the applicable minimum wage under section 2(a)(ii) of Executive Order 13658 results in a higher minimum wage. Adjustments to the Executive Order minimum wage under section 2(a)(ii) of Executive Order 13658 will be effective for all workers subject to the Executive Order beginning January 1 of the following year. If appropriate, the contracting officer, or other agency official overseeing this contract shall ensure the contractor is compensated only for the increase in labor costs resulting from the annual inflation increases in the Executive Order 13658 minimum wage beginning on January 1, 2016. The Secretary of Labor will publish annual determinations in the Federal Register no later than 90 days before such new wage is to take effect. The Secretary will also publish the applicable minimum wage on www.wdol.gov (or any successor Web site). The applicable published minimum wage is incorporated by reference into this contract.

(3) The contractor shall pay unconditionally to each worker all wages due free and clear and without subsequent deduction (except as otherwise provided by 29 CFR 10.23), rebate, or kickback on any account. Such payments shall be made no later than one pay period following the end of the regular pay period in which such wages were earned or accrued. A pay period under this Executive Order may not be of any duration longer than semi-monthly.

(4) The prime contractor and any upper-tier subcontractor shall be responsible for the compliance by any subcontractor or lower-tier subcontractor with the Executive Order minimum wage requirements. In the event of any violation of the minimum wage obligation of this clause, the contractor and any subcontractor(s) responsible therefore shall be liable for the unpaid wages.

(5) If the commensurate wage rate paid to a worker on a covered contract whose wages are calculated pursuant to a special certificate issued under 29 U.S.C. 214(c), whether hourly or piece rate, is less than the Executive Order minimum wage, the contractor must pay the Executive Order minimum wage rate to achieve compliance with the Order. If the commensurate wage due under the certificate is greater than the Executive Order minimum wage, the contractor must pay the 14(c) worker the greater commensurate wage.

(b) Withholding. The agency head shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the prime contractor under this or any other Federal contract with the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay workers the full amount of wages required by Executive Order 13658.

(c) Contract Suspension/Contract Termination/Contractor Debarment. In the event of a failure to pay any worker all or part of the wages due under Executive Order 13658 or 29 CFR part 10, or a failure to comply with any other term or condition of Executive Order 13658 or 29 CFR part 10, the contracting agency may on its own action or after authorization or by direction of the Department of Labor and written notification to the contractor, take action to cause suspension of any further payment, advance or guarantee of funds until such violations have ceased. Additionally, any failure to comply with the requirements of this clause may be grounds for termination of the right to proceed with the contract work. In such event, the Government may enter into other contracts or arrangements for completion of the work, charging the contractor in default with any additional cost. A breach of the contract clause may be grounds for debarment as a contractor and subcontractor as provided in 29 CFR 10.52.

(d) The contractor may not discharge any part of its minimum wage obligation under Executive Order 13658 by furnishing fringe benefits or, with respect to workers whose wages are governed by the Service Contract Act, the cash equivalent thereof.

(e) Nothing herein shall relieve the contractor of any other obligation under Federal, State or local law, or under contract, for the payment of a higher wage to any worker, nor shall a lower prevailing wage under any such Federal, State, or local law, or under contract, entitle a contractor to pay less than $10.10 (or the minimum wage as established each January thereafter) to any worker.

(f) Payroll Records

(1) The contractor shall make and maintain for three years records containing the information specified in paragraphs (f)(1) (i) through (vi) of this section for each worker and shall make the records available for inspection and transcription by authorized representatives of the Wage and Hour Division of the U.S. Department of Labor:

(i) Name, address, and social security number.

(ii) The worker's occupation(s) or classification(s)

(iii) The rate or rates of wages paid.

(iv) The number of daily and weekly hours worked by each worker.

(v) Any deductions made; and

(vi) Total wages paid.

(2) The contractor shall also make available a copy of the contract, as applicable, for inspection or transcription by authorized representatives of the Wage and Hour Division.

(3) Failure to make and maintain or to make available such records for inspection and transcription shall be a violation of 29 CFR part 10 and this contract, and in the case of failure to produce such records, the contracting officer, upon direction of an authorized representative of the Department of Labor, or under its own action, shall take such action as may be necessary to cause suspension of any further payment or advance of funds until such time as the violations are discontinued.

(4) The contractor shall permit authorized representatives of the Wage and Hour Division to conduct investigations, including interviewing workers at the worksite during normal working hours.

(5) Nothing in this clause limits or otherwise modifies the contractor's payroll and recordkeeping obligations, if any, under the Davis-Bacon Act, as amended, and its implementing regulations; the Service Contract Act, as amended, and its implementing regulations; the Fair Labor Standards Act, as amended, and its implementing regulations; or any other applicable law.

(g) The contractor (as defined in 29 CFR 10.2) shall insert this clause in all of its covered subcontracts and shall require its subcontractors to include this clause in any covered lower-tier subcontracts. The prime contractor and any upper-tier subcontractor shall be responsible for the compliance by any

subcontractor or lower-tier subcontractor with this contract clause.

(h) Certification of Eligibility

(1) By entering into this contract, the contractor (and officials thereof) certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of the sanctions imposed pursuant to section 5 of the Service Contract Act, section 3(a) of the Davis-Bacon Act, or 29 CFR 5.12(a)(1).

(2) No part of this contract shall be subcontracted to any person or firm whose name appears on the list of persons or firms ineligible to receive Federal contracts.

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(i) Tipped employees. In paying wages to a tipped employee as defined in section 3(t) of the Fair Labor Standards Act, 29 U.S.C. 203(t), the contractor may take a partial credit against the wage payment obligation (tip credit) to the extent permitted under section 3(a) of Executive Order 13658. In order to take such a tip credit, the employee must receive an amount of tips at least equal to the amount of the credit taken; where the tipped employee does not receive sufficient tips to equal the amount of the tip credit the contractor must increase the cash wage paid for the workweek so that the amount of cash wage paid and the tips received by the employee equal the applicable minimum wage under Executive Order 13658. To utilize this proviso:

(1) The employer must inform the tipped employee in advance of the use of the tip credit;

(2) The employer must inform the tipped employee of the amount of cash wage that will be paid and the additional amount by which the employee's wages will be considered increased on account of the tip credit;

(3) The employees must be allowed to retain all tips (individually or through a pooling arrangement and regardless of whether the employer elects to take a credit for tips received); and

(4) The employer must be able to show by records that the tipped employee receives at least the applicable Executive Order minimum wage through the combination of direct wages and tip credit.

(j) Antiretaliation. It shall be unlawful for any person to discharge or in any other manner discriminate against any worker because such worker has filed any complaint or instituted or caused to be instituted any proceeding under or related to Executive Order 13658 or 29 CFR part 10, or has testified or is about to testify in any such proceeding.

(k) Disputes concerning labor standards. Disputes related to the application of Executive Order 13658 to this contract shall not be subject to the general disputes clause of the contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR part 10. Disputes within the meaning of this contract clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the workers or their representatives.

(l) Notice. The contractor must notify all workers performing work on or in connection with a covered

contract of the applicable minimum wage rate under the Executive Order. With respect to service employees on contracts covered by the Service Contract Act and laborers and mechanics on contracts covered by the Davis-Bacon Act, the contractor may meet this requirement by posting, in a prominent and accessible place at the worksite, the applicable wage determination under those statutes. With respect to workers performing work on or in connection with a covered contract whose wages are governed by the FLSA, the contractor must post a notice provided by the Department of Labor in a prominent and accessible place at the worksite so it may be readily seen by workers. Contractors that customarily post notices to workers electronically may post the notice electronically provided such electronic posting is displayed prominently on any Web site that is maintained by the contractor, whether external or internal, and customarily used for notices to workers about terms and conditions of employment.

24. EXECUTIVE ORDER 13706

Any reference in this section to "prime contractor" or "contractor" shall mean the Grantee and any reference to "contract" shall refer to the Easement.

(a) Executive Order 13706. This contract is subject to Executive Order 13706, the regulations issued by the Secretary of Labor in 29 CFR part 13 pursuant to the Executive Order, and the following provisions.

(b) Paid Sick Leave.

(1) The contractor shall permit each employee (as defined in 29 CFR 13.2) engaged in the performance of this contract by the prime contractor or any subcontractor, regardless of any contractual relationship that may be alleged to exist between the contractor and employee, to earn not less than 1 hour of paid sick leave for every 30 hours worked. The contractor shall additionally allow accrual and use of paid sick leave as required by Executive Order 13706 and 29 CFR part 13. The contractor shall in particular comply with the accrual, use, and other requirements set forth in 29 CFR 13.5 and 13.6, which are incorporated by reference in this contract.

(2) The contractor shall provide paid sick leave to all employees when due free and clear and without subsequent deduction (except as otherwise provided by 29 CFR 13.24), rebate, or kickback on any account. The contractor shall provide pay and benefits for paid sick leave used no later than one pay period following the end of the regular pay period in which the paid sick leave was taken.

(3) The prime contractor and any upper-tier subcontractor shall be responsible for the compliance by any subcontractor or lower-tier subcontractor with the requirements of Executive Order 13706, 29 CFR part 13, and this clause.

(c) Withholding. The contracting officer shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the prime contractor under this or any other Federal contract with the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay employees the full amount owed to compensate for any violation of the requirements of Executive Order 13706, 29 CFR part 13, or this clause, including any pay and/or benefits denied or lost by reason of the violation; other actual monetary losses sustained as a direct result of the violation, and liquidated damages.

(d) Contract Suspension/Contract Termination/Contractor Debarment. In the event of a failure to comply with Executive Order 13706, 29 CFR part 13, or this clause, the contracting agency

may on its own action or after authorization or by direction of the Department of Labor and written notification to the contractor, take action to cause suspension of any further payment, advance, or guarantee of funds until such violations have ceased. Additionally, any failure to comply with the requirements of this clause may be grounds for termination of the right to proceed with the contract work. In such event, the Government may enter into other contracts or arrangements for completion of the work, charging the contractor in default with any additional cost. A breach of the contract clause may be grounds for debarment as a contractor and subcontractor as provided in 29 CFR 13.52.

(e) The paid sick leave required by Executive Order 13706, 29 CFR part 13, and this clause is in addition to a contractor's obligations under the Service Contract Act and Davis Bacon Act, and a contractor may not receive credit toward its prevailing wage or fringe benefit obligations under those Acts for any paid sick leave provided in satisfaction of the requirements of Executive Order 13706 and 29 CFR part 13.

(f) Nothing in Executive Order 13706 or 29 CFR part 13 shall excuse noncompliance with or supersede any applicable Federal or State law, any applicable law or municipal ordinance, or a collective bargaining agreement requiring greater paid sick leave or leave rights than those established under Executive Order 13706 and 29 CFR part 13.

(g) Record keeping.

(1) Any contractor performing work subject to Executive Order 13706 and 29 CFR part 13 must make and maintain, for no less than three (3) years from the completion of the work on the contract, records containing the information specified in paragraphs (i) through (xv) of this section for each employee and shall make them available for inspection, copying, and transcription by authorized representatives of the Wage and Hour Division of the U.S. Department of Labor:

(i) Name, address, and Social Security number of each employee;

(ii) The employee's occupation(s) or classification(s);

(iii) The rate or rates of wages paid (including all pay and benefits provided);
(iv) The number of daily and weekly hours worked;

(v) Any deductions made;

(vi) The total wages paid (including all pay and benefits provided) each pay period;

(vii) A copy of notifications to employees of the amount of paid sick leave the employee has accrued, as required under 29 CFR 13.5(a)(2);

(viii) A copy of employees' requests to use paid sick leave, if in writing, or, if not in writing, any other records reflecting such employee requests;

(ix) Dates and amounts of paid sick leave taken by employees (unless a contractor's paid time off policy satisfies the requirements of Executive Order 13706 and 29 CFR part 13 as described in § 13.5(f)(5), leave must be designated in records as paid sick leave pursuant to Executive Order 13706);

(x) A copy of any written responses to employees' requests to use paid sick leave,

including explanations for any denials of such requests, as required under 29 CFR 13.5(d)(3);

(xi) Any records reflecting the certification and documentation a contractor may require an employee to provide under 29 CFR 13.5(e), including copies of any certification or documentation provided by an employee;

(xii) Any other records showing any tracking of or calculations related to an employee's accrual or use of paid sick leave;

(xiii) The relevant covered contract;

(xiv) The regular pay and benefits provided to an employee for each use of paid sick leave; and

(xv) Any financial payment made for unused paid sick leave upon a separation from employment intended, pursuant to 29 CFR 13.5(b)(5), to relieve a contractor from the obligation to reinstate such paid sick leave as otherwise required by 29 CFR 13.5(b)(4).

(2)(i) If a contractor wishes to distinguish between an employee's covered and noncovered work, the contractor must keep records or other proof reflecting such distinctions. Only if the contractor adequately segregates the employee's time will time spent on non-covered work be excluded from hours worked counted toward the accrual of paid sick leave. Similarly, only if that contractor adequately segregates the employee's time may a contractor properly refuse an employee's request to use paid sick leave on the ground that the employee was scheduled to perform non-covered work during the time she asked to use paid sick leave.

(ii) If a contractor estimates covered hours worked by an employee who performs work in connection with covered contracts pursuant to 29 CFR 13.5(a)(i) or (iii), the contractor must keep records or other proof of the verifiable information on which such estimates are reasonably based. Only if the contractor relies on an estimate that is reasonable and based on verifiable information will an employee's time spent in connection with non-covered work be excluded

from hours worked counted toward the accrual of paid sick leave. If a contractor estimates the amount of time an employee spends performing in connection with covered contracts, the contractor must permit the employee to use her paid sick leave during any work time for the contractor.

(3) In the event a contractor is not obligated by the Service Contract Act, the Davis Bacon Act, or the Fair Labor Standards Act to keep records of an employee's hours worked, such as because the employee is exempt from the FLSA's minimum wage and overtime requirements, and the contractor chooses to use the assumption permitted by 29 CFR 13.5(a)(1)(iii), the contractor is excused from the requirement in paragraph (1)(d) of this section to keep records of the employee's number of daily and weekly hours worked.

(4)(i) Records relating to medical histories or domestic violence, sexual assault, or stalking, created for purposes of Executive Order 13706, whether of an employee or an employee's child, parent, spouse, domestic partner, or other individual related by blood or affinity whose close

association with the employee is the equivalent of a family relationship, shall be maintained as confidential records in separate files/records from the usual personnel files.

(ii) If the confidentiality requirements of the Genetic Information Nondiscrimination Act of 2008 (GINA), section 503 of the Rehabilitation Act of 1973, and/or the Americans with Disabilities Act (ADA) apply to records or documents created to comply with the recordkeeping requirements in this contract clause, the records and documents must also be maintained in compliance with the confidentiality requirements of the GINA, section 503 of the Rehabilitation Act of 1973, and/or ADA as described in 29 CFR 1635.9, 41CFR60-741.23(d), and 29 CFR 1630.14(c)(1), respectively.

(iii) The contractor shall not disclose any documentation used to verify the need to use 3 or more consecutive days of paid sick leave for the purposes listed in 29 CFR 13.5(c)(1)(iv) (as described in 29 CFR 13.5(e)(1)(ii)) and shall maintain confidentiality about any domestic abuse, sexual assault, or stalking, unless the employee consents or when disclosure is required by law.

(5) The contractor shall permit authorized representatives of the Wage and Hour Division to conduct interviews with employees at the worksite during normal working hours.

(6) Nothing in this contract clause limits or otherwise modifies the contractor's record keeping obligations, if any, under the Davis-Bacon Act, the Service Contract Act, the Fair Labor Standards Act, the Family and Medical Leave Act, Executive Order 13658, their respective implementing regulations, or any other applicable law.

(h) The contractor (as defined in 29 CFR 13.2) shall insert this clause in all of its covered subcontracts and shall require its subcontractors to include this clause in any covered lower-tier subcontracts.

(i) Certification of Eligibility.

(1) By entering into this contract, the contractor (and officials thereof) certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of the sanctions imposed pursuant to section 5 of the Service Contract Act, section 3(a) of the Davis-Bacon Act, or 29 CFR 5.12(a)(1).

(2) No part of this contract shall be subcontracted to any person or firm whose name appears on the list of persons or firms ineligible to receive Federal contracts currently maintained on the System for Award Management Web site, http://www.SAM.gov.

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(j) Interference/Discrimination.

(1) A contractor may not in any manner interfere with an employee's accrual or use of paid sick leave as required by Executive Order 13706 or 29 CFR part 13. Interference includes, but is not limited to, miscalculating the amount of paid sick leave an employee has accrued, denying or unreasonably delaying a response to a proper request to use paid sick leave, discouraging an employee from using paid sick leave, reducing an employee's accrued paid sick leave by more than the amount of such leave used, transferring an employee to work on non-covered contracts to prevent

the accrual or use of paid sick leave, disclosing confidential information contained in certification or other documentation provided to verify the need to use paid sick leave, or making the use of paid sick leave contingent on the employee's finding a replacement worker or the fulfillment of the contractor's operational needs.

(2) A contractor may not discharge or in any other manner discriminate against any employee for:

(i) Using, or attempting to use, paid sick leave as provided for under Executive Order 13706 and 29 CFR part 13;

(ii) Filing any complaint, initiating any proceeding, or otherwise asserting any right or claim under Executive Order 13706 and 29 CFR part 13;

(iii) Cooperating in any investigation or testifying in any proceeding under Executive Order 13706 and 29 CFR part 13; or

(iv) Informing any other person about his or her rights under Executive Order 13706 and 29 CFR part 13.

(k) Waiver. Employees cannot waive, nor may contractors induce employees to waive, their rights under Executive Order 13706, 29 CFR part 13, or this clause.

(l) Notice. The contractor must notify all employees performing work on or in connection with a covered contract of the paid sick leave requirements of Executive Order 13706, 29 CFR part 13, and this clause by posting a notice provided by the Department of Labor in a prominent and accessible place at the worksite so it may be readily seen by employees. Contractors that customarily post notices to employees electronically may post the notice electronically, provided such electronic posting is displayed prominently on any Web site that is maintained by the contractor, whether external or internal, and customarily used for notices to employees about terms and conditions of employment.

(m) Disputes concerning labor standards. Disputes related to the application of Executive Order 13706 to this contract shall not be subject to the general disputes clause of the contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR part 13. Disputes within the meaning of this contract clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

25. HOLD HARMLESS

If a duly authorized representative of the United States discovers or determines, whether before or subsequent to executing this contract, that an erroneous determination regarding the applicability of Executive Order 13658 was made, contractor, to the extent permitted by law, agrees to indemnify and hold harmless the United States, its officers, agents, and employees, for and from any and all liabilities, losses, claims, expenses, suits, fines, penalties, judgments, demands or actions, costs, fees, and damages directly or indirectly arising out of, caused by, related to, resulting from or in any way predicated upon, in whole or in part, the erroneous Executive Order 13658 determination. This includes contractor releasing any claim or entitlement it would otherwise have to an equitable adjustment to the

EASEMENT NO. DACA27-2-21-215

contract and indemnifying and holding harmless the United States from the claims of subcontractors and contractor employees.

26. DISCLAIMER

This instrument is effective only insofar as the rights of the United States in the property are concerned, and the grantee shall obtain such permission as may be required on account of any other existing rights. It is understood that the granting of this easement does not eliminate the necessity of obtaining any Department of the Army permit which may be required pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 3 March 1899 (30 Stat. 1151; 33 U.S.C. § 403), Section 404 of the Clean Water Act (33 U.S.C. § 1344) or any other permit or license which may be required by Federal, state or local statute in connection with use of the premises.

THIS EASEMENT is not subject to Title 10, United States Code, Section 2662, as amended.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army, this _____ day of _____, 20___.

DAVIS.NANCY.L.1230573251
Digitally signed by DAVIS.NANCY.L.1230573251
Date: 2024.02.01 15:01:55 -05'00'

NANCY L. DAVIS
Deputy Chief, Real Estate Division
Real Estate Contracting Officer

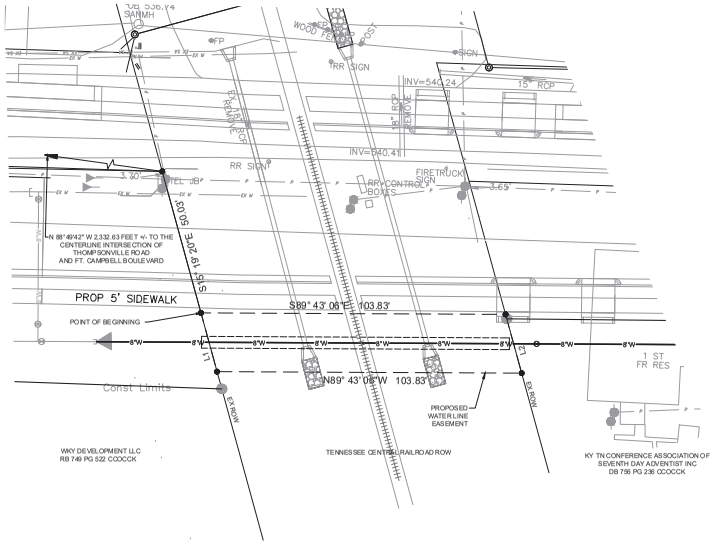
THIS EASEMENT is also executed by the grantee this 3 day of January, 2024.

CITY OF OAK GROVE

BY: _____
(Signature)

Jacqueline Oliver
(Print Name)

Mayor
(Title)



BOUNDARY LINE TABLE		
LINE NO.	LENGTH	DIRECTION
L1	20.77'	N15° 19' 20"W
L2	20.77'	S15° 19' 20"E

EXHIBIT A
DACA27-2-23-510

GRAPHIC SCALE 1"=20'

0 20 40 60

LEGEND

- EXISTING WATERLINE
- EXISTING FORCEMAIN
- EXISTING STORM SEWER
- EXISTING OVERHEAD POWERLINE
- EXISTING SANITARY SEWER
- PROPOSED WATERLINE EASEMENT
- PROPOSED 8" WATERLINE
- PROPOSED CASING
- EXISTING RIGHT OF WAY
- FORT CAMPBELL KENTUCKY RAIL ROAD
- PROPOSED ROADWAY WITH SIDEWALK
- POINT

RB=RECORD BOOK
PG=PAGE
CCOCCK=COUNTY CLERKS OFFICE OF CHRISTIAN COUNTY, KENTUCKY
FT=FORT
ROW=RIGHT OF WAY

TTL
330 North Second Street | Clarksville, TN 37040
931.647.6959 | www.ttlusa.com

WATERLINE RELOCATION FOR KY-911 - SECTION 2

KY-911, OAK GROVE
CHRISTIAN COUNTY, KENTUCKY

Sheet Title:
WATERLINE PLAN & PROFILE

No.	Date	Revision Description

Drawn By: M.MCDONALD | Checked By: A.HENRY
Date: 11/3/2023 | Proj. No.:
File Name: KY911_Waterline_Relocation_Phase 2(Main).dwg

Sheet No.
EX1.00

K:\CIVIL\CHRISTIAN CO.-OAK GROVE\CHRISTIAN CO.-THOMPSONVILLE LN. (KY 911)\KYTC CAD & MISC PLANS\KY 911 WATERLINE PHASE 2\KY911_WATERLINE RELOCATION_PHASE 2(MAIN).DWG
PLOTTED: 11/3/2023 9:00 AM

Utility Easement
20 Feet in Width
Portion of U.S. Tract No. 101

Fort Campbell
Military Reservation
Christian County, Kentucky

LAND DESCRIPTION

SITUATED in the Commonwealth of Kentucky, being a strip of land 20 feet in width, approximately 14.3 miles south-southeast of Christian County Courthouse in Hopkinsville, Kentucky and approximately 2400 feet east of the intersection of Thompsonville Lane (State Hwy 911) with Fort Campbell Blvd (Alternate U.S. Hwy 41) and being a strip of land within the municipal limits of the City of Oak Grove, Kentucky.

In addition, the aforesaid strip of land is centered on an 8-inch waterline, being a utility easement 20 feet in width depicted thereon a Waterline Relocation Exhibit prepared by TTL, Inc. (ttlusa.com) having the effective date of November 3, 2023, and being more specifically described by metes and bounds with bearing referenced to said exhibit as follows:

For a Point of Commencement (POC) go to the northeasterly corner of WKY Development LLC (Deed Book 749, Page 522). Moreover, said POC is situated in the westerly right-of-way line of a fee simple railroad right-of-way (U.S. Tract No. 101) that benefits the Fort Campbell Military Reservation. Thence leaving said POC and going with said lands of WKY Development along said westerly right-of-way line the following call:

South 15 degrees 19 minutes 20 seconds East 60.42 feet, more or less, to a point in the center of an 8-inch waterline, being the **Point of Beginning (POB)** of this utility easement. Thence leaving said lands of WKY Development and traversing across U.S. Tract No. 101 along the centerline of said waterline the following call:

South 89 degrees 43 minutes 06 seconds East 103.83 feet, more or less, to a point in the westerly line of the lands of KY TN Conference Association of Seventh Day Adventist Inc. (Deed Book 756, Page 236), being the Point of Terminus (POT) of this utility easement.

CONTAINING 0.05 acres (2,076 sq. ft.), more or less; encumbering a portion of U.S. Tract No. 101 acquired by grant of on June 5, 1986; conveyed by Illinois Central Gulf Railroad Company, a Delaware Corporation, to The United States of America via Special Warranty Deed of public record in Deed Book 446, Page 378 at the Christian County Court Clerk's Office, Hopkinsville, Kentucky.

In addition, this utility easement is 20 feet wide with each sideline being 10 feet from the center of said waterline; sidelines are to be truncated at the POB, POT, and deflection points (if any) as needed to maintain a perpendicular offset with the pipeline as it traverses across U.S. Tract 101.

28 Nov 2023, JCP

EXHIBIT B
DACA27-2-23-510

RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

(Reference for this form is CAM Reg 200-1, The proponent of this form is DPW Environmental)

REFERENCE NUMBERS:

EIA# (FC Fm 200-1): N/A

REC# (FC Fm 200-2): R-22-252

Project#:

TO: DPW, Environmental Division
ATTN: NEPA Program
Building 871, Bastogne Ave.
Fort Campbell, KY 42223

FROM:
Darrell Dawkins (270-798-5643)
DPW - Master Plans
Real Property Branch (RPAO)
Building 3709 Polk Rd, FTCKY 42223

Attach Document

Compliance Review for Environmental Media

Environmental Program	Not Reviewed	No Issues	See Section II	See Section III
Ag. Lease	☐	☒	☐	☐
Air Quality	☐	☐	☒	☐
Cultural Resources	☐	☒	☐	☐
Forestry	☐	☒	☐	☐
Hazardous Waste	☐	☒	☐	☐
Noise	☐	☒	☐	☐
Real Estate	☐	☒	☐	☐
Restoration	☐	☒	☐	☐
Solid Waste	☐	☒	☐	☐
Storage Tanks	☐	☒	☐	☐
TSCA	☐	☒	☐	☐
Water Quality	☐	☐	☒	☐
Wetlands	☐	☒	☐	☐
Wildlife	☐	☒	☐	☐

DATE REC INITIATED: 2022-08-05 **DATE FINALIZED:** **DATE EXPIRES:** **FY START DATE:**

PROJECT TITLE: ROA Oak Grove Request Install New Water Main beneath Fort Campbell Railroad at KY HWY 911

TOTAL DISTURBED AREA: 17896 SF **PEIS CHECKLIST ATTACHED:** ☐ Yes ☒ No

Project Description:

To relocate and existing water main line. In conjunction with the Kentucky Transportation Cabinet KY 911 roadway project the City of Oak Grove is required to relocate existing waterline. The proposed waterline bore is south of intersection KY 911, approximately 105 feet long and includes one 20 inch diameter, 0.375 inch wall thickness steel casing housing and 8 inch PVC water main.

NOTE THE ASSOCIATED ROA SECTION C IN THE R-22-252 REC FOLDER

TO BE COMPLETED BY NEPA PROGRAM

Reason for Using Record of Environmental Consideration

The proposed action is considered categorically excluded under the provision of CX-F-1, 32 CFR part 651, Appendix B, and no extraordinary circumstances exist as defined in 651.29. However, the mitigation/minimization measures, as developed while using this REC checklist, must be implemented while this project is being accomplished. SEE ALSO FNSI AND PEA RAILROAD MAINTENANCE AND REPAIR OF AN EXISTING RAILROAD SPUR CONNECTING FORT CAMPBELL TO HOPKINSVILL, KENTUCKY MAY 2019.

This REC is valid for up to 2 years from the date of the Installation Environmental Coordinator's (IEC) signature.

SECTION II - Environmental Compliance Requirements

Any change to the footprint or scope of this project will result in a re-evaluation of its environmental impacts. The proponent is required to notify the Fort Campbell NEPA Program immediately if any modifications to the project contained within this Record of Environmental Consideration (REC) are considered. Compliance violations that result from a proponent failing to complete the required NEPA compliance or environmental compliance requirements rests solely on the proponent per 32 CFR 651.

SUMMARY OF ENVIRONMENTAL COMMENTS: NEPA Program Manager: ETSON.DANIEL.LANCE.1078186654 Digitally signed by ETSON.DANIEL.LANCE.1078186654 Date: 2022.08.19 13:20:25 -05'00' **Date:** 2022-08-19

Air Quality:
This action does not require Air Quality Permit Analysis. Maintain all excavations, stockpiles, access roads, waste areas, and all other work areas free from excess dust to such a reasonable degree as to avoid causing a hazard or nuisance.

Water Quality:
Maintain erosion prevention/sediment controls to prevent discharge of sediment to the government ditch line and the Oak Grove MS4. Stabilize with vegetation any soil disturbance.

This document DOES NOT relieve the proponent of compliance with all applicable Federal, State, and Local Laws and regulations. The Proponent must complete the environmental compliance requirements listed within the REC prior to initiating any action. Failure to complete required mitigation/minimization actions is a violation of NEPA and may result in environmental media area Notice of Violations.

I have read and understand the Environmental Compliance Requirements contained within SECTION II and SECTION III of the REC document.

Project Proponent:	**Signature:**	**Date:**
Darrell Dawkins	DAWKINS.DARRELL.1112275530 Digitally signed by DAWKINS.DARRELL.1112275530 Date: 2022.08.19 13:37:55 -05'00'	2022-08-19
IEC:	**Signature**	**Date:**
Jeffrey J. Atkins	ATKINS.JEFFREY.J.1253438831 Digitally signed by ATKINS.JEFFREY.J.1253438831 Date: 2022.08.30 21:53:22 -05'00'	2022-08-30

EXHIBIT C
DACA27-2-23-510

SECTION III- Standard Environmental Mitigation Requirements

EXHIBIT C
DACA27-2-23-510

SPECIAL NOTE

For Tree Removal

Christian County
WIDEN KY-911 FROM US-41A TO OAK GROVE
Item No. 2-180

NO CLEARING OF TREES 5 INCHES OR GREATER (DIAMETER BREAST HEIGHT) FROM JUNE 1- JULY 31.

If there are any questions regarding this note, please contact David Waldner, Director, Division of Environmental Analysis, 200 Mero Street, Frankfort, KY 40601, Phone: (502) 564-7250.

SPECIAL NOTE FOR PIPELINE INSPECTION

1.0 DESCRIPTION. The Department will perform visual inspections on all pipe on the project. A video inspection will be required on projects having more than 250 linear feet of storm sewer and/or culvert pipe and on routes with an ADT of greater than 1,000 vehicles. Conduct video inspections on all pipe located under the roadway and 50 percent of the remaining pipe not under the roadway. Storm sewer runs and outfall pipes not under the roadway take precedence over rural entrance pipes. Contractors performing this item of work must be prequalified with the Department in the work type J51 (Video Pipe Inspection and Cleaning). Deflection testing shall be completed using a mandrel in accordance with the procedure outlined below or by physical measurement for pipes greater than 36inches in diameter. Mandrel testing for deflection must be completed prior to the video inspection testing. Unless otherwise noted, Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, current edition.

2.0 VIDEO INSPECTION. Ensure pipe is clear of water, debris or obstructions. Complete the video inspection and any necessary measurement prior to placing the final surface over any pipe. When paving will not be delayed, take measurements 30 days or more after the completion of earthwork to within 1 foot of the finished subgrade. Notify the Engineer a minimum of 24 hours in advance of inspection and notify the Engineer immediately if distresses or locations of improper installation are logged.

2.1 INSPECTION FOR DEFECTS AND DISTRESSES

A) Begin at the outlet end and proceed through to the inlet at a speed less than or equal to 30 ft/minute. Remove blockages that will prohibit a continuous operation.

B) Document locations of all observed defects and distresses including but not limited to: cracking, spalling, slabbing, exposed reinforcing steel, sags, joint offsets, joint separations, deflections, improper joints/connections, blockages, leaks, rips, tears, buckling, deviation from line and grade, damaged coatings/paved inverts, and other anomalies not consistent with a properly installed pipe.

C) During the video inspection provide a continuous 360 degree pan of every pipe joint.

D) Identify and measure all cracks greater than 0.1" and joint separations greater than 0.5".

E) Video Inspections are conducted from junction to junction which defines a pipe run. A junction is defined as a headwall, drop box inlet, curb box inlet, manhole, buried junction, or other structure that disturbs the continuity of the pipe. Multiple pipe inspections may be conducted from a single set up location, but each pipe run must be on a separate video file and all locations are to be referenced from nearest junction relative to that pipe run.

F) Record and submit all data on the TC 64-765 and TC 64-766 forms.

3.0 MANDREL TESTING. Mandrel testing will be used for deflection testing. For use on Corrugated Metal Pipe, High Density Polyethylene Pipe, and Polyvinyl Chloride Pipe, use a mandrel device with an odd number of legs (9 minimum) having a length not less than the outside diameter of the mandrel. The diameter of the mandrel at any point shall not be less than the diameter specified in Section 3.6. Mandrels can be a fixed size or a variable size.

3.1 Use a proving ring or other method recommended by the mandrel manufacturer to verify mandrel diameter prior to inspection. Provide verification documentation for each size mandrel to the Engineer.

3.2 All deflection measurements are to be based off of the AASHTO Nominal Diameters. Refer to the chart in section 3.6.

3.3 Begin by using a mandrel set to the 5.0% deflection limit. Place the mandrel in the inlet end of the pipe and pull through to the outlet end. If resistance is met prior to completing the entire run, record the maximum distance achieved from the inlet side, then remove the mandrel and continue the inspection from the outlet end of the pipe toward the inlet end. Record the maximum distance achieved from the outlet side.

3.4 If no resistance is met at 5.0% then the inspection is complete. If resistance occurred at 5.0% then repeat 3.1 and 3.2 with the mandrel set to the 10.0% deflection limit. If the deflection of entire pipe run cannot be verified with the mandrel then immediately notify the Engineer.

3.5 Care must be taken when using a mandrel in all pipe material types and lining/coating scenarios. Pipe damaged during the mandrel inspection will be video inspected to determine the extent of the damage. If the damaged pipe was video inspected prior to mandrel inspection then a new video inspection is warranted and supersedes the first video inspection. Immediately notify the Engineer of any damages incurred during the mandrel inspection and submit a revised video inspection report.

3.6 AASHTO Nominal Diameters and Maximum Deflection Limits.

Base Pipe Diameter	AASHTO Nominal Diameter	Max. Deflection Limit	
		5.0%	10.0%
(inches)	(inches)	(inches)	
15	14.76	14.02	13.28
18	17.72	16.83	15.95
24	23.62	22.44	21.26
30	29.53	28.05	26.58
36	35.43	33.66	31.89
42	41.34	39.27	37.21
48	47.24	44.88	42.52
54	53.15	50.49	47.84
60	59.06	56.11	53.15

4.0 PHYSICAL MEASUREMENT OF PIPE DEFLECTION. Alternate method for deflection testing when there is available access or the pipe is greater than 36 inches in diameter, as per 4.1. Use a contact or non-contact distance instrument. A leveling device is recommended for establishing or verifying vertical and horizontal control.

4.1 Physical measurements may be taken after installation and compared to the AASHTO Nominal Diameter of the pipe as per Section 3.6. When this method is used, determine the smallest interior diameter of the pipe as measured through the center point of the pipe (D2). All measurements are to be taken from the inside crest of the corrugation. Take the D2 measurements at the most deflected portion of the pipe run in question and at intervals no greater than ten (10) feet through the run. Calculate the deflection as follows:

% Deflection = [(AASHTO Nominal Diameter - D2) / AASHTO Nominal Diameter] x 100%

Note: The Engineer may require that preset monitoring points be established in the culvert prior to backfilling. For these points the pre-installation measured diameter (D1) is measured and recorded. Deflection may then be calculated from the following formula:

$$\% \text{ Deflection} = [(D1 - D2) / D1] (100\%)$$

4.2 Record and submit all data.

5.0 DEDUCTION SCHEDULE. All pipe deductions shall be handled in accordance with the tables shown below.

FLEXIBLE PIPE DEFLECTION	
Amount of Deflection (%)	Payment
0.0 to 5.0	100% of the Unit Bid Price
5.1 to 9.9	50% of the Unit Bid Price [(1)]
10 or greater	Remove and Replace [(2)]

[(1)] Provide Structural Analysis for HDPE and metal pipe. Based on the structural analysis, pipe may be allowed to remain in place at the reduced unit price. [(2)] The Department may allow the pipe to remain in place with no pay to the Contractor in instances where it is in the best interest to the public and where the structural analysis demonstrates that the pipe should function adequately.

RIGID PIPE REMEDIATION TABLE PIPE	
Crack Width (inches)	Payment
≤ 0.1	100% of the Unit Bid Price
Greater than 0.1	Remediate or Replace [(1)]

(1) Provide the Department in writing a method for repairing the observed cracking. Do not begin work until the method has been approved.

6.0 PAYMENT. The Department will measure the quantity in linear feet of pipe to inspect. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
24814EC	Pipeline Inspection	Linear Foot
10065NS	Pipe Deflection Deduction	Dollars

SPECIAL NOTE FOR NON-TRACKING TACK COAT

1. DESCRIPTION AND USEAGE. This specification covers the requirements and practices for applying a non-tracking tack asphalt coating. Place this material on the existing pavement course, prior to placement of a new asphalt pavement layer. Use when expedited paving is necessary or when asphalt tracking would negatively impact the surrounding area. This material is not suitable for other uses. Ensure material can "break" within 15 minutes under conditions listed in 3.2.

2. MATERIALS, EQUIPMENT, AND PERSONNEL.

2.1 Non-Tracking Tack. Provide material conforming to Subsection 2.1.1.

2.1.1 Provide a tack conforming to the following material requirements:

Property	Specification	Test Procedure
Viscosity, SFS, 77 ˚ F	20 – 100	AASHTO T 72
Sieve, %	0.3 max.	AASHTO T 59
Asphalt Residue[1], %	50 min.	AASHTO T 59
Oil Distillate, %	1.0 max.	AASHTO T 59
Residue Penetration, 77 ˚ F	0 - 30	AASHTO T 49
Original Dynamic Shear (G*/sin δ), 82 ˚ C	1.0 min.	AASHTO T 315
Softening Point, ˚ F	149 min.	AASHTO T 53
Solubility, %	97.5 min.	AASHTO T 44

[1] Bring sample to 212 ˚F over a 10-15 minute period. Maintain 212 ˚F for 15-20 minutes or until 30-40 mL of water has distilled. Continue distillation as specified in T59.

2.2. Equipment. Provide a distributor truck capable of heating, circulating, and spraying the tack between 170 ˚F and 180 ˚F. Do not exceed 180 ˚F. Circulate the material while heating. Provide the correct nozzles that is recommend by the producer to ensure proper coverage of tack is obtained. Ensure the bar can be raised to between 14" and 18" from the roadway.

2.3. Personnel. Ensure the tack supplier has provided training to the contractor on the installation procedures for this product. Make a technical representative from the supplier available at the request of the Engineer.

3. CONSTRUCTION.

3.1 Surface Preparation. Prior to the application of the non-tracking tack, ensure the pavement surface is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the surface by scraping, sweeping, and the use of compressed air. Ensure this preparation process occurs shortly before application to prevent the return of debris on to the pavement. If rain is expected within one hour after application, do not apply material. Apply material only when the surface is dry, and no precipitation is expected.

3.2 Non-tracking Tack Application. Placement of non-tracking tack is not permitted from October 1st to May 15th. When applying material, ensure the roadway temperature is a minimum of 40˚F and rising. Prior to application, demonstrate competence in applying the tack according to this note to the satisfaction of the Engineer. Heat the tack in the distributor to between 170 – 180 ˚F. After the initial heating, between 170 – 180 ˚F, the material may be sprayed between 165 ˚F and 180 ˚F. Do not apply outside this temperature range. Apply material at a minimum rate of 0.70 pounds (0.08 gallons) per square yard. Ensure full coverage of the material on the pavement surface. Full coverage of this material is critical. Increase material application rate if needed to achieve full coverage. Schedule the work so that, at the end of the day's production, all non-tracking tack is covered with the asphalt mixture. If for some reason the non-tracking tack cannot be covered by an asphalt mixture, ensure the non-tracking tack material is clean and reapply the non-tracking tack prior to placing the asphalt mixture. Do not heat material more than twice in one day.

3.3 Non-tracking Tack Certification. Furnish the tack certification to the Engineer stating the material conforms to all requirements herein prior to use.

3.4 Sampling and Testing. The Department will require a sample of non-tracking tack be taken from the distributor at a rate of one sample per 15,000 tons of mix. Take two 1 gallon samples of the heated material and forward the sample to the Division of Materials for testing within 7 days. Ensure the product temperature is between 170 and 180 °F at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of non-tracking tack in tons. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of non-tracking tack, the cleaning of the pavement surface, or furnishing and placing the non-tracking tack. The Department will consider all such items incidental to the non-tracking tack.

5. PAYMENT. The Department will pay for the non-tracking tack at the Contract unit bid price and apply an adjustment for each manufacturer's lot of material based on the degree of compliance as defined in the following schedule. Non-tracking tack will not be permitted for use from October 1st to May 15th. During this timeframe, the department will allow the use of an approved asphalt emulsion in lieu of a non-tracking tack product but will not adjust the unit bid price of the material. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

Non-Tracking Tack Price Adjustment Schedule						
Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
Viscosity, SFS, 77 ˚ F	20 – 100	19 - 102	17 - 18 103 - 105	15 - 16 106 - 107	14 108 - 109	≤13 ≥ 110
Sieve, %	0.30 max.	≤ 0.40	0.41 - 0.50	0.51 - 0.60	0.61 - 0.70	≥ 0.71
Asphalt Residue, %	50 min.	≥49.0	48.5 – 48.9	48.0 – 48.4	47.5-47.9	≤ 47.4
Oil Distillate, %	1.0 max.	≤1.0	1.1-1.5	1.6 - 1.7	1.8-1.9	>2.0
Residue Penetration, 77 ° F.	30 max.	≤ 31	32 - 33	34 - 35	36 - 37	≥ 38
Original Dynamic Shear (G*/sin δ), 82 ˚ C	1.0 min.	≥0.95	0.92 – 0.94	0.90 – 0.91	0.85 - 0.89	≤ 0.84
Softening Point, º F	149 min.	≥145	142 - 144	140 - 141	138 - 139	≤ 137
Solubility, %	97.5 min.	≥ 97.0	96.8 – 96.9	96.6 – 96.7	96.4 – 96.5	≤ 96.3

Code	Pay Item	Pay Unit
24970EC	Asphalt Material for Tack Non-Tracking	Ton

Revised: May 23, 2022

SPECIAL NOTES FOR FIXED COMPLETION DATE AND LIQUIDATED DAMAGES

KY 911 Widening – Phase II

Christian County

Item No. 02-180.20

INTERMEDIATE COMPLETION DATE

All utility work within the contract shall be completed by December 1, 2025.

All utility work within the contract shall be in place and operational prior to the commencement of roadway construction, EXCEPT for clearing and grubbing, MOT signage, erosion control item installation and cleaning, temporary pavement, temporary stone and temporary drainage items required for and during the contract utility work, as approved and directed by the Engineer.

Start of other contract work not listed above, prior to the intermediate completion date, shall be approved by the Engineer.

FIXED PROJECT COMPLETION DATE

Project completion date is November 1, 2027.

LIQUIDATED DAMAGES

Liquidated Damages, for the entire project, in the amount specified in the Standard Specifications, per calendar day, will be assessed for each day work remains incomplete beyond the Intermediate Completion Date listed above.

Liquidated Damages, for the entire project, in the amount specified in the Standard Specifications, per calendar day, will be assessed for each day work remains incomplete beyond the Specified Project Completion Date. This project has a Fixed Completion Date of November 1, 2027.

Also contrary to Section 108, liquidated damages will be charged during the months of December through March.

TEAM KENTUCKY TRANSPORTATION CABINET

KENTUCKY TRANSPORTATION CABINET
Department of Highways
DIVISION OF RIGHT OF WAY & UTILITIES

TC 62-226
Rev. 01/2016
Page 1 of 1

RIGHT OF WAY CERTIFICATION

☒ Original	☐ Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	**COUNTY**	**PROJECT # (STATE)**	**PROJECT # (FEDERAL)**
2-180.20	Christian		
PROJECT DESCRIPTION			
This is a breakout of the Item No. 2-180.00 Parent project. (See Below)			

☐ **No Additional Right of Way Required**

Construction will be within the limits of the existing right of way. The right of way was acquired in accordance to FHWA regulations under the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970, as amended. No additional right of way or relocation assistance were required for this project.

☒ **Condition # 1 (Additional Right of Way Required and Cleared)**

All necessary right of way, including control of access rights when applicable, have been acquired including legal and physical possession. Trial or appeal of cases may be pending in court but legal possession has been obtained. There may be some improvements remaining on the right-of-way, but all occupants have vacated the lands and improvements, and KYTC has physical possession and the rights to remove, salvage, or demolish all improvements and enter on all land. Just Compensation has been paid or deposited with the court. All relocations have been relocated to decent, safe, and sanitary housing or that KYTC has made available to displaced persons adequate replacement housing in accordance with the provisions of the current FHWA directive.

☐ **Condition # 2 (Additional Right of Way Required with Exception)**

The right of way has not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish all improvements. Just Compensation has been paid or deposited with the court for most parcels. Just Compensation for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract

☐ **Condition # 3 (Additional Right of Way Required with Exception)**

The acquisition or right of occupancy and use of a few remaining parcels are not complete and/or some parcels still have occupants. All remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. KYTC is hereby requesting authorization to advertise this project for bids and to proceed with bid letting even though the necessary right of way will not be fully acquired, and/or some occupants will not be relocated, and/or the just compensation will not be paid or deposited with the court for some parcels until after bid letting. KYTC will fully meet all the requirements outlined in 23 CFR 635.309(c)(3) and 49 CFR 24.102(j) and will expedite completion of all acquisitions, relocations, and full payments after bid letting and prior to AWARD of the construction contract or force account construction.

Total Number of Parcels on Project		EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed			
Condemnation			
Signed ROE			

Notes/ Comments (Text is limited. Use additional sheet if necessary.)

All parcels were acquired under the Parent project: Item No. 2-180.00, with the exception of Parcel No. 04. Item No. 2-180.20 is a breakout of 31 parcels from the Parent project, those 31 parcels are: Parcel Nos. 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 40, 42, 45, 46, 47, and 78.

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	
Signature		Signature	Digitally signed by Jennifer K Cox Date: 2024.02.05 07:50:03 -06'00'
Date		Date	

Right of Way Director		FHWA	
Printed Name		Printed Name	
Signature	Digitally signed by Kelly Divine Date: 2024.02.06 08:22:41 -06'00'	Signature	
Date		Date	

UTILITIES AND RAIL CERTIFICATION NOTE

2-180.20
Christian County
KY 911 from MP 0 to MP 1.835
FD52 024 8022601
STP 6000 027

GENERAL PROJECT NOTE ON UTILITY PROTECTION

NOTE: DO NOT DISTURB THE FOLLOWING UTILITIES LOCATED WITHIN THE PROJECT DISTURB LIMITS

N/A

The Contractor is fully responsible for protection of all utilities listed above

THE FOLLOWING COMPANIES ARE RELOCATING/ADJUSTING THEIR UTILITIES WITHIN THE PROJECT LIMITS AND WILL BE COMPLETE PRIOR TO CONSTRUCTION

PRECC has completed relocation.
Mediacom has completed relocation.

THE FOLLOWING COMPANIES HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE COMPANY OR THE COMPANY'S SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

AT&T will be relocated by 5/30/2024

THE FOLLOWING COMPANIES HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE ROAD CONTRACTOR AS INCLUDED IN THIS CONTRACT

HWEA
Oak Grove Water

THE FOLLOWING RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

☒ **No Rail Involved** ☐ **Minimal Rail Involved (See Below)** ☐ **Rail Involved (See Below)**

UTILITIES AND RAIL CERTIFICATION NOTE

2-180.20
Christian County
KY 911 from MP 0 to MP 1.835
FD52 024 8022601
STP 6000 027

UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. The contractor is instructed to contact KY 811 for the location of existing underground utilities. Contact shall be made a minimum of two (2) and no more than ten (10) business days prior to excavation.

The contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY 811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom are to be contacted through their individual Protection Notification Center. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area. Non-compliance with these directives can result in the enforcement of penalties.

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

The contractor will be responsible for contacting all utility facility owners on the subject project to coordinate his activities. The contractor will coordinate his activities to minimize and, where possible, avoid conflicts with utility facilities. Due to the nature of the work proposed, it is unlikely to conflict with the existing utilities beyond minor facility adjustments. Where conflicts with utility facilities are unavoidable, the contractor will coordinate any necessary relocation work with the facility owner and Resident Engineer. The Kentucky Transportation Cabinet maintains the right to remove or alter portions of this contract if a utility conflict occurs.

The utility facilities as noted in the previous section(s) have been determined using data garnered by varied means and with varying degrees of accuracy: from the facility owners, a result of S.U.E., field inspections, and/or reviews of record drawings. The facilities defined may not be inclusive of all utilities in the project scope and are not Level A quality, unless specified as such. It is the contractor's responsibility to verify all utilities and their respective locations before excavating.

Please Note: The information presented in this Utility Note is informational in nature and the information contained herein is not guaranteed.

UTILITIES AND RAIL CERTIFICATION NOTE

2-180.20
Christian County
KY 911 from MP 0 to MP 1.835
FD52 024 8022601
STP 6000 027

AREA UTILITIES CONTACT LIST

NOTE: The Utilities Contact List is provided as informational only, and may not be a complete list of all Utility Companies with facilities in the project area.

HWEA	Trey Pollock	(270) 877-4132 TPollock@HWEA-KY.com
Oak Grove Water	Brian Ahart	(270) 439-4646 brian.ahart@oakgroveky.org
Mediacom	Brian Carter	(270) 703-4363 bcarter@mediacomcc.com
AT&T	Michael Forrest	(270) 519-5862 mf6322@att.com
PRECC	Josh Johnson	(270) 584-5157 jjohnson@precc.com

GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT

The contractor should be aware the following utility notes and KYTC Utility Bid Item Descriptions shall supersede, replace and take precedence over any and all conflicting information that may be contained in utility owner supplied specifications contained in the contract, on plans supplied by the utility owner, or any utility owner specifications or information externally referenced in this contract.

Where information may have been omitted from these notes, bid item descriptions, utility owner supplied specifications or plans; the KYTC Standard Specifications for Road and Bridge Construction shall be referenced.

PROTECTION OF EXISTING UTILITIES

The existing utilities shown on the plans are shown as best known at the time the plans were developed and are to be used as a guide only by the Contractor. The Contractor shall use all means at his disposal to accurately locate all existing utilities, whether shown on the plans or not, prior to excavation. The contractor shall protect these utilities during construction. Any damage to existing utilities during construction that are shown or not shown on the plans shall be repaired at the Contractor's expense.

PREQUALIFIED UTILITY CONTRACTORS

Some utility owners may require contractors that perform relocation work on their respective facilities as a part of the road contract be prequalified or preapproved by the utility owner**. Utility contractors may be added via addendum if KYTC is instructed to do so by the utility owner. Potential contractors must seek prequalification from the utility owner. Any revisions must be sent from the utility owner to KYTC a minimum of one week prior to bid opening.** Those utility owners with a prequalification or preapproval requirement are as follows:

HWEA

Scott & Ritter, Inc.
Luke Ritter
lukeritter@scottandritter.com
2385 Barren River Road
Bowling Green, KY 42101
(270) 781-9988

Cleary Construction, Inc.
Ryan Cornwell
2006 Edmonton Road
Tompkinsville, KY 42167
(270) 407-8831

Twin States Utilities, Inc.
Chris Adams, Superintendent
9344 Old Glasgow Road
Mt Hermon, KY 42157
(270) 427-5300

Oak Grove Water

Infinity Pipeline
Terry Tracy
ttracy@infinitypipinc.com
PO Box 928
Bowling Green, KY 42102
270-796-7209

Scott & Ritter, Inc.
Luke Ritter
lukeritter@scottandritter.com
2385 Barren River Road
Bowling Green, KY 42101
(270) 781-9988

Cleary Construction, Inc.
Ryan Cornwell
2006 Edmonton Road
Tompkinsville, KY 42167
(270) 407-8831

Twin States Utilities, Inc.
Chris Adams, Superintendent
9344 Old Glasgow Road
Mt Hermon, KY 42157
(270) 427-5300

The bidding contractor needs to review the above list and choose from the list of approved subcontractors at the end of these general notes as identified above before bidding. When the list of approved subcontractors is provided, only subcontractors shown on the following list(s) will be allowed to work on that utility as a part of this contract. In such instances, the utility subcontractor is not required to be prequalified with the KYTC Division of Construction Procurement.

IF A UTILITY SUPPLIED CONTRACTOR LIST IS NOT PROVIDED

When the above list of approved subcontractors for the utility work is not provided, the utility work can be completed by the prime contractor, or a prime contractor-chosen subcontractor. In such instances, the subcontractor shall be prequalified with the KYTC Division of Construction Procurement in the work type of "Utilities" (I33). Those who would like to become prequalified may contact the Division of

Construction Procurement at (502) 564-3500. Please note: it could take up to 30 calendar days for prequalification to be approved. The prequalification does not have to be approved prior to the bid, but must be approved before the subcontract will be approved by KYTC and the work can be performed.

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

All utility work is being performed as a part of a contract administered by KYTC; there is not a direct contract between the utility contractor and utility owner. The KYTC Section Engineer is ultimately responsible for the administration of the road contract and any utility work included in the contract.

SUBMITTALS AND CORRESPONDENCE

All submittals and correspondence of any kind relative to utility work included in the road contract shall be directed to the KYTC Section Engineer, a copy of which may also be supplied to the utility owner by the contractor to expedite handling of items like material approvals and shop drawings. All approvals and correspondence generated by the utility owner shall be directed to the KYTC Section Engineer. The KYTC Section Engineer will relay any approvals or correspondence to the utility contractor as appropriate. At no time shall any direct communication between the utility owner and utility contractor without the communication flowing through the KYTC Section Engineer be considered official and binding under the contract.

ENGINEER

Where the word “Engineer” appears in any utility owner specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Engineer” is the Kentucky Transportation Cabinet (KYTC) Section Engineer or designated representative and the utility owner engineer or designated representative jointly. Both engineers must mutually agree upon all decisions made with regard to the utility construction. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

Where the word “Inspector” or “Resident Project Representative” appears in the utility specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Inspector” or “Resident Project Representative” is the utility owner inspector and KYTC inspector jointly. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

NOTICE TO UTILITY OWNERS OF THE START OF WORK

One month before construction is to start on a utility, the utility contractor shall make notice to the KYTC Section Engineer and the utility owner of when work on a utility is anticipated to start. The utility contractor shall again make confirmation notice to the KYTC Section Engineer and the utility owner one week before utility work is to actually start.

UTILITY SHUTDOWNS

The Contractor shall not shut down any active and in-service mains, utility lines or services for any reason unless specifically given permission to do so by the utility owner. The opening and closing of valves and operating of other active utility facilities for main, utility line or utility service shut downs are to be performed by the utility owner unless specific permission is given to the contractor by the owner to make shutdowns . If and when the utility owner gives the contractor permission to shutdown mains, utility lines or utility services, the contractor shall do so following the rules, procedures and regulations of the utility owner. Any permission given by the utility owner to the contractor to shutdown active and in-service mains, utility lines or services shall be communicated to the KYTC Section Engineer by the utility owner that such permission has been given.

Notice to customers of utility shut downs is sometimes required to be performed by the utility contractor. The contractor may be required; but, is not limited to, making notice to utility customers in a certain minimum amount of time in advance of the shut down and by whatever means of communication specified by the utility owner. The means of communication to the customer may be; but is not limited to, a door hanger, notice by newspaper ad, telephone contact, or any combination of communication methods deemed necessary, customary and appropriate by the utility owner. The contractor should refer to the utility owner specifications for requirements on customer notice.

Any procedure the utility owner may require the contractor to perform by specification or plan note and any expense the contractor may incur to comply with the utility owner's shut down procedure and notice to customers shall be considered an incidental expense to the utility construction.

CUSTOMER SERVICE AND LATERAL ABANDONMENTS When temporary or permanent abandonment of customer water, gas, or sewer services or laterals are necessary during relocation of utilities included in the contract, the utility contractor shall perform these abandonments as part of the contract as incidental work. No separate payment will be made for service line and lateral abandonments. The contractor shall provide all labor, equipment and materials to accomplish the temporary or permanent abandonment in accordance with the plans, specifications and/or as directed by the engineer. Abandonment may include, but is not limited to, digging down on a water or gas main at the tap to turn off the tap valve or corporation stop and/or capping or plugging the tap, digging down on a sewer tap at the main and plugging or capping the tap, digging down on a service line or lateral at a location shown on the plans or agreeable to the engineer and capping or plugging, or performing any other work necessary to abandon the service or lateral to satisfactorily accomplish the final utility relocation.

STATIONS AND DISTANCES

All stations and distances, when indicated for utility placement in utility relocation plans or specifications, are approximate; therefore, some minor adjustment may have to be made during construction to fit actual field conditions. Any changes in excess of 6 inches of plan location shall be reviewed and approved jointly by the KYTC Section Engineer or designated representative and utility owner engineer or designated representative. Changes in location without prior approval shall be remedied by the contractor at his own expense if the unauthorized change creates an unacceptable conflict or condition.

RESTORATION

Temporary and permanent restoration of paved or stone areas due to utility construction shall be considered incidental to the utility work. No separate payment will be made for this work. Temporary restoration shall be as directed by the KYTC Section Engineer. Permanent restoration shall be "in-kind" as existing.

Restoration of seed and sod areas will be measured and paid under the appropriate seeding and sodding bid items established in the contract for roadway work.

BELOW ARE NOTES FOR WHEN "INST" ITEMS ARE IN THE CONTRACT MEANING THE UTILITY COMPANY IS PROVIDING CERTAIN MATERIALS FOR UTILITY RELOCATION

MATERIAL

Contrary to Utility Bid Item Descriptions, those bid items that have the text **"Inst"** at the end of the bid item will have the major components of the bid item provided by the utility owner. No direct payment will be made for the major material component(s) supplied by the utility company. All remaining materials required to construct the bid item as detailed in utility bid item descriptions, in utility specifications and utility plans that are made a part of this contract will be supplied by the contractor. The contractor's bid price should reflect the difference in cost due to the provided materials.

The following utility owners have elected to provide the following materials for work under this contract:

All materials are to be supplied by the contractor per bid item descriptions, utility specifications and utility plans.

SECURITY OF SUPPLIED MATERIALS

If any utility materials are to be supplied by the utility owner, it will be the responsibility of the utility contractor to secure all utility owner supplied materials after delivery to the project site. The utility contractor shall coordinate directly with the utility owner and their suppliers for delivery and security of the supplied materials. Any materials supplied by the utility owner and delivered to the construction site that are subsequently stolen, damaged or vandalized and deemed unusable shall be replaced with like materials at the contractor's expense.

Standard Water Bid Item Descriptions

THESE BID ITEM DESCRIPTIONS SHALL SUPERCEDE ANY BID ITEM DESCRIPTIONS CONTAINED IN UTILITY OWNER SUPPLIED SPECIFICATIONS PROVIDED ELSEWHERE IN THIS PROPOSAL.

W AIR RELEASE VALVE This bid item description shall apply to all air release valve installations of every size except those defined as "Special". This item shall include the air release valve, main to valve connecting line or piping, manhole, vault, structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill, and restoration required to install the air release valve at the location shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

BOLLARDS This item is for payment for furnishing and installing protective guard posts at above-ground utility installations. A bollard may consist of, but is not limited to, a steel post set in concrete or any other substantial post material. This item shall include all labor, equipment, and materials needed for complete installation of the bollard, as specified by the utility owner specifications and plans. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

NOTE: A bid code for this item has been established in standard roadway bid items and shall be used for payment of this item. The bid code is 21341ND.

W CAP EXISTING MAIN This item shall include the specified cap, concrete blocking and/or mechanical anchoring, labor, equipment, excavation, backfill, and restoration required to install the cap on an existing main to be left in service at the location shown on the plans or as directed, in accordance with the specifications. This item is not to be paid to cap new main installations or mains that are to be abandoned. This pay item is only to be paid to cap existing mains to be left in service. Caps on new mains are to be considered incidental to the new main, as are other fittings, and are not to be paid under this item. All caps on existing mains shall be paid under this one bid item included in the contract, regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Plugging of existing abandoned mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

W CATHODIC PROTECTION This item is for providing and installing all cathodic protection materials to iron pipe and fittings, as specified in plans and specifications, complete and ready-for-use. Materials to be supplied and installed by the contractor shall include, but are not limited to, anodes, wire, fusion kits, test stations, and/or marker posts. All cathodic protection required for the entire project shall be paid under this one item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LUMP SUM (LS) when complete.

W DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized to minimize the impact of open-cut for the installation of water main under streets, creeks, etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore, whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at

each end of the bore, when specified, to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract, regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT CONCRETE This item shall include all labor, equipment, excavation, concrete, reinforcing steel, backfill, restoration, etc., to construct the concrete encasement of the water main as shown on the plans, and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe, as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasements shall be paid under one bid item included in the contract, regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement, as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement in accordance with the plans and specifications, complete and ready-for-use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately but shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASEMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open-cut and install the encasement in accordance with the plans and specifications, complete and ready-for-use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately but shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W FIRE HYDRANT ADJUST This item includes all labor, equipment, excavation, materials, and backfill to adjust the existing fire hydrant using the fire hydrant manufacturer's extension kit for adjustments of 18" or less. Adjustments greater than 18" require anchoring couplings and vertical bends to adjust to grade. The Contractor will supply and install all anchor couplings, bends, fire hydrant extension, concrete blocking, restoration, granular drainage material, etc., needed to adjust the fire hydrant, complete and ready-for-use as shown on the plans, and in accordance with the specifications and standard drawings. This also includes allowing for the utility owner inspector to inspect the existing fire hydrant prior to adjusting, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W FIRE HYDRANT ASSEMBLY This item includes all labor, equipment, new fire hydrant, isolating valve and valve box, concrete pad around valve box (when specified in specifications or plans), piping, anchoring tee, anchoring couplings, fire hydrant extension, excavation, concrete blocking, granular drainage material, backfill, and restoration, to install a new fire hydrant assembly as indicated on plans and standard drawings, compete and ready-for-use. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT RELOCATE This item includes all labor and equipment to remove the existing fire hydrant from its existing location and to reinstall at a new location. This item shall include a new isolating valve and valve box, concrete pad around valve box (when required in specifications or plans), new piping, new anchoring tee, anchoring couplings, fire hydrant extensions, concrete blocking, restoration, granular drainage material, excavation, and backfill as indicated on plans, specifications, and standard drawings, compete and ready-for-use. This item shall also include allowing for utility owner inspector to inspect the existing fire hydrant prior to reuse, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant for use if the existing fire hydrant is determined unfit for reuse. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT REMOVE This item includes removal of an abandoned fire hydrant, isolating valve, and valve box, to the satisfaction of the engineer. The removed fire hydrant, isolating valve, and valve box shall become the property of the contractor for his disposal as salvage or scrap. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSH HYDRANT ASSEMBLY This item shall include the flushing hydrant assembly, service line, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the flush hydrant at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSHING ASSEMBLY This item shall include the flushing device assembly, service line, meter box and lid, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the flushing device at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W LEAK DETECTION METER This item is for payment for installation of a water meter at main valve locations, as shown on the plans, for detection of water main leaks. The meter shall be of the size and type specified in the plans or specifications. This item shall include all labor, equipment, meter, meter box or vault, connecting pipes between main and meter, main taps, tapping saddles, casting, yoke, and any other associated material needed for installation of a functioning water meter in accordance with the plans and specifications, complete and ready-for-use. No separate payment will be made under any other contract item for connecting pipe or main taps. All leak detection meters shall be paid under one bid item included in the contract, regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W LINE MARKER This item is for payment for furnishing and installing a water utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

W LINE STOP SIZE 1 OR 2 This item shall include the line stop saddle/sleeve, valve, completion plug and any other material, labor, and equipment necessary to complete the line stop as indicated in the plans and/or specifications. This installation shall allow the waterline system to operate as usual without any interruption of service. The size shall be the measured internal diameter of the live pipe to be tapped. The line stop size to be paid under sizes 1 or 2 shall be as follows:
Size 1 = All live tapped main sizes up to and including 8 inches
Size 2 = All live tapped main sizes greater than 8 inches
Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the location shown on the plans. This bid item is to be used to relocate an existing water main at point locations, such as to clear a conflict at a proposed drainage structure, pipe, or any other similar short relocation situation, and where the existing pipe material is to be reused. The contractor shall provide any additional pipe or fitting material needed to complete the work, as shown on the plans and specifications. The materials provided shall be of the same type and specifications as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case-by-case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically, regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Water Main Relocate shall not be paid on a linear feet basis but shall be paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER This item is for payment for installation of all standard water meters of all sizes 2 inches in diameter or less as specified on the plans. This item shall include all labor, equipment, meter, meter box, casting, yoke, and any other associated materials needed for installation of a functioning water meter, in accordance with the plans and specifications, complete and ready-for-use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER ADJUST This item includes all labor, equipment, excavation, materials, backfill, restoration, etc., to adjust the meter casting to finished grade (whatever size exists) at the location shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER RELOCATE This item includes all labor, equipment, excavation, additional fittings, disinfection, testing, restoration, etc., to relocate the existing water meter (whatever size exists), meter yoke, meter box, casting, etc., from its old location to the location shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. The new service pipe (if required) will be paid under the short side or long side service bid item. Any and all meter relocations of 2 inches or less shall be paid under one bid item included in the contract, regardless of size. Each individual relocation shall be paid individually under this item; however, no separate bid items will be established for meter size variations of 2 inches in diameter or less. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER VAULT SIZE RANGE 1 OR 2 This item is for payment for installation of an underground structure for housing of a large water meter, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s) valve(s), all piping, and fitting materials associated with installing a functioning meter and vault in accordance with the plans, standard drawings, and specifications, complete and ready-for-use. The size shall be the measured internal diameter of the meter and piping to be installed. The size meter vault to be paid under size 1 or 2 shall be as follows:

Size Range 1 = All meter and piping sizes greater than 2 inches up to and including 6 inches
Size Range 2 = All meter and piping sizes greater than 6 inches

This item shall be paid EACH (EA) when complete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER/FIRE SERVICE COMBO VAULT This item is for payment for installation of an underground structure for housing of a water meter and fire service piping, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s), valve(s), all piping, and fitting materials associated with installing a functioning meter and fire service vault, in accordance with the plans and specifications, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER WITH PRESSURE REDUCING VALVE (PRV) This item is for payment for installation of all standard water meters with pressure reducing valves (PRV) of all sizes 2 inches in diameter or less,

as specified on the plans. This item shall include all labor, equipment, meter, PRV, meter box, casting, yoke, and any other associated materials needed for installation of a functioning water meter with PRV, in accordance with the plans and specifications, complete and ready-for-use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W PIPE This item shall apply to all pipe of every size and type material to be used as water main, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specifications), polyethylene wrap (when specified), labor, equipment, excavation, bedding, backfill, restoration, testing, sanitizing, etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. This item shall include all temporary and permanent materials, as well as equipment required to pressure test and sanitize mains including, but not limited to, pressurization pumps, hoses, tubing, gauges, main taps, saddles, temporary main end caps or plugs and blocking, main end taps for flushing, chlorine liquids or tablets for sanitizing, water for testing/sanitizing and flushing (when not supplied by the utility), chlorine neutralization equipment and materials, and any other items needed to accomplish pressure testing and sanitizing the main installation. This item shall also include pipe anchors at each end of polyethylene pipe runs, when specified to prevent the creep or contraction of the pipe. When owner specifications require, this bid item shall include contractor preparation of as-built drawings to be provided to the engineer and/or utility owner at the end of construction. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W PLUG EXISTING MAIN This item shall include the specified plug, concrete blocking and/or mechanical anchoring, labor, equipment, excavation, backfill, and restoration required to install the plug on an existing main to be left in service at the location shown on the plans or as directed, in accordance with the specifications. This item is not to be paid to plug new main installations or mains that are to be abandoned. This pay item is only to be paid to plug existing mains that are to be left in service. Plugs on new mains are to be considered incidental to the new main, as are other fittings, and are not to be paid under this item. All plugs on existing mains left in service shall be paid under this one bid item included in the contract, regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Plugging of existing abandoned mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

W PRESSURE REDUCING VALVE This item shall apply to all pressure reducing valves (PRV) of every size required in the plans and specifications, except those bid items defined as "Special". Payment under this description is to be for PRVs being installed with new main. This item includes the PRV as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), pit or vault, backfill, restoration, testing, disinfection, etc., required to install the specified PRV at the location shown on the plans, in accordance with the specifications and standard

drawings, complete and ready-for-use. If required on the plans and/or proposed adjoining DIP is restrained, PRVs shall be restrained. PRV restraint shall be considered incidental to the PRV and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W PUMP STATION This item is for payment for installation of pumps and an above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LUMP SUM (LS) when complete.

W REMOVE TRANSITE (AC) PIPE This item shall include all labor, equipment, and materials needed for removal and disposal of the pipe as hazardous material. All work shall be performed by trained and certified personnel, in accordance with all environmental laws and regulations.
Any and all transite AC pipe removed shall be paid under one bid item included in the contract, regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W SERVICE LONG SIDE This item shall apply to all service line installations of every size bid up to and including 2-inch inside diameter, except those service bid items defined as "Special". This item includes the specified piping material, main tap, tapping saddle (if required), corporation stop materials, coupling for connecting the new piping to the surviving existing piping, encasement of 2 inches or less internal diameter (if required by plans or specifications), labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. This bid item is to pay for service installations where the ends of the service connection are on opposite sides of the public roadway and the service line crosses the centerline of the public roadway, as shown on the plans. The length of the service line is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for special bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE SHORT SIDE This item shall apply to all service line installations of every size up to and including 2-inch internal diameter, except those service bid items defined as "Special". This item includes installation of the specified piping material of the size specified on plans, encasement of 2 inches or less internal diameter (if required by plans or specifications), main tap, tapping saddle (if required), corporation stop, coupling for connecting the new piping to the surviving existing piping, labor, equipment, excavation, backfill, testing, disinfection, and restoration at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. This bid item is to pay for service installations where both ends of the service connection are on the same side of the public roadway, or when an existing service crossing a public roadway will remain and is being extended, reconnected, or relocated, with all work on one side of the public roadway centerline as shown on the plans. The length of

the service line is not to be specified and shall not be restricted to any minimum or maximum length. Placement of a service lateral across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE RELOCATE This item is for the relocation of an existing water service line where a meter is not involved, and where an existing service line can easily be adjusted by excavating alongside and moving the line horizontally and/or vertically a short distance without cutting the service line to avoid conflicts with road construction. This item shall include excavation, labor, equipment, bedding, and backfill to relocate the line, in accordance with the plans and specifications, complete and ready-for-use. Payment under this item shall be for each location requiring relocation. Payment shall be made under this item regardless of service size or relocation length. No separate pay items will be established for size or length variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE ABANDONMENT This item is to be used to pay for abandonment of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, etc. Payment under this item shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item but shall be considered incidental to water construction (i.e., abandonment of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in-place and complete restoration. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, etc. Payment under this item shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item but shall be considered incidental to water construction (i.e., removal of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and complete restoration. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TAPPING SLEVE AND VALVE SIZE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready-for-use, in accordance with the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Size 1 = All live tapped main sizes up to and including 8 inches
Size 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TIE-IN This item shall be used for all main tie-in bid items of every size, except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, disinfection, testing, and backfill required to make the water main tie-in as shown on the plans and in accordance with the specifications, complete and ready-for-use. Pipe for tie-ins shall be paid under separate bid items. This item shall be paid EACH (EA) when complete.

Plugging of existing abandoned mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

W VALVE This item shall apply to all valves of every size required in the plans and specifications, except those bid items defined as "Special". Payment under this description is to be for gate or butterfly valves being installed with new main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specifications), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specifications), restoration, testing, disinfection, etc., required to install the specified valve at the location shown on the plans, in accordance with the specifications and standard drawings, complete and ready-for-use. If required on plans and/or proposed adjoining DIP is restrained, valves shall be restrained. Valve restraint shall be considered incidental to the valve and adjoining pipe. This description does not apply to cut-in valves. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE ANCHOR EXISTING This item is intended to pay for installation of restraint hardware on an existing valve where no restraint exists, to hold the valve in place to facilitate tie-ins and other procedures where restraint is prudent. This work shall be performed in accordance with water specifications and plans. This bid item shall include all labor, equipment, excavation, materials, and backfill to complete restraint of the designated valve, regardless of size, at the location shown on the plans, complete and ready-for-use. Materials to be provided may include, but are not limited to, retainer glands, lugs, threaded rod, concrete, reinforcing steel, or any other material needed to complete the restraint. Should the associated valve box require removal to complete the restraint, the contractor shall reinstall the existing valve box, the cost of which shall be considered incidental to this bid item. No separate bid items are being provided for size variations. All sizes shall be paid under one bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE BOX ADJUST This item include all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, etc., to adjust the top of the box to finished grade, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE BOX REMOVE This item is in payment for all labor, equipment, restoration materials, disposal, and any other effort for removal of a valve box, leaving the valve in place. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE CUT-IN This item is for new cut-in valve installations of all sizes, where installation is accomplished by cutting out a section of existing main. This item shall include cutting the existing pipe, supplying the specified valve, couplings or sleeves, valve box, concrete pad around valve box (when required in specifications or plans), labor, equipment, and materials to install the valve at the locations

shown on the plans, or as directed by the engineer, complete and ready-for-use. Any pipe required for installation shall be cut from that pipe removed or supplied new by the contractor. No separate payment will be made for pipe required for cut-in valve installation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE REMOVE This item is in payment for all labor, equipment, and restoration materials for cutting of existing pipe and any other effort necessary for total removal of an existing valve and valve box. This bid item shall include disposal of the valve and box, unless plans or specifications state the valve and box are to be salvaged and delivered to the utility owner for reuse. No separate pay items are to be established for size variations. All valve removals, regardless of size, shall be paid under this one pay item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.
If plugging of existing abandoned mains is needed after valve removal, the work shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

W VALVE VAULT This item is for payment for installation of an underground structure for housing of specific valve(s), as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or doors, the specified valve(s), all piping, and fitting materials associated with installing a functioning valve vault, in accordance with the plans, standard drawings, and specifications, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

PROJECT MANUAL

STANDARD SPECIFICATIONS FOR WATER LINES

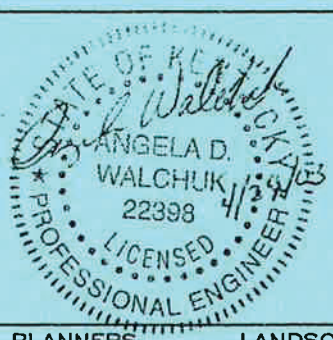
CITY OF OAK GROVE, KENTUCKY

MAYOR	JEAN LEAVELL
COUNCIL MEMBER	SUSAN LANEY
COUNCIL MEMBER	ANNETTE MARTIN
COUNCIL MEMBER	BOYD MICK
COUNCIL MEMBER	LAWRENCE ROSSER
COUNCIL MEMBER	EDDIE CANNON
COUNCIL MEMBER	RICK FORD

SET NO. _____

File No.: 09706-60
Date: December 2002

211 Commerce Street, Suite 600
Nashville, Tennessee 37201-1811
(615)254-1500



BWSC | Barge Waggoner Sumner & Cannon, Inc.

ENGINEERS ARCHITECTS PLANNERS LANDSCAPE ARCHITECTS SURVEYORS

B.W.S.C.

HENRY C. LIST
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

May 5, 2003

City of Oak Grove
8505 Pembroke-Oak Grove Road
Oak Grove, KY 42262

RE: DW # 0240329-03-003
Standard Specification
Christian Co., Kentucky

Dear Sirs:

We have reviewed the proposed standard specifications for the above system. This is to advise that specifications covering the above referenced subject are APPROVED with respect to sanitary features of design as of this date with the following stipulations:

1. These standard specifications are for the City of Oak Grove and are applicable to **waterline construction only** within their jurisdiction.

2. When this project is completed, the owner shall submit a written certification to the Division of Water that the above referenced water supply facilities have been constructed and tested in accordance with the approved plans and specifications and the above stipulations. Such certification shall be signed by a licensed professional engineer.

This approval has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this approval does not relieve the applicant from the responsibility of obtaining any other approvals, permits or licenses required by this Cabinet and other state, federal and local agencies.

Unless construction of this project is begun within one year from the date of approval, the approval shall expire. If you have any questions concerning this project, please contact Scott Thomson at (502) 564-2225, extension 549.

Sincerely,

Jeffrey W. Pratt, PE, Director
Division of Water

JWP:JST

Enclosures

C: BWSC, Inc
Christian County Health Department
Madisonville Regional Office
Drinking Water Files

DOCUMENT 00001

TABLE OF CONTENTS

GENERAL

This project manual follows the Construction Specifications Institute Format Document Identifying System and Cost Accounting Numbers.

Nonapplicable division and section references have been omitted.

Recipients of bidding instruments must consult the Index to determine the full scope of the work involved and to ensure that all pages of the project manual and drawings have been included.

Neither the Owner nor the A/E will be responsible for bids submitted that are based on incomplete bidding instruments.

STANDARD DRAWINGS

011	Straw Berm Detail
030	Temporary Silt Fence
112	Concrete Protection
120	Concrete Cap (Earth Excavation and Rock Excavation)
165	Pipe Line Crossing Under Railroad Track (For Non-Flammable Substances)
165A	Pipe Line Crossing Under Highways (For Non-Flammable Substances)
203	Typical Valve Box Setting
214	Typical Fire Hydrant Setting
221-A	Concrete Thrust Blocking (Vertical and Horizontal Bends)
221-B	Concrete Thrust Blocking Dimensions
231	3/4 Inch Service Assembly
261A	Automatic Air Release Assembly
261B	Manual Air Release Assembly
616	Pavement Repair Detail
617	Pavement Repair Detail
618	Pavement Repair Detail
619	Pavement Repair Detail
1024	Casing Spacer Installation Detail

END OF DOCUMENT

SECTION 01031

SPECIAL PROJECT PROCEDURES

1. All abandoned valves and fire hydrants shall be returned to the Owner at the Contractor's expense.

2. MANUFACTURERS QUALIFICATIONS

2.1 The manufacturers of all materials and equipment used must be reputable and regularly engaged in the manufacture of the particular material or equipment for the use and service to which it will be subjected.

3. CONTRACTOR SHALL PAY FOR ALL LABORATORY INSPECTION SERVICE

3.1 All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Contractor and approved by the Owner. Pay for all laboratory inspection services as a part of the Contract. Submit all material test reports to the A/E in triplicate.

4. COMPLIANCE WITH STATE AND LOCAL LAWS

4.1 Comply with all applicable requirements of state and local laws and ordinances to the extent that such requirements do not conflict with federal laws or regulations.

5. PROTECTION OF PUBLIC AND PRIVATE PROPERTY

5.1 Take special care in working areas to protect public and private property. The Contractor shall replace or repair at his own expense any damaged water pipes, power and communication lines, or other public utilities, roads, curbs, gutters, sidewalks, drain pipes, sewer drainage ditches, and all plantings, including grass or sod on the site of the work. Leave the site in original or better condition after all cleanup work has been done.

6. MARKERS

6.1 Preserve all USGS, State of Kentucky, and private markers; do not remove or disturb any such markers without prior approval from the A/E. Any removal and replacement of such markers shall be at the expense of the Contractor.

7. PAVEMENT REPAIR AND/OR REPLACEMENT

7.1 Wherever pipe trenches are cut across or along existing pavement or shoulders, backfill same and restore traffic over the cuts as quickly as possible by constructing a temporary 12 inch surface of Class A, Grade D crushed stone. Add material and otherwise maintain such surface until the permanent pavement is restored or until the entire project is accepted.

8. DEPARTMENT OF HIGHWAYS PERMITS

8.1 The Owner will secure any permits and provide bond as required by the Kentucky Transportation Cabinet Department of Highways or other Agency having jurisdiction for the installation of permanent facilities on highway rights-of way. All such work shall be coordinated with and be subject to the approval of the jurisdiction Agency, in addition to the approval of the A/E. Backfill requirements for utilities in proposed roads and adjacent to proposed roads must meet the requirements of the agency having jurisdiction of the roads upon completion of the project. These requirements take precedence over trenching details in these specifications if more stringent.

9. APPROVED CHEMICALS

9.1 All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or other classification, must show approval of either EPA or USDA. The use of all such chemicals and the disposal of residues shall be in strict conformance with instructions.

10. DRAWINGS OF RECORD

10.1 Provide and keep up-to-date a complete record set of blueline prints, which shall be corrected daily to show every change, and the approved shop drawings. Keep this set of prints at the job site, and use only as a record set. This shall not be construed as authorization for the Contractor to make changes in the approved layout without definite instructions in each case. Turn the set over to the A/E upon completion of the project.

11. PRESERVATION OF EXISTING VEGETATION

11.1 Take reasonable care during construction to avoid damage to vegetation. Where the area to be excavated is occupied by trees, brush, or other uncultivated vegetable growth, clear such growth from the area, and dispose of it in a satisfactory manner. Leave undisturbed any trees, cultivated shrubs, flowers, etc., situated within public rights-of-way and/or easements through private property but not located directly within excavation limits. Transplant small ornamental trees, cultivated shrubs, flowers, etc.,

located directly within excavation limits so they may be replaced during property restoration operations. Do not remove or disturb any tree larger than six inches in diameter without the permission of the A/E. Take special precautions (including the provision of barricades and the temporary tying back of shrubbery and tree branches) for the protection and preservation of such objects throughout all stages of construction; the Contractor will be held liable for any damage that may result to said objects from excavation or construction operations. Trim any limbs or branches of trees broken during construction operations with a clean cut, and paint with an approved tree pruning compound. Treat tree trunks receiving damage from equipment with a tree dressing.

12. UTILITIES

12.1 The Contractor is to contact the owner of all underground utilities before beginning construction in the area. Carefully protect from damage all utilities in the vicinity of the work at all times. If it is necessary to repair, remove, and/or replace any such utility in order to complete the work properly, do so in compliance with the rules and regulations of the particular utility involved. Any such work shall be considered incidental to the construction or repairs of utility lines, and no additional payment will be allowed therefore.

13. SEQUENCING OF WORK

13.1 The Contractor shall coordinate all work with the A/E and the Owner. Work shall be sequenced so that only short term (less than 30 minutes) shut down occur. Contractor shall submit a work plan and schedule for approval by the A/E and the Owner.

END OF SECTION

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

A. Applicability of Reference Standards.

B. Provision of Reference Standards at site.

C. Acronyms used in Contract Documents for Reference Standards. Source of Reference Standards.

1.2 QUALITY ASSURANCE

A. 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.

B. The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is specified.

C. When required by individual Specifications section, obtain copy of standard. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

1.3 SCHEDULE OF REFERENCES

AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001 (202) 624-5800
AGA	American Gas Association 1515 Wilson Boulevard Arlington, Virginia 22209 (703) 841-8400
AGC	Associated General Contractors of America 1957 E Street, N.W. Washington, DC 20006
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740 (301) 277-4258

SECTION 01546

SAFETY AND HEALTH

PART 1 GENERAL

1.1 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. Code of Federal Regulations (CFR):

1. OSHA Construction Industry Standards (29 CFR 1926).
2. OSHA General Industry Standards (29 CFR 1910).
3. National Emission Standards for Hazardous Air Pollutants (40 CFR, Part 61).
4. Environmental Protection Agency (EPA) Final Rule (40 CFR Part 761).

1.2 WORK COVERED BY THIS SECTION

A. This section is applicable to all work covered by this contract.

1.3 DEFINITION OF HAZARDOUS MATERIALS

A. Refer to hazardous and toxic materials/substances included in Subparts D and Z of 29 CFR 1926. Those most commonly encountered include asbestos and lead paint, but may include others. The most likely products to contain asbestos are sprayed-on fireproofing, insulation, boiler lagging, pipe covering, asbestos-cement (AC) pipe, and likely products to contain lead paint are window sills, door frames, doors, and exterior paint.

1.4 QUALITY ASSURANCE

A. Compliance with Regulations: All work, including contact with and handling of hazardous materials, the disturbance or dismantling of structures containing hazardous materials and/or the disposal of hazardous materials shall comply with the applicable requirements of 29 CFR 1926/1910 and 40 CFRs 260-263 and 761. Work involving the disturbance, dismantling of asbestos or asbestos containing materials; the demolition of structures containing asbestos; and/or the disposal and removal of asbestos, shall also comply with the requirements of 40 CFR, Part 61, Subparts A and M. All work shall comply with applicable state and municipal safety and health

requirements. Where there is a conflict between applicable regulations, the most stringent shall apply.

B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work, and shall hold the Owner harmless for any action on his/her part or that of his/her employees or subcontractors, which results in illness, injury or death.

1.5 SUBMITTALS

A. Accident Reporting: A copy of each accident report, which the Contractor or subcontractors submit to their insurance carriers, shall be forwarded through the Construction Engineer to the Owner as soon as possible, but in no event later than 7 calendar days after the day the accident occurred.

B. Permits: If hazardous materials are disposed of off site, submit copies of permits from applicable, Federal, state, or municipal authorities and necessary certificates that the material has been disposed of in accordance with regulations.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Special facilities, devices, equipment, clothing, and similar items used by the Contractor in the execution of work shall comply with the applicable regulations.

2.2 HAZARDOUS MATERIALS

A. The Contractor shall bring to the attention of the Owner any material suspected of being hazardous which he/she encounters during execution of the work. A determination will be made by the Owner as to whether the Contractor shall perform tests to determine if the material is hazardous. If the Owner directs the Contractor to perform tests, and/or if the material is found hazardous and additional protective measures are needed, a contract change may be required, subject to applicable provisions of this contract.

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 REQUIREMENTS INCLUDED

A. General Quality Control.

B. Workmanship.

C. Manufacturers' Instructions.

D. Manufacturers' Certificates.

E. Manufacturers' Field Services.

F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

A. Section 01090 - Reference Standards: Applicability of specified reference standards.

B. Section 03303 - Concrete Work: Tests required for concrete.

1.3 QUALITY CONTROL, GENERAL

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

1.4 WORKMANSHIP

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

B. Perform work by persons qualified to produce workmanship of specified quality.

C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

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

1.6 MANUFACTURERS' CERTIFICATES

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

1.7 MANUFACTURERS' FIELD SERVICES

A. When specified in respective Specification Sections, require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship; start-up of equipment; test, adjust, and balance of equipment; as applicable, and to make appropriate recommendations.

B. Representative shall submit written report to A/E listing observations and recommendations.

1.8 TESTING LABORATORY SERVICES

A. Contractor shall employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services required by individual Specification Sections.

B. Services will be performed in accordance with requirements of governing authorities and with specified standards.

C. Reports will be submitted to A/E in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents.

D. Contractor shall cooperate with Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.

1. Notify A/E and Testing Laboratory 24 hours prior to expected time for operations requiring testing services.
2. Make arrangements with Testing Laboratory and pay for additional samples and tests for Contractors' convenience.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

PART 3 EXECUTION

3.1 STOP WORK ORDERS

A. When the Contractor or his/her subcontractors are notified by the Owner of any noncompliance with the provisions of the contract and the action(s) to be taken, the Contractor shall immediately, if so directed, or within 48 hours after receipt of a notice of violation correct the unsafe or unhealthy condition. If the Contractor fails to comply promptly, all or any part of the work being performed may be stopped by the Owner with a "Stop Work Order." When, in the opinion of the Owner, satisfactory corrective action has been taken to correct the unsafe and unhealthy condition, a start order will be given immediately. The Contractor shall not be allowed any extension of time or compensation for damages by reason of or in connection with such work stoppage.

3.2 PROTECTION

A. The Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or damage to property of others. For the purposes of this contract, the public or building occupants shall include all persons not employed by the Contract or a subcontractor working under his/her direction.

B. Storing, positioning or use of equipment, tools, materials, scraps, and trash in a manner likely to present a hazard to the public or building occupants by its accidental shifting, ignition, or other hazardous qualities is prohibited.

C. Obstructions: No corridor, aisle, stairway, door, or exit shall be obstructed or used in such a manner as to encroach upon routes of ingress or egress utilized by the public or building occupant, or to present unsafe or unhealthy condition to the public or building occupant.

D. Work shall not be performed in any area occupied by the public or Federal employees unless specifically permitted by the contract or the Owner and unless adequate steps are taken for the protection of the public or Federal employees.

E. Wherever practicable, the work area shall be fenced, barricaded, or otherwise blocked off from the public or building occupants to prevent unauthorized entry into the work area.

F. Alternate Precautions: When the nature of the work prevents isolation of the work area and the public or

building occupants may be in or pass through, under or over the work area, alternate precautions such as the posting of signs, the use of signal persons, the erection of barricades or similar protection around particularly hazardous operations shall be used as appropriate.

G. Public Thoroughfare: When work is to be performed over a public thoroughfare such as a sidewalk, lobby, or corridor, the thoroughfare shall be closed, if possible, or other precautions taken such as the installation of screens or barricades. When the exposure to heavy falling objects exists, as during the erection of building walls or during demolition, special protection of the type detailed in 29 CFR 1910/1926 shall be provided.

H. Fences and barricades shall be removed upon completion of the project, in accordance with local ordinance and to the satisfaction of the Owner or his/her representative(s).

END OF SECTION

SECTION 01568

EROSION CONTROL

PART 1 GENERAL

1.1 DESCRIPTION

A. This work shall consist of erosion control on all cut and fill operations, excavation, backfill, or other construction activities within the limits of the construction site, within any temporary or permanent easements, and within any borrow site used during the period of construction. The protection of these sites shall continue throughout the construction period. During flood seasons, protect the sites by sandbagging, the pumping of water, and any other means appropriate to restrain flooding of plant and equipment. During dry weather, sprinkle the sites with water or use other means as necessary to provide dust control. In case of abnormally cold weather, any construction such as excavation work may be delayed until warmer weather or covered to prevent freezing.

B. The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features, to ensure economical, effective, and continuous erosion control throughout the construction and post-construction period.

C. If disturbed areas exceed 5 acres (calculated for line work by the permanent or construction easement width times the length of the line work) at any one time, the developer/contractor is responsible for complying with the storm water permitting requirements of the Kentucky Revised Statutes, Chapter 224, and pursuant to herein. **All erosion control work is considered incidental to the water line construction and no separate payment shall be made for initial installation, maintenance of the control measures until ground cover is re-established, or final removal.**

PART 2 PRODUCTS

2.1 TEMPORARY BERMS

A. A temporary berm is constructed of compacted soil, with or without a shallow ditch, at the top of fill slopes or transverse to centerline on fills.

B. These berms are used temporarily at the top of newly constructed slopes to prevent excessive erosion until permanent controls are installed or slopes stabilized.

2.2 TEMPORARY SLOPE DRAINS: A temporary slope drain is a facility consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half round pipe, metal pipe, plastic pipe, sod, or other material that may be used to carry water down slopes to reduce erosion.

2.3 SEDIMENT STRUCTURES: Sediment basins, ponds, and traps, are prepared storage areas constructed to trap and store sediment from erodible areas in order to protect properties and stream channels below the construction areas from excessive siltation.

2.4 CHECK DAMS

A. Check dams are barriers composed of large stones, sand bags, or other noncorrodible materials placed across or partially crossing a natural or constructed drainway.

2.5 TEMPORARY SEEDING AND MULCHING: Temporary seeding and mulching are measures consisting of seeding, mulching, fertilizing, and matting utilized to reduce erosion. All cut and fill slopes including waste sites and borrow pits shall be seeded when and where necessary to eliminate erosion.

2.6 BALED HAY OR STRAW CHECKS

A. Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw containing 5 cubic feet or more of material.

B. Baled hay or straw checks shall be used where the existing ground slopes toward or away from the embankment along the toe of slopes, in ditches, or other areas where siltation erosion or water runoff is a problem.

2.7 TEMPORARY SILT FENCES: Silt fences are temporary measures utilizing woven wire or other approved material attached to posts with filter cloth composed of burlap, plastic filter fabric, etc., attached to the upstream side of the fence to retain the suspended silt particles in the runoff water.

PART 3 EXECUTION

3.1 PROJECT REVIEW: Prior to the preconstruction conference the Contractor shall meet with the A/E and go over in detail the expected problem areas in regard to the erosion control work. Different solutions should be discussed so that the best method might be determined. It is the basic responsibility of the

Contractor to develop an erosion control plan acceptable to the A/E. The erosion control plan and spill prevention plans are due at the preconstruction meeting and no construction shall commence until they are approved by the City and in place.

3.2 If the Contractor desires to stockpile construction materials, stone, earth, etc., the location of same and protection thereof shall be outlined in an Erosion and Siltation Control Plan to be submitted to the A/E for review.

3.3 The Contractor shall have a spill prevention plan meeting the requirements of all agencies having jurisdiction. The contents of this spill prevention plan shall depend on what types of chemicals, lubricants and fuels will be used and if these will be stored on site. As a minimum, if no fuel or lubricants or other chemicals are stored on site, either temporarily in vehicular tanks or in skid or trailer mounted tanks, a plan shall be supplied which directs all employees of the Contractor in the proper procedures to be followed should a spill occur. For more complex chemical storage requirements, a more complex plan will be required.

3.4 The Contractor shall have his schedule for accomplishment of temporary and permanent erosion control work, as are applicable for clearing and grubbing, grading, bridges, and other structures at watercourses, construction, and paving. He shall also have his proposed method of erosion control on haul roads and borrow pits and his plan for disposal of waste materials. No work shall be started until the Contractor has the erosion control schedules and methods of operations.

3.5 CONSTRUCTION REQUIREMENTS

A. The A/E has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, the surface of erodible earth material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other water impoundment. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. Cut and fill slopes shall be seeded and mulched as the excavation proceeds to the extent directed by the A/E.

B. The Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedule. Temporary pollution control measures shall be used to correct conditions that develop during construction that were not foreseen during the

preconstruction stage; that are needed prior to installation of permanent pollution control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

C. Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise erosion control measures may be required between successive construction stages. Under no conditions shall the surface area of erodible earth material exposed at one time by clearing and grubbing, exceed 750,000 square feet without approval of the A/E.

D. The A/E will limit the area of excavation, borrow, and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

E. Under no conditions shall the amount of surface area or erodible earth material exposed at one time by excavation or fill within the project area exceed 750,000 square feet without prior approval by the A/E.

F. The A/E may increase or decrease the amount of surface area of erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions.

G. In the event of conflict between these requirements and pollution control laws, rules or regulations, or other Federal, state, or Local agencies, the more restrictive laws, rules, or regulations shall apply.

3.6 CONSTRUCTION OF STRUCTURES

A. Temporary Berms

1. A temporary berm shall be constructed of compacted soil, with a minimum width of 24 inches at the top and a minimum height of 12 inches with or without a shallow ditch, constructed at the top of fill slopes or transverse to centerline on fills.

Temporary berms shall be graded so as to drain to a compacted outlet at a slope drain. The area adjacent to the temporary berm in the vicinity of the slope drain must be properly graded to enable this inlet to function efficiently and with only minimum ponding in this area. All transverse berms required on the downstream side of a slope drain shall extend across the grade to the highest point at approximately a 10 degree angle with a perpendicular to centerline. The top width of these berms may be wider and the side slope flatter on transverse berms to allow equipment to pass over these berms with minimal disruptions. When practical and until final roadway elevations are approached, embankments should be constructed with a gradual slope to one side of the embankment to permit the placement of temporary berms and slope drains on only one side of the embankment.

B. Temporary Slope Drains

1. Temporary slope drains shall consist of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half round pipe, metal pipe, plastic pipe, flexible rubber, or other materials which can be used as temporary measures to carry water accumulating in the cuts and on the fills down the slopes prior to installation of permanent facilities or growth of adequate ground cover on the slopes.
2. Fiber matting and plastic sheeting shall not be used on slopes steeper than 4:1 except for short distances of 20 feet or less.
3. All temporary slope drains shall be adequately anchored to the slope to prevent disruption by the force of the water flowing in the drains. The base for temporary slope drains shall be compacted and concavely formed to channel the water or hold the slope drain in place. The inlet end shall be properly constructed to channel water into the temporary slope drain. Energy dissipators, sediment basins, or other approved devices shall be constructed at the outlet end of the slope drains to reduce erosion downstream. An ideal dissipator would be dumped rock or a small sediment basin which would slow the water as well as pick up some sediment. All temporary slope drains shall be removed when no longer necessary and the site restored to match the surroundings.

C. Sediment Structures

1. Sediment structures shall be utilized to control sediment at the foot of embankments where slope drains outlet; at the bottom as well as in the ditchlines atop waste sites; in the ditchlines or borrow pits. Sediment structures may be used in most drainage situations to prevent excessive siltation of pipe structures. All sediment structures shall be at least twice as long as they are wide.
2. When use of temporary sediment structures is to be discontinued, all sediment accumulation shall be removed, and all excavation backfilled and properly compacted. The existing ground shall be restored to its natural or intended condition.

D. Check Dams

1. Check dams shall be utilized to retard stream flow or restrict stream flow within the channel. Materials utilized to construct check dams are varied and should be clearly illustrated or explained in the Contractor's erosion control plan.
2. All check dams shall be keyed into the sides and bottom of the channel. A design is not needed for check dams.

E. Temporary Seeding and Mulching: Seeding and mulching shall be performed in accordance with the Section 02485, Seeding.

F. Baled Hay or Straw Erosion Checks: Hay or straw erosion checks shall be embedded in the ground 4 to 6 inches to prevent water flowing under them. The bales shall also be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales can remain in place until they rot, or be removed after they have served their purpose, as determined by the A/E. The Contractor shall keep the checks in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris cleanout will be considered routine maintenance.

G. Temporary Silt Fences

1. Temporary silt fences shall be placed on the natural ground, at the bottom of fill slopes, in ditches, or other areas where siltation is a problem. Silt fences are constructed of wire mesh fence with a covering of burlap or some other

suitable material on the upper grade side of the fence and anchored into the soil.

2. The Contractor shall be required to maintain the silt fence in a satisfactory condition for the duration of the project or until its removal is requested by the A/E. The silt accumulation at the fence may be left in place and seeded, removed, etc., as directed by the A/E. The silt fence becomes the property of the Contractor whenever the fence is removed.

H. Under no circumstances will spent oil wastes be discharged anywhere on the site.

3.7 MAINTENANCE

A. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the Contractor.

3.8 EROSION CONTROL OUTSIDE PROJECT AREA: Temporary pollution control shall include construction work outside the project area where such work is necessary as a result of construction such as borrow pit operations, haul roads, and equipment storage sites.

END OF SECTION

SECTION 02222

UNCLASSIFIED EXCAVATION FOR UTILITIES

PART 1 GENERAL

1.1 The work called for by this section shall consist of clearing and grubbing, loosening, loading, removing, and disposing of, in the specified manner, all wet and dry materials (including rock) encountered that must be removed for construction purposes; furnishing, placing, and maintaining all sheeting, shoring, bracing, and timbering necessary for the proper protection and safety of the work, the workmen, the public, and adjacent property and improvements; the dewatering of trenches and other excavations; the preparation of satisfactory pipe beds; the backfilling and tamping of trenches, foundations, and other structures; the preparation of fills and embankments; the removal of unsuitable material from outside the normal limits of excavation and, where ordered by the A/E, their replacement with suitable materials; and all other grading or excavation work incidental to or necessary for the work. This work shall be performed as specified below.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 PREPARATION OF THE SITE

A. Before starting construction, remove from the work site all vegetable growth (except as hereinafter excluded), debris, and/or other objectionable matter as well as any buildings and/or other structures that the drawings and/or the A/E specifically indicate are to be removed. Dispose of this refuse material in an acceptable manner.

B. Take reasonable care during construction to avoid damage to vegetation. Where the area to be excavated is occupied by trees, brush, or other uncultivated vegetable growth, clear such growth from the area, and dispose of it in a satisfactory manner. Leave undisturbed any trees, cultivated shrubs, flowers, etc., situated within public rights-of-way and/or easements through private property but not located directly within excavation limits. Transplant small ornamental trees, cultivated shrubs, flowers, etc., located directly within excavation limits so they may be replaced during property restoration operations. Do not remove or disturb any

tree larger than six inches (6") in diameter without the permission of the A/E. Take special precautions (including the provision of barricades and the temporary tying back of shrubbery and tree branches) for the protection and preservation of such objects throughout all stages of construction; the Contractor will be held liable for any damage that may result to said objects from excavation or construction operations. Trim any limbs or branches of trees broken during construction operations with a clean cut, and paint with an approved tree pruning compound. Treat tree trunks receiving damage from equipment with a tree dressing.

C. If the area to be excavated is occupied by trees, brush, or other vegetable growth, clear such growth and grub the excavated area, and remove all large roots to a depth of not less than 2' below the bottom of the proposed construction. Dispose of the growth removed in a manner satisfactory to the A/E. Fill all holes or cavities created during this work that extend below the subgrade elevation with suitable material, and compact to the same density as the surrounding material.

3.2 UNSUITABLE MATERIALS

A. Wherever muck, quicksand, soft clay, swampy ground, or other material unsuitable for foundations, subgrade, or backfilling is encountered, remove it and continue excavation until suitable material is encountered. The material removed shall be disposed of in the manner described below. Then refill the areas excavated for this reason with 1" to 2" crushed stone up to the level of the lines, grades, and/or cross sections shown on the drawings. The top 6" of this refill shall be 1/2" to 3/4" crushed stone for bedding.

3.3 ROCKS AND BOULDERS

A. Any material that is encountered within the limits of the required excavation that cannot be removed except by drilling and/or blasting, including rock, boulders, masonry, hard pan, chert, shale, street and sidewalk pavements, and/or similar materials, shall be considered as unclassified excavation.

B. Should rock be encountered in the excavation, remove it by blasting or otherwise. Where blasts are made, cover the excavation with enough excavation material and/or timber or steel matting to prevent danger to life and property. The Contractor shall secure, at his own expense, all permits required by law for blasting operations and the additional hazard insurance required.

Observe all applicable laws and ordinances pertaining to blasting operations.

C. Excavate rock over the horizontal limits of excavation and to a depth of not less than 6" below the bottom of pipe up to 30"in diameter and not less than 12" below the bottom of larger pipes if rock extends to such depth. Then backfill the space below grade with 1/2" to 3/4" crushed stone or other approved material, tamp to the proper grade, and make ready for construction.

3.4 DISPOSAL OF MATERIALS

A. Whenever practicable, all materials removed by excavation that are suitable for backfilling pipe trenches or for other purposes shown on the drawings or directed by the A/E shall be used for these purposes. Any materials not so used shall be considered waste materials and disposed of by the Contractor as specified below.

B. Waste materials may be deposited in spoil areas at approved locations. Do not leave in unsightly piles but instead spread in uniform layers, neatly level, and shape to drain. Seed as specified in Section 02485, Seeding.

C. Once any part of the work is completed, properly dispose of all surplus or unused materials (including waste materials) left within the construction limits of that work. Leave the surface of the work in a neat and workmanlike condition, as described below.

D. The disposal of waste materials shall be considered an integral part of the excavation work.

3.5 EXCAVATION FOR TRENCHES, MANHOLES, AND STRUCTURES

A. Unclassified excavation for pipelines shall consist of the excavation necessary for the construction of water, sewer, and other pipes and their appurtenances (including manholes, inlets, outlets, headwalls, collars, concrete saddles, and pipe protection) that are called for by the drawings. It shall include clearing and grubbing where necessary, backfilling and tamping pipe trenches and around structures, and disposing of waste materials, all of which shall conform to the applicable provisions set forth elsewhere in these specifications.

B. Unless the construction of lines by tunneling, jacking, or boring is called for by the drawings or specifically authorized by the A/E, make excavation for pipelines in open cut and true to the lines and grades shown on the drawings or established by the Developer's A/E on the

ground. From the bottom of the trench to 1' above the top of the pipe cut the bank of trenches between vertical parallel planes equidistant from the pipe centerline. The horizontal distance between the vertical planes (or, if sheeting is used, between the inside faces of the sheeting) shall vary with the size of the pipe to be installed, but shall be a minimum of 8" and a maximum of 12" on each side of the pipe. Any cut made in excess of 12" on both sides of the pipe may be cause for the A/E to require stronger pipe and/or a higher class of bedding. From a distance of 1' above the top of the pipe to the surface of the ground, comply with all OSHA standards.

C. Shape the bottom of all trenches to provide uniform bearing for the bottom of the pipe barrel.

D. Excavate bell holes for bell and spigot pipe at proper intervals so that the barrel of the pipe will rest for its entire length upon the bottom of the trench. Bell holes shall be large enough to permit proper jointing of the pipe. Do not excavate bell holes more than 2 joints ahead of pipe laying.

E. Excavation for manholes, inlets, and other incidental structures shall not be greater in horizontal area than that required to allow a 2' clearance between the outer surface of the structure and the walls of the adjacent excavation or of the sheeting used to protect it. The bottom of the excavation shall be true to the required shape and elevation shown on the drawings. No earth backfilling will be permitted under manholes, inlets, headwalls, or similar structures. Should the Contractor excavate below the elevations shown or specified, he shall, at his own expense, fill the void with either concrete or clean 1/2" to 3/4" crushed stone.

F. Do not excavate pipe trenches more than 200' ahead of the pipe laying, and perform all work so as to cause the least possible inconvenience to the public. Construct temporary bridges or crossings when and where the A/E deems necessary to maintain vehicular or pedestrian traffic.

G. In all cases where materials are deposited along open trenches, place them so that in the event of rain no damage will result to the work and/or to adjacent property.

H. Excavation for manholes and other structures may be performed with nonvertical banks except beneath pavements or adjoining existing improvements. Do not permit the horizontal area of the excavation to exceed that required

to allow a 2' clearance between the outer surface of the structure and the banks of the excavation or the sheeting used to protect the embankments. The bottom of the excavation shall be true to the required shape and elevation shown on the drawings.

3.6 THE DEWATERING OF EXCAVATION

A. Provide and keep in operation enough suitable pumping equipment whenever necessary or whenever directed to do so by the A/E. Give special attention to excavations for those structures that, prior to proper backfilling, are subject to flotation from hydrostatic uplift.

3.7 BORROW EXCAVATION

A. Whenever the backfill of excavated areas or the placement of embankments requires more material than is available from authorized excavations, or whenever the backfill material from such excavations is unsuitable, then obtain additional material from other sources. This may require the opening of borrow pits at points accessible to the work. In such cases, make suitable arrangements with the property owner and pay all incidental costs, including any royalties, for the use of the borrowed material. Before a borrow pit is opened, the quality and suitability of its material shall be approved by the A/E.

B. Excavate borrow pits in such a way that the remaining surfaces and slopes are reasonably smooth and that adequate drainage is provided over the entire area. Construct drainage ditches wherever necessary to provide outlets for water to the nearest natural channel, thus preventing the formation of pools in the pit area. Leave the sides of borrow pit cuts at a maximum slope of 2:1 unless otherwise directed by the A/E.

C. Properly clear and grub borrow pits, and remove all objectionable matter from the borrow pit material before placing it in the backfill.

D. The taking of materials from borrow pits for use in the construction of backfill, fills, or embankments shall be considered an incidental part of the work.

3.8 BACKFILLING

A. Begin backfilling after the line construction is completed and then inspected and approved by the A/E. On each side of the line, from the bottom of barrel to 1' above the top of the pipe, the backfill material shall consist either of fine, loose earth like sandy soil or loam or of granular material that is free from clods, vegetable matter, debris, stone, and/or other objectionable materials that has a size of no more than 2". Place this backfill simultaneously on either side of the pipe in even layers that before compaction are no more than 6" deep. Thoroughly and completely tamp each layer into place before placing additional layers. At locations beneath or closely adjacent to existing pavement this backfill shall consist of clean 1/2" to 3/4" crushed stone properly consolidated. Backfill in proposed streets shall meet the requirements of Metro Davidson, or Williamson County.

B. From 1' above the pipe upward, the backfill material may contain broken stones that make up approximately 3/4 of the backfill's total volume. However, if this type of backfill is used, there must be enough spalls and earth materials to fill all voids completely. The maximum dimension of individual stones in such backfill shall not exceed 6", and the backfill material shall be placed and spread in even layers not more than 12" deep. At locations beneath or closely adjacent to existing pavement or at locations of improvements subject to damage by displacement, backfill material shall consist of clean 1/2" to 3/4" crushed stone properly consolidated. In other areas, including areas beneath or closely adjacent to proposed pavement, the backfill for the upper portion of the trenches may be placed without tamping, but shall be compacted to a density equivalent to that of adjacent earth material as determined by laboratory tests. Use special care to prevent the operation of backfilling equipment from causing any damage to the pipe.

C. If earth material for backfill is too dry to allow thorough compaction, then add enough water so that the backfill can be properly compacted. Material that is too wet to obtain compaction shall be moisture conditioned prior to placing additional backfill.

D. Wherever excavation has been made within easements across private property backfill material shall consist of topsoil up to 4 inches below the finished contour elevations called for by the Drawings or over rock to 12 inches below the finished contour elevations.

E. Wherever trenches have been cut across or along existing pavement, temporarily pave the backfill of such trenches by placing 12" of Class A, Grade D, crushed stone and 3" of cold mix at the top of the backfill. Maintain this temporary pavement either until the permanent pavement is restored or until the project is accepted by the Owner.

F. Conduct backfilling around manholes, inlets, outfalls, and/or structures in the same manner as specified above for pipelines except that even greater care is necessary to prevent damage to the utility structure.

G. Wherever pipes have diameters of 12" or less, do not use power operated tampers to tamp that portion of the backfill around the pipe within 1' above the pipe.

H. Perform backfilling so as not to disturb or injure any pipe and/or structure against which the backfill is being placed. If any pipe or structure is damaged and/or displaced during backfilling, open up the backfill and make repairs as necessary.

I. Backfilling and clean-up operations shall closely follow pipe laying; failure to comply with this provision will result in the A/E's requiring that the Contractor's other activities be suspended until backfilling and clean-up operations catch up with pipe laying.

3.9 MAINTENANCE

A. Seed and maintain in good condition all excavated areas, trenches, fills, embankments, and channels until final acceptance by the Owner.

B. Maintain trench backfill at the approximate level of the original ground surface by periodically adding backfill material wherever necessary and whenever directed to do so by the A/E. Continue such maintenance until one year after final acceptance of the project, or until the City issues a written release.

3.10 SLOPES

A. Neatly trim all open cut slopes, and finish to conform either with the slope lines shown on the drawings or the directions of the A/E. Leave the finished surfaces of bottom and sides in reasonably smooth and uniform planes like those normally obtainable with hand tools, though the Contractor will not be required to use hand methods if he is able to obtain the required degree of evenness with mechanical equipment. Conduct grading operations so that material is not removed or loosened beyond the required slope.

END OF SECTION

SECTION 02260

FINISH GRADING

PART 1 GENERAL

1.1 The work called for by this section shall include, but not necessarily be limited to, finish grading and the spreading and shaping of topsoil to the finished contour elevations indicated by the Drawings.

1.2 Refer to other sections for work related to that specified under this heading. Coordinate this work with that specified by other sections for timely execution.

PART 2 PRODUCTS

2.1 TOPSOIL: Use stripped topsoil that has been stockpiled as specified elsewhere. If the quantity of topsoil on the job is inadequate, furnish enough additional topsoil. Topsoil furnished shall be natural, fertile, friable soil possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well drained areas. It shall not be excessively acid or alkaline nor contain toxic substances that may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and reasonably free from clay lumps, stones, stumps, roots, or similar substances 2 inches or more in diameter, debris, or other objects that are a hindrance to planting operations. Such material shall be subject to testing.

PART 3 EXECUTION

3.1 Do not begin work until the earth is dry enough to be tillable.

3.2 Inspect subgrades to see that they generally conform to the standards called for elsewhere in these specifications, particularly with regard to the approximate depths required for the work. After work is completed, inspect it to ensure that all finish grading complies with design requirements.

3.3 Place finished grade stakes wherever necessary to bring the work accurately to the elevations required by the Drawings.

3.4 Finish grade all areas outside the building line to the depths required for the work as follows:

A. Grade uniformly with rounded surfaces at the tops and bottom of abrupt changes of planes.

B. Hand grade steep slopes and areas that are inaccessible for machine work.

C. Protect graded areas from undue erosion, and repair and regrade areas where erosion does occur.

D. Refill areas where noticeable settlement has occurred.

E. Finish grade areas that are to receive topsoil up to 4 inches below the finished contour elevations called for by the Drawings or over rock to 12 inches below the finished contour elevations.

3.5 Place topsoil uniformly over disturbed areas that do not receive other work as follows:

A. Obtain approval of the finish grading from the A/E before starting to place topsoil.

B. Scarify subgrade to a depth of 3 inches.

C. Place the topsoil to a depth of 4 inches when lightly rolled or, on rock, to a depth of 12 inches.

D. Level the topsoil so that it slopes uniformly and has no water pockets.

E. Carefully rake the topsoil by hand to remove all clods, roots, sticks, stones over 1 inch in diameter, and other foreign materials from the surface.

3.6 Dispose of excess excavated materials and debris away from the site.

END OF SECTION

SECTION 02271

RIPRAP

PART 1 GENERAL

1.1 This item consists of furnishing and placing riprap slope protection in accordance with the Drawings and specifications.

PART 2 PRODUCTS

2.1 The riprap material shall be durable and of hard natural stone, free from cracks, seams, or other defects that would tend to cause increased deterioration because of freezing and thawing or other natural causes. Riprap material shall be reasonably well graded from the minimum size stone. At least 90 percent of the riprap stone shall be not less than 8 inches wide by 12 inches long by 12 inches deep and shall be approximately rectangular in shape. Fragments or spalls shall be used to fill the voids between the larger rocks. The inclusion of appreciable quantities of dirt, sand, clay, or rock fines will not be accepted. All materials considered for use as riprap shall be approved by the A/E.

PART 3 EXECUTION

3.1 Earth surface on which riprap is to be placed shall be trimmed and graded so as to provide for the thickness of riprap shown on the Drawings, but in no instance less than 12 inches. Surfaces that are below grade shall be brought to grade by fillings with well compacted materials similar to the adjacent materials. Prior to placement of riprap, the prepared earth foundation will be inspected and no materials shall be placed thereon until approved by the A/E.

3.2 Place riprap to the full course thickness at 1 operation and in such a manner as to avoid serious displacement of the underlying materials. Deliver and spread the material so that the mass of pieces in place shall be reasonably well graded, with the larger pieces uniformly distributed and the smaller pieces and spalls filling the voids between the larger pieces. The finished riprap shall be free from objectionable concentration of large or small pieces.

3.3 A tolerance of +6 inches or -3 inches from slope lines and grades shown on the Drawings will be permitted in the finished surface of the riprap, except that the extreme minus tolerance shall not be continuous over an area exceeding 200 square feet.

END OF SECTION

SECTION 02485

SEEDING

PART 1 GENERAL

1.1 This work shall be performed in all disturbed areas not receiving such site improvements as buildings, roads, walks, sod, planting, etc., and shall include, but not necessarily be limited to, all seed bed preparation; the supplying and placing of soil additives, seed, and mulch wherever required by the drawings or directed by the A/E; and maintenance.

1.2 Unless otherwise approved in writing by the A/E, seeding operations shall be limited to the following planting periods:

A. Spring - March 1 through May 30

B. Fall - August 15 through October 31

1.3 Refer to other sections for items affecting seeding. Coordinate this work with that specified by other sections for timely execution.

PART 2 PRODUCTS

2.1 GRASS SEED: Kentucky 31 Fescue (Festuca Elatior) and annual rye meeting the requirements of the State Department of Agriculture and furnished in new bags or bags that are sound and not mended; no "below standard" seed accepted. Where lawns or fields have special grass, replace in kind.

2.2 FERTILIZER: Commercially manufactured; Grade 10-10-10; furnished in standard containers that are clearly marked with the name, weight, and guaranteed analysis of the contents and that ensure proper protection in transportation and handling; and incompliance with all local, state, and federal fertilizer laws

2.3 AGRICULTURAL LIMESTONE: Containing a minimum of 85 percent calcium carbonate and magnesium carbonate combined, 85 percent of which passes a No. 10 mesh sieve

2.4 MULCH: Stalks of rye, oats, wheat, or other approved grain crops properly cured prior to baling, air dried, and reasonably free of noxious weeds and weed seeds or other material detrimental to plant growth

PART 3 EXECUTION

3.1 Perform all seeding and related work as a continuous operation. Sow seed as soon as the seed bed has been prepared, and perform subsequent work in a continuous manner.

3.2 Before beginning seeding operations in any area, complete the placing of topsoil and final grading, and have the work approved by the A/E.

3.3 Scarify, disk, harrow, rake, or otherwise work each area to be seeded until the soil has been loosened and pulverized to a depth of not less than 2". Perform this work only when the soil is in a tillable and workable condition.

3.4 Apply fertilizer and agricultural limestone uniformly over the seed bed, and lightly harrow, rake, or otherwise incorporate them into the soil for a depth of approximately 1" at the following rates:

A. Fertilizer: 40 pounds per 1,000 square feet

B. Agricultural Limestone: 80 pounds per 1,000 square feet

3.5 Sow seed uniformly with a rotary seeder, wheelbarrow seeder, or hydraulic equipment or by other satisfactory means.

3.6 The seeding rate shall be 5 pounds per 1,000 square feet for Kentucky 31 Fescue (Festuca Elatior).

3.7 When seeding during March 1 through April 1 and October 1 through November 20, add an additional 3 pounds per 1,000 square feet of annual rye grass.

3.8 Perform no seeding during windy weather or when the ground surface is frozen, wet, or otherwise untillable.

3.9 When seeding with mulch is specified, spread the mulch material evenly over the seeded areas immediately following the seeding operation.

A. Mulch Rate: 2 bales (100 pound minimum) per 1,000 square feet

3.10 The mulch rate may be varied by the A/E, depending on the texture and condition of the mulch material and the characteristics of the area seeded. Cover all portions of the seeded areas with a uniform layer of mulch so that approximately 25 percent of the ground is visible.

3.11 No equipment, material storage, construction traffic, etc., will be permitted on newly seeded ground.

3.12 Dispose of all surplus materials.

PART 4 INSPECTIONS

A. The A/E shall inspect the seeding within 60 days after planting and determine if it is acceptable.

PART 5 GUARANTEE

5.1 Secure an acceptable growth of grass in all areas designated for seeding, and maintain these areas during the full warranty period.

5.2 An area is considered acceptable if it is represented by a minimum of 100 seedlings per square foot of the permanent species of grass representative of the seed mixture. If an acceptable growth is not obtained on the first planting, reseeding and remulching will be required.

5.3 If the planting is less than 50 percent successful, rework the ground, refertilize, reseed, and remulch.

END OF SECTION

SECTION 02486

SODDING

PART 1 GENERAL

1.1 This work shall include all soil preparation and the storage, transportation, placing, and maintenance of sod at all locations shown on the drawings or as directed by the A/E.

1.2 Temporary storage of sod is permitted; however, take care to maintain the sod in a live, growing condition. Sod shall be rejected if it is permitted to decay or dry out to the extent that, in the judgment of the A/E, its survival is doubtful. Dispose of rejected sod as directed by the A/E at no expense to the Owner.

1.3 Set sod between October 1 and April 1 when the soil is in a workable condition.

1.4 Do not set sod out of season unless soil conditions are favorable and written permission is obtained from the A/E.

1.5 Refer to other sections for items affecting sodding. Coordinate this work with that specified by other sections for timely execution. The Contractor shall be wholly responsible for the scheduling, ordering, receiving, storing, and installing of all sodding materials.

PART 2 PRODUCTS

2.1 SOD: Kentucky 31 Fescue (Festuca Elatior); new sod consisting of live, dense, well rooted growth; well suited for the intended purpose and soil conditions; completely free of noxious weeds and grasses (Bermuda grass, quack grass, Johnson grass, Canada thistle); and containing less than 5 plants of objectionable weeds per 100 square feet if nursery grown or 10 such plants if field grown.

2.2 FERTILIZER: Commercially manufactured, Grade 10-10-10; furnished in standard containers that are clearly marked with the name, weight, and guaranteed analysis of the contents and that ensure proper protection in transportation and handling; and incompliance with all local, state, and federal fertilizer laws.

2.3 AGRICULTURAL LIMESTONE: Containing a minimum of 85 percent calcium carbonate and magnesium carbonate combined, 85 percent of which passes a No. 10 mesh sieve.

PART 3 EXECUTION

3.1 Before beginning sodding operations in any area, complete the placing of topsoil and final grading, and have the work approved by the A/E.

3.2 Scarify each area to be sodded a minimum of 2".

3.3 Apply fertilizer and agricultural limestone uniformly over the sod bed at the rates shown below. Immediately prior to placing sod, water the sod bed until it is saturated to a depth of 1", and keep it moist until the sod is placed.

A. Fertilizer: 40 pounds per 1,000 square feet of 10-10-10

B. Agricultural Limestone: 80 pounds per 1,000 square feet

3.4 Place sod as soon as practical after its removal from point of origin. Keep it moist while displaced.

3.5 Place sod by hand so that the edges are in close contact and in a position to break joints with the long dimension perpendicular to the slope. Fit and pound the sod into place with a 10" x 10" wood tamp or other similar implements.

3.6 Immediately after placing the sod, thoroughly wet and roll it.

3.7 Two weeks after the sod is installed, top dress and thoroughly water it. Top dressing shall consist of the following:

A. 1/2 to 1 pound: 38 percent urea formaldehyde per 1,000 square feet

B. 20 pounds: 6-12-12 per 1,000 square feet

3.8 No equipment, material storage, construction traffic, etc., will be permitted on newly sodded areas.

3.9 Dispose of all surplus material.

PART 4 INSPECTIONS

A. The A/E shall inspect the sod within 30 days after installation and determine if it is acceptable.

PART 5 GUARANTEES

A. Establish an acceptable growth of the specified sod on all areas indicated on the drawings or as directed by the A/E. An area is considered acceptable if the majority of each piece of sod is alive and healthy and generally free from weeds, insects, and disease.

END OF SECTION

SECTION 02575

PAVEMENT REPAIR

PART 1 GENERAL

1.1 The work specified by this section shall consist of repairing or replacing all damaged pavement, whether public or private. Dirt shoulders, roads, streets, drives, and walks are to be restored to their original condition as an incidental part of the installation of utilities. Repair damaged base on either side of a trench wherever necessary. Trim the oxidation surface to neat lines outside of the trench wall, and repave the entire area as specified below and as shown on the Drawings or on the standard drawings.

1.2 Both these specifications and the Drawings make reference to the current edition of the Standard Specifications of the Kentucky Transportation Cabinet Department of Highways (KTCDOH). Even though the weather limitations, construction methods, and materials specifications contained in the KTCDOH specifications may not be explicitly repeated in these specifications, they shall, wherever applicable to the work called for by this section, be considered as implied and therefore adhered to. However, the various subsections "Measurement and Payment" contained in the KTCDOH specifications shall not be considered applicable.

1.3 The repair of trenches in streets and roads, including shoulders, under the jurisdiction of KTCDOH shall be made in accordance with and under the direction of the City of Franklin and the A/E. Refer to other sections for work related to that covered by this section. Curb repair is detailed on the Standard Drawings.

PART 2 PRODUCTS

2.1 AGGREGATE BASE: Dense graded aggregate base (DGA); (KTCDOH specifications, Section 302)

2.2 ASPHALT PRIME COATS: Cutback asphalt, emulsion primer-L; (KTCDOH specifications, Section 407)

2.3 AGGREGATE SURFACING: Gradation Size No. 610 or 710 coarse aggregate (KTCDOH specification, Section 805, Subsection 805.14)

2.4 ASPHALT BASE: Class I (KTCDOH specifications, Sections 401, 402, and 403)

2.5 ASPHALT BINDER: Class I (KTCDOH specifications, Sections 401, 402, and 403)

2.6 ASPHALT TACK COATS: Grade SS-1, SS-1h, AE-60, RS-1, or CRS-1 (KTCDOH specifications, Section 407)

2.7 ASPHALT SURFACE: Class I-O (KTCDOH specifications, Sections 401, 402, and 403)

2.8 QUICK DRY PAVEMENT STRIPING PAINT: Type A (white) and Type B (yellow) (KTCDOH specifications, Section 842)

PART 3 EXECUTION

3.1 SUBGRADE

A. The subgrade shall be prepared in accordance with KTCDOH specifications, Section 208.

B. Before any base material is installed, compact the subgrade of the area to be paved to 95 percent of maximum density as determined by KM 64-511.

3.2 BASE

A. Do not place the mineral base course on a subgrade surface which is frozen or excessively dry. The moisture content of the subgrade must be no more than 290 below the materials optimum moisture content as determined by ASTM D698. Install an aggregate base of the type specified above in accordance with Section 302 of the KTCDOH specifications. The maximum compacted thickness of any 1 layer shall be 6 inches and the total thickness of the base shall be that indicated by the standard drawings or as shown on the plans.

3.3 SEAL COAT SURFACE: Prior to applying the seal coat surface, the surface of the base course shall be in a moist condition. Do not place seal coat surface on base course which is excessively dry. In accordance with KTCDOH specifications, Section 406, uniformly apply an asphalt seal coat of a cutback asphalt emulsion, Grade RS-1, RS-2, WFRS-2, CRS-1 or CRS-2 over the entire width of the area to be surfaced at a rate of 0.3 gallon per square yard (1.5 liters per square meter). Immediately after application, uniformly cover the entire area with Size 7 crushed stone chips at a rate of 12 pounds per square yard (6.5 kilograms per square meter).

3.4 ASPHALTIC BINDER

A. Construct asphalt binder course in accordance with KTCDOH specifications, Sections 401, 402, and 403. Apply a prime coat of cutback asphalt emulsion primer-L, at a rate of 0.38 to 0.42 gallon per square yard (0.9 to 2.3 liters per square meter). Take care to prevent the bituminous material's splashing on exposed faces of curbs and gutters, walls, walks, trees, etc.; if such splashing does occur, remove it immediately. After the prime coat has been properly cured, apply an asphalt binder to the thickness shown on the standard drawings or the plans.

B. Carefully place the material to avoid segregation of the mix. Broadcasting of the material will not be permitted. Remove any lumps that do not readily break down.

3.5 ASPHALT SURFACE: Construct asphalt surface course in accordance with KTCDOH specifications, Sections 401, 402, and 403. If the asphalt surface course is to be placed directly on the mineral aggregate base, place an asphalt prime coat as described above. If, however, the surface course is to be placed on a binder course, then apply an asphalt tack coat of the sort specified above under PRODUCTS at a rate of 0.05 to 0.10 gallon per square yard (0.2 liters per square meter). Take care to prevent the bituminous material's splashing on exposed faces of curbs, gutters, walls, walks, trees, etc.; if such splashing does occur, remove it immediately. After the prime or tack coat has been properly cured, apply the asphaltic concrete to the thickness shown on the Drawings or standard drawings. Apply the surface course as described above for the binder course.

3.6 SMOOTHNESS: The finished surfaces shall conform to the lines with grades that existed prior to construction. No deviations, variations, or irregularities exceeding 1/4 inch (6.35 mm) in any direction when tested with a 12 foot (3.6 meter) straightedge will be permitted in the finished work, nor will any depressions that will not drain. Correct all such defects.

3.7 SAMPLING AND TESTING

A. Submit to the A/E test reports made by an independent testing laboratory on the dense graded aggregate, asphalt materials, and asphalt design mixes, and obtain his approval of these reports before starting paving operations.

B. Tests shall be made on the completed elements of the pavement to ascertain the compacted thickness of the base, binder and surface courses. If sections with deficient thicknesses are found, the full section for a reasonable distance on each side of the deficiency shall be refused. Remove and reinstall all such sections. Patch all test holes in connection with thickness tests.

C. When making surface tests, furnish on man to mark all surface defects for corrections.

END OF SECTION

SECTION 02640

VALVES, HYDRANTS, AND BLOWOFFS

PART 1 GENERAL

1.1 Refer to other sections for work related to that specified under this heading.

PART 2 PRODUCTS

2.1 GATE VALVES

A. Gate valves on water lines 12 inches and smaller shall be resilient seated, manufactured to meet or exceed the requirements of AWWA C509/C515 of latest revision and in accordance with the following specifications and shall be manufactured by Mueller, M&H, or approved equal.

B. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve.

C. The valves shall be nonrising stem with the stem made of bronze described in AWWA C509/C515. Provide 2 stem seals of the O-ring type.

D. The stem nut, also made of bronze shall be independent of the gate or cast integrally with the gate. If the stem nut is cast integrally, the threads shall be straight and true with the axis of the stem to avoid binding during the opening or closing cycle.

E. The sealing mechanism shall consist of a cast or ductile iron wedge gate fully encapsulated in synthetic rubber or urethane. The resilient sealing mechanism shall provide zero leakage at 200 psi working pressure when installed with flow in either direction.

F. The valve body, bonnet, and bonnet cover shall be ductile iron or cast iron, ASTM A126, Class B, fully coated with fusion bonded epoxy, both interior and exterior.

G. All valves shall be tested in strict accordance with AWWA C509/515.

B. Position

1. All hydrants shall stand plumb and shall be set near normal bury. Set hydrants to the established grade, with the pumper nozzle 18 inches above finish grade, as shown on the drawings or as directed by the A/E.

C. Connection and Anchorage to Main

1. The gate valve shall be rodded to the tee and the hydrant. Brace the bowl of each hydrant well against unexcavated earth at the end of the trench with concrete blocking. Where rods cannot be used, Uniflange connections may be used.

D. Hydrant Drainage

1. Provide drainage at the base of the hydrant by placing coarse gravel or crushed stone from the bottom of the trench to at least 6 inches above the waste opening in the hydrant to a distance of 1 foot around the elbow. Connect no drainage system to a sewer.

END OF SECTION

SECTION 02713

WATER LINES

PART 1 GENERAL

1.1 Furnish all material, equipment, tools, and labor in connection with the water lines, complete and in accordance with the drawings and these specifications. All materials which come in contact with potable water shall be NSF certified.

1.2 It shall be the Contractor's responsibility to ensure that all necessary materials are furnished to him and that those found to be defective in manufacture are replaced at no extra cost to the Owner. Materials damaged in handling after being delivered by the manufacturer shall be replaced at the Contractor's expense. If installed material is found to be defective, the cost of both the material and labor needed to replace it shall be borne by the Contractor.

1.3 The Contractor shall be responsible for safely storing materials needed for the work which have been accepted by him. Keep the interior of all pipes, fittings, and other accessories, free from dirt and foreign matter at all times.

1.4 Refer to other sections for work related to that specified by this section. Coordinate this work with that required by other sections for timely execution.

1.5 Wherever thrust blocking is necessary it shall be considered an integral part of the water line work, and no separate payment shall be made for it.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall conform to the requirements of ANSI 21.51/AWWA C151 for ductile iron pipe centrifugally cast in metal or sand-lined molds. It shall be made and tested in accordance with ASTM A536 and be subjected to and able to withstand a hydrostatic pressure of 500 psi.

B. The pipe shall be plain end ductile iron pipe with push-on, single gasket joints. The design thickness shall be that specified by ANSI A21.50/AWWA C150, latest revision, with wall thickness of pressure Class 350.

C. The length of each individual piece of ductile iron pipe shipped must be plainly marked on that piece of pipe.

D. The push-on single gasket joints shall be either "Fastite" (by American Cast Iron Pipe Company), or "Tyton" (by U.S. Pipe and Foundary Company).

E. The bell of each pipe shall have a tapered annular opening and a cast or machined retaining groove for the gasket. The gasket groove shall have a flared design so that maximum deflection will be provided. The plain spigot end of the pipe shall be beveled in order to simplify its entry into and centering within the bell and the compression of the gasket.

F. The gasket shall be of high quality vulcanized rubber made in the form of a solid ring to exact dimensions. The design of the gasket groove in the bell of the pipe and the design, hardness, and other properties of the gasket itself shall be such that the joint is liquidtight for all pressures from a vacuum to a maximum rating of 350 psi of internal liquid pressure.

G. Enough lubricant shall be furnished with each order to provide for the proper installation of the pipe supplied with said order. This lubricant shall be nontoxic, impart no taste or smell to the water, and have no harmful effect on the rubber gasket. It shall have a consistency that will allow it to be easily applied to the pipe in either hot or cold weather and that will enable it to adhere to either wet or dry pipe.

H. Standard and special fittings shall be ductile iron. Use standard mechanical joint fittings. All fittings shall conform to the specifications of ANSI A21.53/AWWA C153, short body where applicable.

I. Pipe and fittings shall be lined with enameline or a thin cement lining as specified in ANSI A21.4/AWWA C104; this lining is to be furnished at no extra costs. In addition, a bituminous seal coat or asphalt emulsion spray coat approximately 1 mil thick shall be applied to the cement lining in accordance with the pipe manufacturer's standard practices. A petroleum asphaltic coating approximately 1 mil thick shall be applied to the outside of the pipe.

J. All fittings shall be mechanical joint unless otherwise shown on the contract drawings or directed by the A/E. Where flanged pipe is shown no substitution of a Uni-Flange type joint will be used without prior approval of the City.

K. Fittings shall be the compact body type and shall conform to the specifications of ANSI/AWWA C153/A21.53 (latest edition) in all respects.

L. Fittings shall be in accordance with the standard mechanical joint fittings manufactured by the U.S. Pipe and Foundry Company, American Cast Iron Pipe Company, Clow Corporation, Griffin, McWane, or equal.

M. Restrained Joint Pipe and Fittings

1. Restrained pipe and fittings are to be noted on Drawing where applicable. Retainer glands and similar devices will not be allowed unless prior approval by the City and then noted or shown on the Drawings.
2. Restrained push-on pipe and fittings shall be either "Flex-Ring" or "Lok-Ring" (by American Cast Iron Pipe Company), "TR Flex" (by U.S. Pipe and Foundry Company) or "Super-Lock" (by Clow Corporation). The lining and wall thickness shall be the same as that specified elsewhere in the section for the water lines.
3. For restraining valves use Mueller Uniflange, AquaGrip System, or approved equal.

N. The pipe manufacturer is to furnish the A/E a certificate of inspection, sworn to by the factory inspector in the presence of a notary public, stating that the pieces of pipe in the shipment were made and tested in accordance with ANSI A21.51 and that they were subjected to and withstood a hydrostatic pressure of 500 psi. Each statement is to give the number of pieces of pipe in the shipment, the length of each piece of pipe, and the serial number of each piece of pipe making up the shipment. In addition, the weight of each individual piece of pipe making up the shipment is to be listed opposite the serial number of each pipe length and attached to the certificate of inspection.

2.2 PVC PIPE

A. All plastic pipe shall be made from Class 12454-B polyvinyl chloride plastic (PVC 1120) as defined by ASTM D1784.

B. All Class 200 pipe shall have NSF approval and be manufactured in accordance with ASTM D2241. The following tests shall be run for each machine on each size and type of pipe being produced, as specified below:

1. Flattening Test: One per shift in accordance with ASTM D2412. Upon completion of the test, the specimen shall not be split, cracked, or broken.

2. Acetone Test (Extrusion Quality Test): one per shift in accordance with ASTM D2152. There shall be no flaking, peeling, cracking, or visible deterioration on the inside or outside surface after completion of the tests.
3. Quick Burst Test: Once per 24 hours in accordance with ASTM D1599.
4. Impact Tests: For 6 inches and larger, once per shift in accordance with ASTM D2444; for 4 inches and smaller, once each 2 hours in accordance with ASTM D2444.
5. Wall Thickness and Outside Dimensions Tests: Once per hour in accordance with ASTM D2122.
6. Bell Dimensions Test: Once per hour in accordance with ASTM D3139.

C. If any specimen fails to meet any of the above mentioned tests, all pipe of that size and type manufactured between the test periods must be scrapped and a full set of tests rerun.

D. Furnish a certificate from the pipe manufacturer stating that he is fully competent to manufacture PVC pipe of uniform texture and strength and in full compliance with these specifications and further stating that he has manufactured such pipe and done so in sufficient quantities to be certain that it will meet all normal field conditions. In addition, the manufacture's equipment and quality control facilities must be adequate to ensure that each extrusion of pipe is uniform in texture, dimensions, and strength. Also furnish a certificate from the manufacturer certifying that the pipe furnished for this project meets the requirements of these specifications.

E. All pipe shall be manufactured in the United States of America. All pipe for any one project shall be made by the same manufacturer.

F. All 4 inch and 6 inch pipe may be furnished in the manufacturer's standard laying lengths of 20 feet, 38 feet, or 40 feet. Pipe 8 inches and larger shall be furnished in 20 foot lengths. The Contractor's methods of storing and handling the pipe shall be approved by the A/E. All pipe shall be supported within 5 feet of each end; in between the end supports, there shall be additional supports at least every 15 feet. The pipe shall be stored away from heat or direct sunlight.

G. Certain information shall be applied to each piece of pipe. At the least, this shall consist of:

1. Nominal size
2. Type of material
3. SDR or class
4. Manufacturer
5. NSF Seal of Approval

H. Pipe that fails to comply with the requirements set forth in these specifications shall be rejected.

I. The pipe shall have push-on joints designed with grooves in which continuous molded rubber ring gaskets can be placed. Gaskets shall be made of vulcanized natural or synthetic rubber; no reclaimed rubber will be allowed. Gasket materials shall meet the requirements of ASTM F477. The gaskets shall be of the manufacturer's standard design dimensions and of such size and shape as to provide a positive seal under all combinations of joint and gasket tolerance. The gasket and annular groove shall be designed and shaped so that when the joint is assembled, the gasket will be radially compressed to the pipe and locked in place against displacement, thus forming a positive seal.

J. The spigot end of each pipe shall be beveled so that it can be easily inserted into the gasket joint, which in turn shall be designed so that the spigot end may move in the socket as the pipe expands or contracts. The spigot end shall be striped to indicate the distance into which it is to be inserted into the socket. Each joint shall be able to accommodate the thermal expansions and contractions experienced with a temperature shift of at least 75 degrees F.

K. Enough lubricant shall be furnished with each order to provide a coat on the spigot end of each pipe. This lubricant shall be nontoxic, impart no taste or smell to the water, have no harmful effect on the gasket or pipe material, and support or promote any bacterial growth. The lubricant containers shall be labeled with the manufacturer's name.

L. Joints shall be manufactured in accordance with ASTM D3139 except that the thickness of the bell shall be, as a minimum, equal to that of the barrel. Joints shall be either integral bell and ring joints with rubber compression gaskets as manufactured by the Clow Corporation, H&W, or Vulcan Plastic Corporation; twin gasket couplings as manufactured by the Certain-Teed Products Corporation; or equal. However, the pipe and bell must be made by the same manufacturer.

M. Standard and special fittings shall be ductile iron. Use standard mechanical joint fittings. All fittings shall conform to the specifications of ANSI A21.53/AWWA C153. The gaskets shall be ducked tipped transition gaskets for use with PVC pipe.

N. Fittings shall be lined with enameline or a thin cement lining as specified in ANSI A21.4/AWWA C104. In addition, a bituminous seal coat or asphalt emulsion spray coat approximately 1 mil thick shall be applied to the cement lining in accordance with the pipe manufacturer's standard practices. A petroleum asphaltic coating approximately 1 mil thick shall be applied to the outside of the pipe.

O. Fitting laying lengths shall conform to ANSI A21.53/AWWA C153.

P. Fittings shall be in accordance with the standard mechanical joint fittings manufactured by the U.S. Pipe and Foundry Company, American Cast Iron Pipe Company, Clow Corporation, Griffin, McWane, or equal.

Q. A #10 insulated copper wire shall be laid in the trench on top of the water main. The wire must be bonded to each fire hydrant and valve.

PART 3 EXECUTION

3.1 INSTALLATION OF WATER LINES

A. Lay water lines to the line and grade required by the drawings. All fittings, valves, and hydrants shall be at the required locations, the spigots centered in the bells, and all valve and hydrant stems plumb.

B. Unless otherwise indicated by the drawings, all water lines shall have at least 30" of cover. No departure from this policy shall be made except with the approval of the A/E.

C. Provide and use tools and facilities that are satisfactory to the A/E and that will allow the work to be done in a safe and convenient manner. All pipe, fittings, valves, and hydrants are to be unloaded from the trucks using suitable tools and equipment. Use a derrick, ropes, or other suitable tools or equipment to lower all pipe, fittings, valves, and hydrants into the trench one piece at a time. Lower each piece carefully so that neither it nor any protective coating or lining it may have will be damaged. Under no circumstances drop or dump water line materials into the trench.

D. Any pipes strung out along the route of the proposed lines before the actual installation of those lines is due to take place shall not be lowered into the trench until they have been swabbed to remove any mud, debris, etc., that may have accumulated within them. Remove all unnecessary material from the bell and spigot end of each pipe. Before any pipe is laid, brush and wipe clean the outside of its spigot end and the inside of its bell, and leave dry and oil-free.

E. Take every precaution to keep foreign material from getting into the pipe while it is being placed in the line. If the crew laying the pipe cannot put it into the trench and in place without allowing earth to get inside, then put a heavy, tightly woven canvas bag of suitable size over each end of the pipe, and leave in place until it is time to connect that pipe to the one adjacent to it.

F. Place no debris, tools, clothing, or other materials in the pipe during laying operations.

G. After a length of pipe has been placed in the trench, center the spigot end in the bell of the adjacent pipe, and then insert to the depth specified by the manufacturer and bring to the correct line and grade. Secure the pipe in place by tamping an approved backfill material around it.

H. Bell holes shall be big enough so that there is ample room for the pipe joints to be properly made. Between bell holes, carefully grade the bottom of the trench so that each pipe barrel will rest on a solid foundation for its entire length.

I. Whenever pipe laying is not in progress, close the open ends of pipe either with a watertight plug or by other means approved by the A/E. This shall be done not only at the end of each working day but also before work is stopped for lunch periods, bad weather, or any other reason. If there is water in a trench, leave this seal in place until the trench has been pumped completely dry.

J. Cut pipe so that valves, fittings, or closure pieces can be inserted in a neat and workmanlike manner and without any damage to the pipe. Follow the manufacturer's recommendations concerning how to cut and machine the ends of the pipe in order to leave a smooth end at right angles to the pipe's axis.

K. Lay pipe with the bell ends facing in the direction of laying unless otherwise directed by the A/E.

L. Wherever pipe must be deflected from a straight line (in either the vertical or horizontal plane) in order to avoid obstructions or plumb stems, or wherever long radius curves are permitted, the amount of deflection shall not exceed that necessary for the joint to be satisfactorily made, nor that recommended by the pipe manufacturer, and shall be approved by the A/E.

M. Lay no pipe in water or when it is the A/E's opinion that trench conditions are unsuitable. If crushed stone is used to improve trench conditions or as backfill for bedding the pipe, its use is considered incidental to the project.

N. Where a water line crosses over a sanitary sewer, use a full joint of pipe and center over the sewer. Where a water line is to be parallel to a sanitary sewer, lay it at least 10' from the sewer. If it is not practical for the water and sewer lines to be separated as described above, then lay the water line at least 18" above the top of the sewer.

O. Join all pipe in the exact manner specified by the manufacturer of the pipe and jointing materials.

P. Thrust blocking must be used at all fittings in accordance with standard drawings 221-A and 221-B in these specifications.

Q. The detectable wire shall be buried in the trench directly above the installation to be identified. The wire shall be placed in the trench and shall be essentially parallel to the finished surface. The Contractor will take necessary precautions to ensure that the wire is not pulled, distorted, or otherwise misplaced in completing the trench backfill. Wire will be placed in all trenches above all nonmetallic pipe used.

R. Water lines within a 200 foot radius of oil or gasoline lines, underground storage tanks or pumping stations shall be constructed of ductile iron pipe. Pipe joint materials which are resistant to permeation of the petroleum products shall be used within the 200 foot radius.

3.2 HYDROSTATIC TESTS

A. Pressure Test

1. After pipe has been laid and backfilled as specified above, subject all newly laid pipe or any valved section thereof to a pressure of 200 psi.

All services are to be laid prior to testing the main and tested as part of the test of the main.

2. The duration of each pressure test shall be at least one hour. The specified pressure shall be maintained within 5 psi during this test.
3. Slowly fill each valved section of pipe with water, and apply the specified test pressure to each valved section, individually (based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge) with a pump connected to the pipe in a manner satisfactory to the A/E. Furnish the pump, pipe, connections, new liquid filled gauges (marked in 5 psi increments, 0 - 300 psi) with snubber and all necessary appurtenances. After the Contractor's tests indicates there is no leakage, notify the City to witness the tests.
4. Before applying the specified test pressure, expel all air from the pipe. If hydrants or blowoffs are not available at high places, make the necessary taps at the points of highest elevation before testing, and insert plugs after the test has been completed.
5. Carefully examine all exposed pipes, fittings, valves, and hydrants during the test. Remove any cracked or defective pipes, fittings, valves, or hydrants discovered in consequence of this pressure test, and replace with sound material in the manner specified. Repeat the test until the results are satisfactory to the A/E.

B. Leakage Test

1. Begin the leakage test immediately after the pressure test has been satisfactorily completed. The Contractor shall furnish the pump, pipe, connections, gauges, meter, and all other necessary apparatus as well as all necessary assistance to conduct the test.
2. The duration of each leakage test shall be 2 hours; during the test, subject the main to a pressure of 150 psi.
3. Leakage is defined as the amount of water which must be supplied to the newly laid pipe or any valved section in order to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

4. No pipe installation will be accepted until the leakage is less than the number of gallons per 2 hour period listed below:

Pipe Sizes	Gallons per 1,000 Feet of Pipe
4"	0.4
6"	0.6
8"	0.8
10"	1.0
12"	1.1

5. Should any test of pipe laid disclose leakage greater than that specified, the Contractor shall, at his own expense, locate and repair the defective joints until the leakage is within the specified allowance.

3.3 DISINFECTION

A. During construction, take precautions to protect pipe interiors, fittings, and valves against contamination. When pipe laying is not in progress (e.g., at the end of the day's work), place watertight plugs in the ends of all pipe already in the trench; if water accumulates in the trench, leave the plugs in place until the trench is dry. Complete the joints of all pipe in the trench before stopping work for any reason.

B. If dirt or other foreign material that has gotten into a pipe will not, in the opinion of the A/E, be removed by flushing, clean the interior of the pipe, and swab with a disinfecting solution of 5 percent hypochlorite.

C. Make water flow from the existing distribution system or some other source approved by the A/E into the newly laid pipeline, and add chlorine to it. Feed water into the pipe, and chlorine into the water, at constant, measured rates so proportioned that the chlorine concentration in the water in the pipe is kept at a minimum of 50 mg/l available chlorine. To ensure that this concentration is maintained, measure the chlorine residual at regular intervals.

D. Upon completion of construction, disinfection shall be strictly in accordance with the procedure designated in the State Regulations which reads as follows:

> "A water distribution system, including storage distribution tanks, repaired portions of existing systems or all extensions to existing systems, shall be thoroughly disinfected before being placed

into service. **A water distribution system shall disinfect with chlorine or chlorine compounds, in amounts as to produce a concentration of at least fifty (50) ppm** and a residual of at least twenty-five (25) ppm at the end of twenty-four (24) hours and the disinfection shall be followed by a thorough flushing."

New or repaired water distribution lines shall not be placed into service until bacteriological samples taken at the points specified in 401 KAR 8:150 Section 4 (2) are examined and are shown to be negative following disinfection.

E. Chlorinated water resulting from disinfection of treatment facilities and new, repaired, or extended distribution systems shall be disposed in a manner which will not violate 401 KAR 5:031.

F. Table I shows how much chlorine is needed for each 100' of line for pipes of various diameters. A 1 percent chlorine solution may be prepared either with 1 pound of calcium hypochlorite for each 8.5 gallons of water or with sodium hypochlorite.

TABLE I

CHLORINE REQUIRED TO PRODUCE A 50 MG/L CONCENTRATION IN 100' OF PIPE, BY DIAMETER

Pipe Size (Inches)	100% Chlorine (Pounds)	1% Chlorine Solutions (Gallons)
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88

G. While the chlorine is being applied, manipulate valves so that the treatment dosage will not flow back into the line that is supplying the water. Continue the application of chlorine until the entire line being treated is filled with the chlorine solution. Then retain the chlorinated water in the line for at least 24 hours, during which time all valves and hydrants in the line being treated shall be operated so that appurtenances can also be disinfected. After 24 hours, the treated water shall have a chlorine concentration of at least 25 mg/l throughout the line.

H. After the applicable retention period, flush the heavily chlorinated water from the line until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 mg/l. Perform such flushing only at sites where there is adequate drainage.

I. The velocity of the water used to flush a line shall be at least 2.5 fps. The flow rates required to produce this velocity in various sizes of pipe are shown in Table II.

TABLE II

REQUIRED OPENINGS TO FLUSH PIPELINES
(40 PSI RESIDUAL PRESSURE)

Pipe Size (Inches)	Flow Required To Produce 2.5 fps Velocity (gpm)	Orifice Size (Inches)	Hydrant Outlet Nozzles*	
			Number	Size (Inches)
4	100	15/16	1	2-1/2
6	220	1-3/8	1	2-1/2
8	390	1-7/8	1	2-1/2
10	610	2-5/16	1	2-1/2
12	880	2-13/16	1	2-1/2

* With a 40 psi pressure in the main with the hydrant flowing to the atmosphere, a 2-1/2" hydrant outlet will discharge approximately 1,000 gpm.

J. Once a line has been flushed, test to make certain that the residual chlorine in the water is within acceptable limits.

K. It must be noted that flushing is no substitute for taking preventative measures before and during the laying of water lines. Certain contaminants--especially those in caked deposits--are difficult or even impossible to remove by flushing, no matter how high the velocity.

3.4 BACTERIOLOGICAL TESTS

A. After a water line has undergone final flushing but before it is placed into service, collect a sample for bacteriological testing from the end of that line. In the case of extremely long lines, take additional samples if the A/E so directs.

B. Collect these samples in sterile bottles treated with sodium thiosulphate. Do not use a hose or fire hydrant to collect samples. One suggested sampling method is to

install a standard corporation cock in the line with a copper tube gooseneck assembly; after the samples have been taken, the gooseneck assembly can be removed and retained for later use.

C. Take the samples collected to an approved laboratory to be tested for bacteriological quality in order to determine if they contain any coliform organisms. If the initial disinfection fails to produce satisfactory samples, repeat disinfection until satisfactory samples are obtained.

D. When the samples tested are found to be satisfactory, the water line may be placed in service provided all other requirements have been met.

3.5 DISINFECTION PROCEDURE AFTER CUTTING INTO OR REPAIRING EXISTING LINES

A. The procedures outlined above apply primarily to cases in which the lines are wholly or partially dewatered.

B. However, leaks or breaks that are repaired with clamping devices while the lines remain full of water under pressure present little danger of contamination and require no disinfection.

C. When an existing line is opened, whether by accident or design, the excavated area could be wet and contaminated because of the presence of sewers nearby. The danger of contamination from such pollution can be lessened if liberal quantities of hypochlorite are applied to the open trenches. It is better to use tablets for disinfection in such cases because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation site.

D. Where practical, treat the lines by the slug method in accordance with AWWA C651.

E. The following disinfection procedure is considered the minimum that may be used when existing lines are repaired:

1. Swab the interior of all pipes and fittings (particularly couplings and tapping sleeves) that are to be used in repairing an existing line with a solution of 5 percent hypochlorite before installing them.
2. The most practical means of removing contamination introduced into a line during repairs is to give the line a thorough flushing. If the locations of valves and hydrants make it possible, flushing in

both directions is recommended. Start flushing as soon as repairs are completed, and continue until all discolored water is eliminated.

3.6 CLEANUP

A. After completing each section of water line, remove all debris and all construction materials from the work site. Then grade and smooth over the surface on both sides of the line. Leave the entire area clean and in a condition satisfactory to the A/E.

END OF SECTION

SECTION 02718

SERVICE ASSEMBLIES

PART 1 GENERAL

1.1 Refer to other sections for work related to that specified under this heading.

PART 2 PRODUCTS

2.1 The service assembly shall include a corporation stop, copper service pipe, meter yoke, meter, meter box, and tapping saddle as required.

2.2 CORPORATION STOP: The corporation stop shall be of solid bronze suitable for a compression flange on the service pipe and for tapping into the water main. This stop shall be Mueller H-15000, or equal. The threads on the corporation stop shall be AWWA taper.

2.3 SERVICE PIPE: Service pipe shall be 3/4 inch Type K copper meeting ASTM B88.

2.4 METER BOXES: Meter boxes for 5/8 inch x 3/4 inch assemblies shall be precast concrete, Brooks Products No. 36, 16 inches deep with No. 36-H cover. The box shall be installed with one course of brick as a base.

2.5 METER YOKES: Meter yokes shall be Mueller H-1404-2A, with H-14222 or H-14227, end pieces. Yokes to be fitted with angle ball valves (360 degree rotation)with provision for locking, ASSE dual check valves, saddle type swivel nuts, hard copper cross tubes, Mueller 110 or "T" series compression inlet fittings, and double purpose (Flare of FIP) outlet fittings. Copper cross tubes are to be of sufficient weight and hardness that they will not be bent during service installation or meter replacement.

2.6 WATER METERS: All meters shall be frostproof, sealed register, displacement type with bronze cast similar and equal to Sensus Precision or Rockwell. Meters shall be straight reading in gallons. Meters 1-1/2 inches and larger shall have flanged connections and shall be similar and equal to Neptune Style 3.

2.7 TAPPING SADDLES: Tapping saddles shall be used for tapping all PVC pipe and shall be Mueller H-13400 series, or equal, and shall be threaded to accept the corporation cock specified above. No taps larger than 1 inch shall be made in any size pipe without approval by the A/E.

PART 3 EXECUTION

3.1 The service line shall have a minimum of 20 inch cover except under roads and sidewalks where it shall have minimum of 24 inches cover. After the line is installed and yoke set, turn water on service pipe between yoke and main, blowing any accumulated trash out of the pipe. A single piece of copper pipe shall be used from the main to the meter unless the meter is over 100 feet from the main.

3.2 In general, install the meter box inside the property near the property line. Set plumb approximately 1 inch above the existing or proposed grade and so that surface drainage will not enter it. Fill from the existing or proposed grade to the top of the meter box at a slope of 1 inch in 12 inches. When the cut or fill slopes on streets extend beyond the street right-of-way, install the meter box at the top or toe of slope, as applicable, or as directed by the A/E. Place meter box on one layer of brick.

3.3 The service main shall not be taut from corporation stop to meter yoke.

3.4 Set the yoke plumb and level.

3.5 For connecting the service lines to meter yokes and corporation stop, use Mueller 110, or Ford Quick Joint, with suitable adapters, compression type connections. Unions shall be Mueller H-25172 compression connection or Ford Quick Joint compression coupling.

3.6 The meter box is to be installed at a location such that it will not be in a driveway or under shrubs and trees. If during construction of homes, the meter location conflicts with the location of the driveway, then the meter shall be moved at the expense of the builder or developer.

3.7 Refer to Drawing 231 in these specifications for proper installation of a 3/4 inch service assembly.

END OF SECTION

SECTION 02725

BORING AND CASING FOR WATER LINES

PART 1 GENERAL

1.1 The work to be performed hereunder shall consist of the installation of a casing pipe for the purpose of installing a water line as shown on the Drawings or as called for in these specifications. It shall include the excavation of a boring pit, auger boring between the points specified on the Drawings, furnishing and installing of the carrier pipe, and disposing of the excavated materials in the manner herein provided.

1.2 The Owner will provide the necessary control points required by the Contractor for this construction. The Contractor will provide the detailed layout required to keep the tunnel or bore on grade.

PART 2 PRODUCTS

2.1 CASING PIPE

A. The casing pipe shall be of steel meeting the latest approved American Railway Engineering Association "Specifications for Pipelines for Carrying Flammable and Nonflammable Substances." The steel casing pipe shall have a minimum yield strength of 35,000 psi and shall have the minimum wall thickness shown in the following table:

TABLE OF MINIMUM WALL THICKNESS FOR STEEL CASING PIPE

Carrier Pipe (Inches)	(For Highway H20 Loading) Casing Pipe (Inches)	Nominal Thickness (Inches)	(For Railroad E72 Loading) Casing Pipe (Inches)	Nominal Thickness (Inches)
2	6	0.250	8	0.250
4	8	0.250	10	0.250
6	12	0.250	14	0.250
8	16	0.250	18	0.281
12	20	0.281	24	0.375
16	24	0.375	30	0.500
20	30	0.500	30	0.500
24	36	0.500	36	0.625
30	42	0.500	42	0.625
36	48	0.625	48	0.750
42	54	0.625	54	0.875
48	60	0.750	60	0.875

2.2 PIPE: The carrier pipe shall meet the standards specified in Section 02713.

PART 3 EXECUTION

3.1 BORING

A. The boring shall be accomplished by means of auguring to the size, line, and grade shown on the Drawings.

3.2 INSTALLATION OF CASING PIPE

A. Jack the steel casing pipe into place as the boring proceeds. Weld sections of casing pipe together to provide watertight joints.

B. Do not remove unacceptable casing without prior approval from the A/E. If the removal of casing pipe is permitted, make proper provisions to prevent caving in of the earth surrounding the casing.

3.3 INSTALLATION OF CARRIER PIPE

A. The carrier pipe(s) shall be furnished by the Contractor. Upon acceptance of the casing, install the carrier pipe in the casing by jacking it through the casing. Spacers shall be used within the casing pipe. Casing Spacers shall be bolt on style with a shell made in two sections of heavy T-304 Stainless Steel. Connecting flanges shall be ribbed for extra strength. The shell shall be lined with a PVC liner .090 inch minimum thickness with 85-90 durometer. All nuts and bolts are to be 18-8 stainless steel. Runners shall be made of ultra high molecular weight polymer with inherent high abrasion resistance and a low coefficient of friction. Runners shall be supported by risers made of heavy 304 Stainless Steel. The supports shall be mig welded to the shell and all welds shall be passivated. The height of the supports and runners combined shall be sufficient to keep the carrier pipe at least 0.75 inch from the casing pipe wall at all times. A minimum of three spacers shall be placed on each joint of pipe. Casing spacers shall be made by Cascade Waterworks Mgf. Co. or Pipeline Seal and Insulator, Inc., Model S 12G-2. Each end of the casing pipe shall be sealed with a wrap-around end seal. (See Standard Drawing 1024).

3.4 TUNNELING ALTERNATIVE

A. General

1. In the event boring and jacking is impossible because of pipe size, rock, or other factors and the highway department or railroad will not permit open cutting, make crossings by tunneling using liner plates. Conduct tunneling operations as approved by the railroad or highway department. If voids are caused by the tunneling operations, fill by pressure grouting or by other approved methods that will provide proper support.

blocking shall be installed within one foot on each side of the bell of the carrier pipe and at the center of each joint. The main portion of the support shall be stainless steel with a PVC liner between the support and the carrier pipe. Detailed plans and specifications shall be submitted showing the proposed bracing and support of the carrier pipe inside the tunnel. Each end of the tunnel liner shall be plugged with brick and mortar.

12. All tunnel liners shall have one 2 inch grout coupling in every ring. Grout back of the rings as required.

4 GUARANTEE OF WORK

4.1 Guarantee a usable completed casing or tunnel between the points specified and to the line and grade specified. The allowable tolerance at the downstream end point of the bore shall be such that the invert of the carrier pipe may be positioned within a vertical area limited on the top by an elevation no higher than the elevation shown on the Drawings and on the bottom by an elevation no lower than the existing inlet pipe invert.

4.2 The allowable tolerance at the upstream end point of the bore shall be such that the invert of the carrier pipe may be positioned at the elevation shown on the Drawings.

END OF SECTION

SECTION 03303

CONCRETE FOR UTILITY LINES

1. This item shall include furnishing and installing concrete blocking, cradles, anchors, caps, pipe protection, and/or encasement at the locations shown on the drawings and/or as directed by the A/E.

2. Concrete work shall conform to ACI 301-72 (as revised), as modified by the supplemental requirements below:

3.2 Strength

The strength of concrete shall be 3,000 psi unless otherwise shown on the drawings.

3.4.1 Durability

All concrete exposed to weather shall be air entrained.

3.5 Slump

Concrete shall be proportional and produced to have a slump of 3" with a 1" tolerance.

3.7 Admixtures

Air entrainment, mandatory for concrete exposed to weather, may be used.

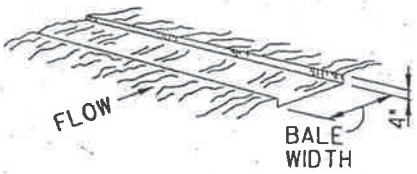
A water reducing admixture (retarding, normal, or accelerating, depending on placing temperature), may be used if approved by the A/E.

5.2.1 Reinforcing Steel

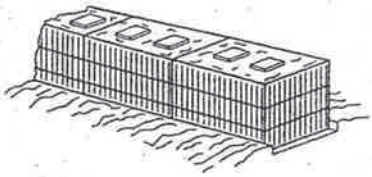
Yield strength of reinforcing steel shall be 60,000 psi.

END OF SECTION

STANDARD DRAWINGS

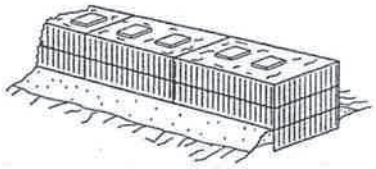


1. EXCAVATE THE TRENCH



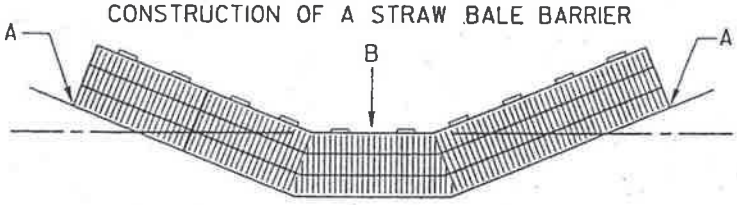
2. PLACE AND STAKE STRAW BALES

3. WEDGE LOOSE STRAW BETWEEN BALES



4. BACKFILL AND COMPACT THE EXCAVATED SOIL

CONSTRUCTION OF A STRAW BALE BARRIER



POINTS A SHOULD BE HIGHER THAN POINT B

PROPER PLACEMENT OF STRAW BALE BARRIER IN DRAINAGE WAY

STRAW BERM DETAIL

N.T.S.

BWSC
BARGE WAGGONER SUMNER & CANNON, INC.
ENGINEERS ARCHITECTS PLANNERS
LANDSCAPE ARCHITECTS AND SURVEYORS
211 Commerce Street, Suite 600 Nashville, Tennessee 37201
PHONE (615) 254-1500 FAX (615) 255-6572

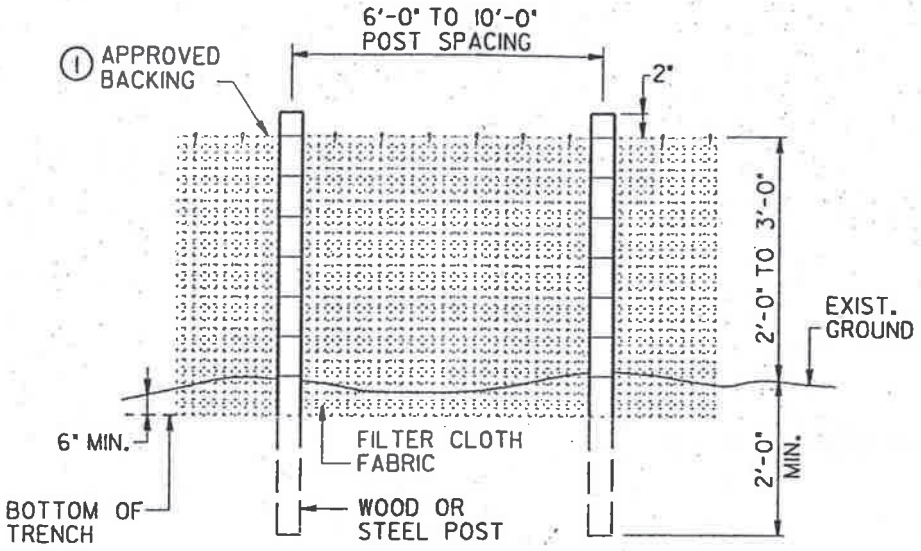
STRAW BERM DETAIL

OAK GROVE, KENTUCKY

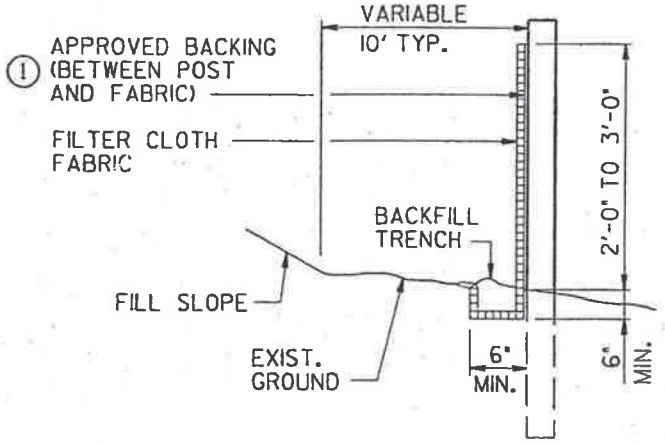
DETAIL NO.: C011

DATE ISSUED: DEC. 2002

DATE REVISED:



ELEVATION



SECTION

1. FILTER CLOTH SHALL HAVE APPROVED BACKING OR A BUILT-IN REINFORCED STRUCTURE, AS RECOMMENDED BY THE MANUFACTURER TO SUPPORT THE FILTER CLOTH.
2. A PREASSEMBLED SILT FENCE MEETING THE REQUIREMENTS OF THIS DRAWING IS ACCEPTABLE IN LIEU OF A FIELD CONSTRUCTED SILT FENCE.

TEMPORARY SILT FENCE

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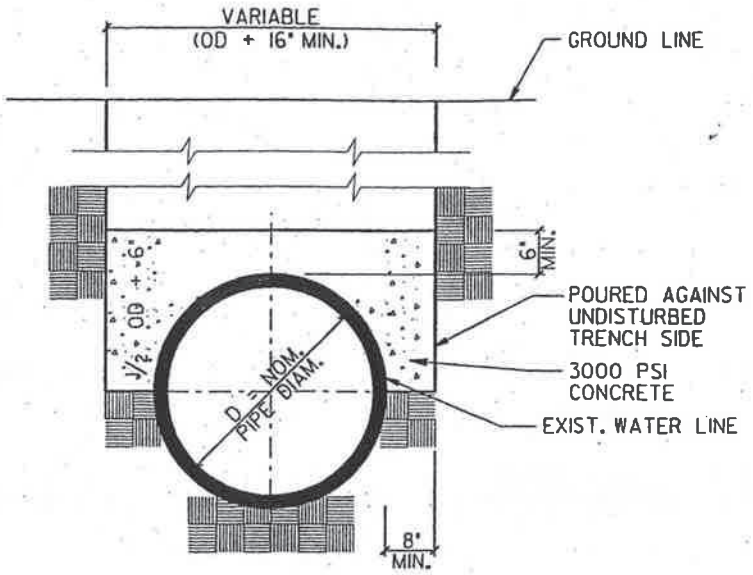
TEMPORARY SILT FENCE

OAK GROVE, KENTUCKY

DETAIL NO.: C030

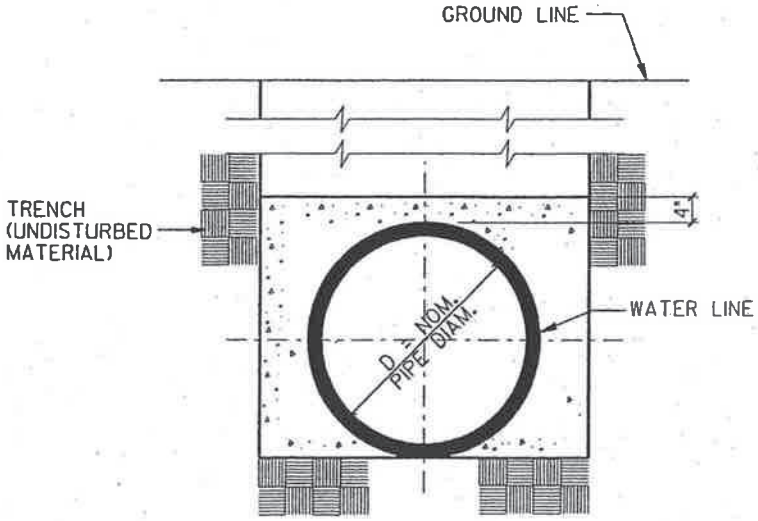
DATE ISSUED: DEC. 2002

DATE REVISED:



TYPICAL CONCRETE
PROTECTION FOR EXISTING WATER LINES

NOTE:
3000 PSI CONCRETE TO BE POURED 16 HOURS BEFORE BACKFILL IS PLACED AND IN SUCH A MANNER AS TO PREVENT PIPE FROM FLOATING



TYPICAL CONCRETE
PROTECTION FOR NEW WATER LINES

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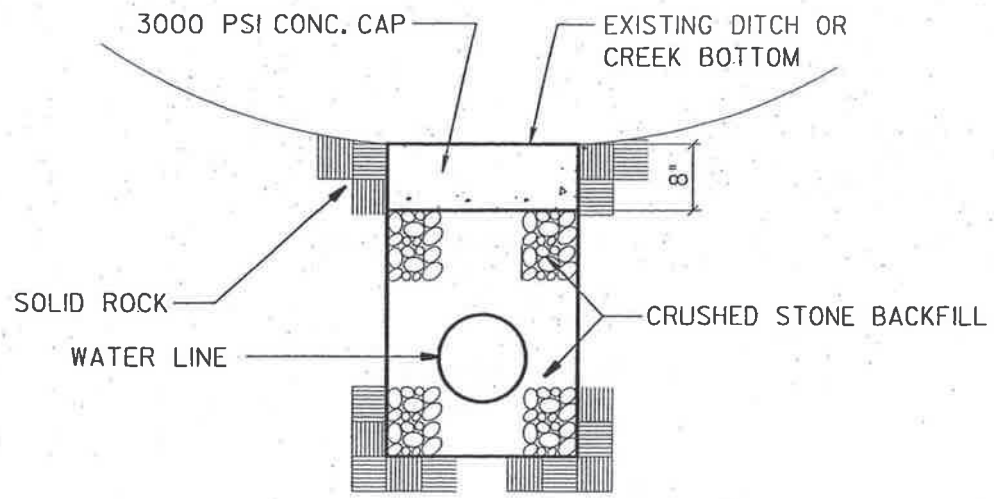
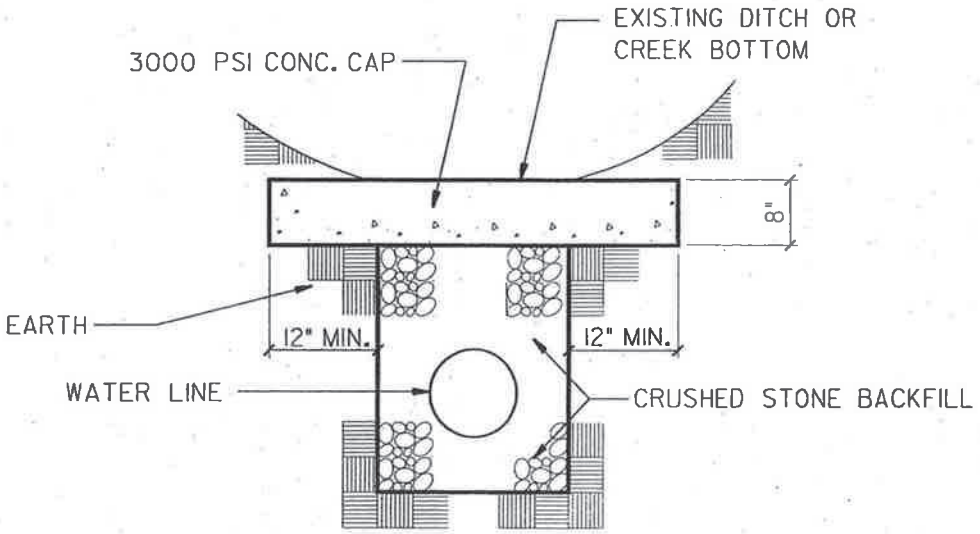
CONCRETE PROTECTION

OAK GROVE, KENTUCKY

DETAIL NO.: C112
DATE ISSUED: NOV. 1999
DATE REVISED:



ROCK EXCAVATION



EARTH EXCAVATION

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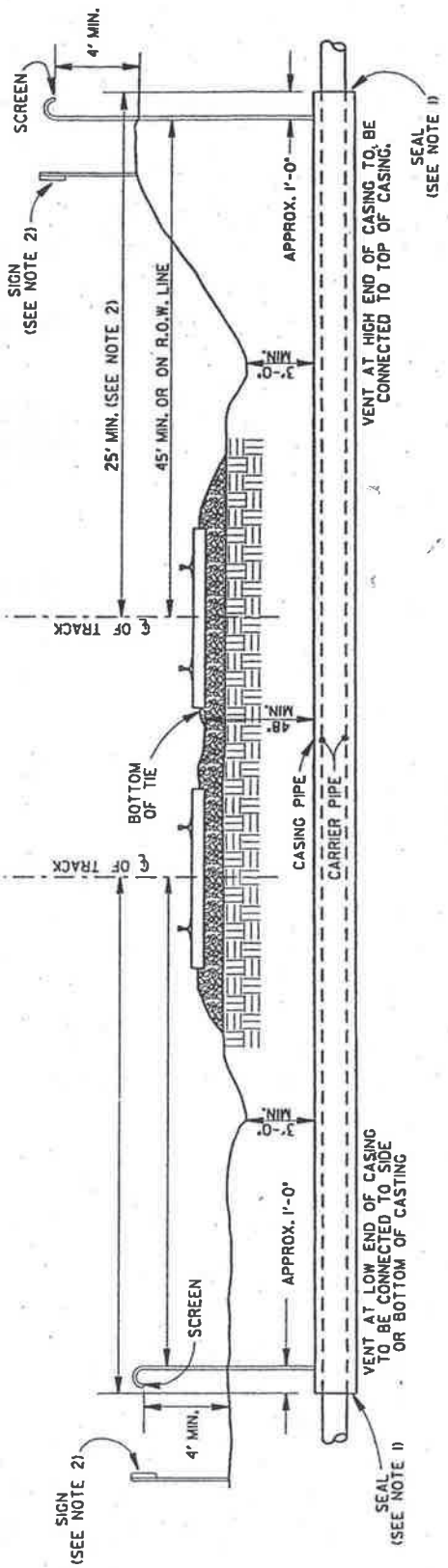
$USER$
$DATE$
$TIME$
$INSTR$
PRF

CONCRETE CAP

OAK GROVE, KENTUCKY

DETAIL NO.: C120
DATE ISSUED: NOV. 1999
DATE REVISED:



NOTES

1. SEAL AND VENT PIPE NOT REQUIRED IF CASING ENDS ABOVE GROUND WHERE DRAINAGE IS AVAILABLE.

2. CASING SHALL EXTEND TO THE GREATER OF THE FOLLOWING DISTANCES:
   A. 2' BEYOND TOE OF SLOPE.
   B. 3' BEYOND DITCH LINE.
   C. MIN. OF 25' WHEN CASING IS SEALED AT BOTH ENDS.
   D. MIN OF 45' WHEN CASING IS OPEN AT BOTH ENDS.

3. SIGN TO INDICATE LOCATION OF PIPE LINE AT R.O.W. LINE, KIND, OWNERSHIP, AND DEPTH OF PIPE LINE.

4. PIPE LINE LAID LONGITUDINALLY ON RAILWAY R.O.W. SHALL BE ENCASED IF LOCATED WITHIN 15' OF CENTER LINE OF ANY TRACT OR CLOSER THAN 45' TO ANY IMPORTANT STRUCTURE.

5. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE AT LEAST TWO INCHES GREATER THAN THE LARGEST DIAMETER OF CARRIER PIPE, JOINTS, OR COUPLINGS FOR CARRIER PIPES LESS THAN 6" IN DIAMETER; AND AT LEAST 4" GREATER FOR CARRIER PIPES 6" AND OVER IN DIAMETER.

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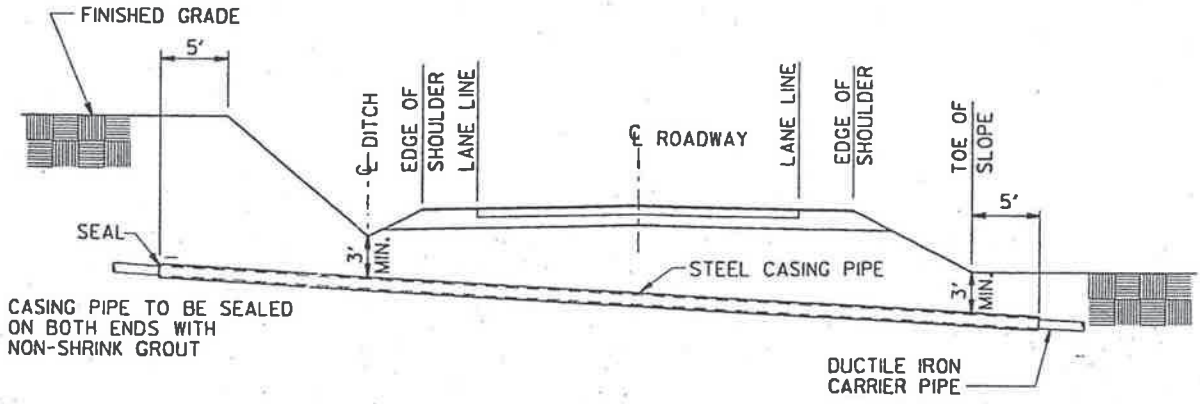
PIPE LINE CROSSING UNDER RAILROAD TRACKS (FOR NON-FLAMMABLE SUBSTANCES)

OAK GROVE, KENTUCKY

DETAIL NO.: C165
DATE ISSUED: DEC. 2002
DATE REVISED:



NOTES:

1. CASING SHALL EXTEND TO THE FOLLOWING DISTANCES:
   A. 5' BEYOND TOE OF SLOPE.
   B. 5' BEYOND BACK OF DITCH.

2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH "KENTUCKY TRANSPORTATION CABINET / DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" LATEST REVISION.

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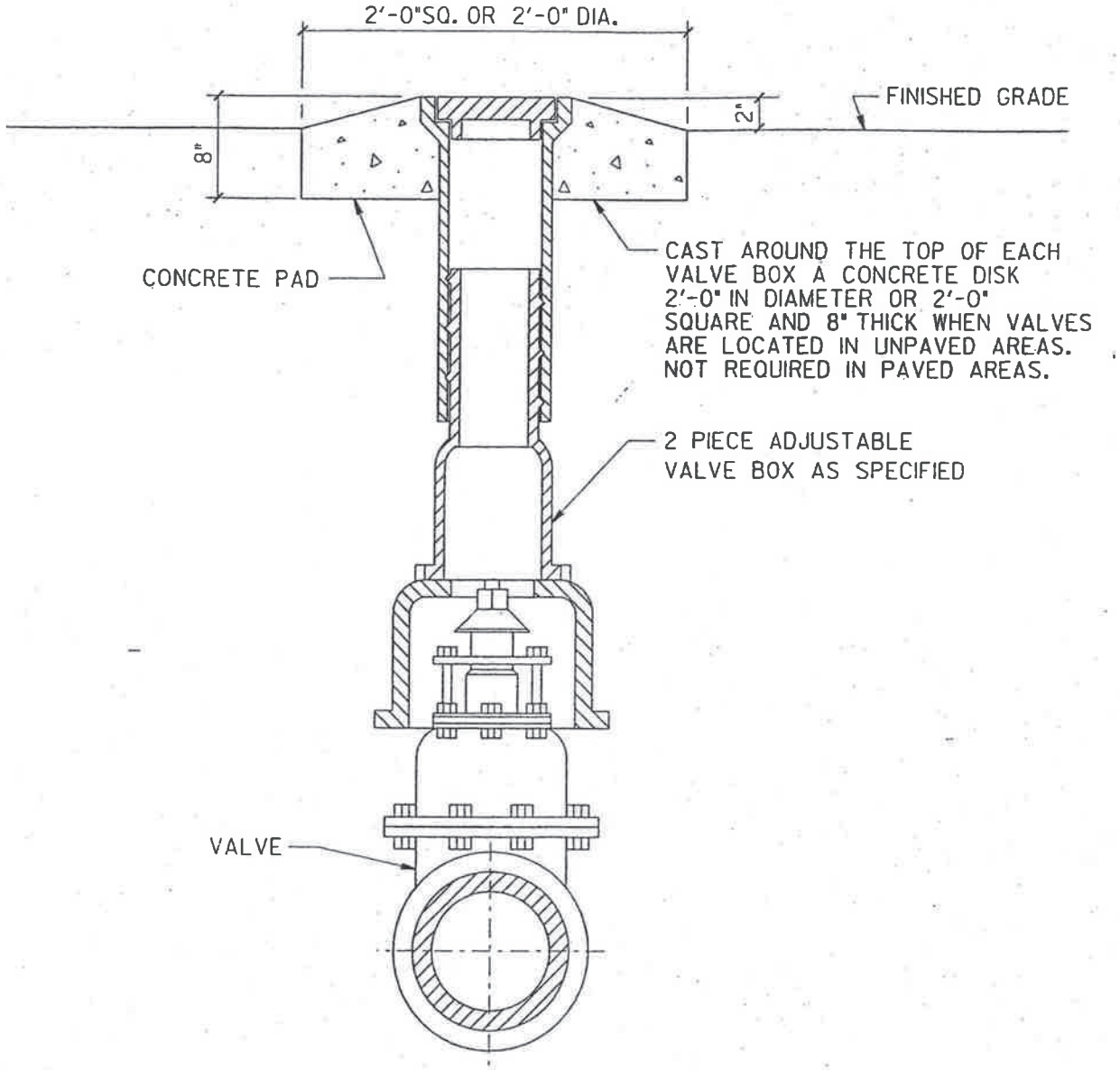
PIPE LINE CROSSING UNDER HIGHWAYS

OAK GROVE, KENTUCKY

DETAIL NO.: C165A

DATE ISSUED: DEC. 2002

DATE REVISED:



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TYPICAL VALVE BOX SETTING

OAK GROVE, KENTUCKY

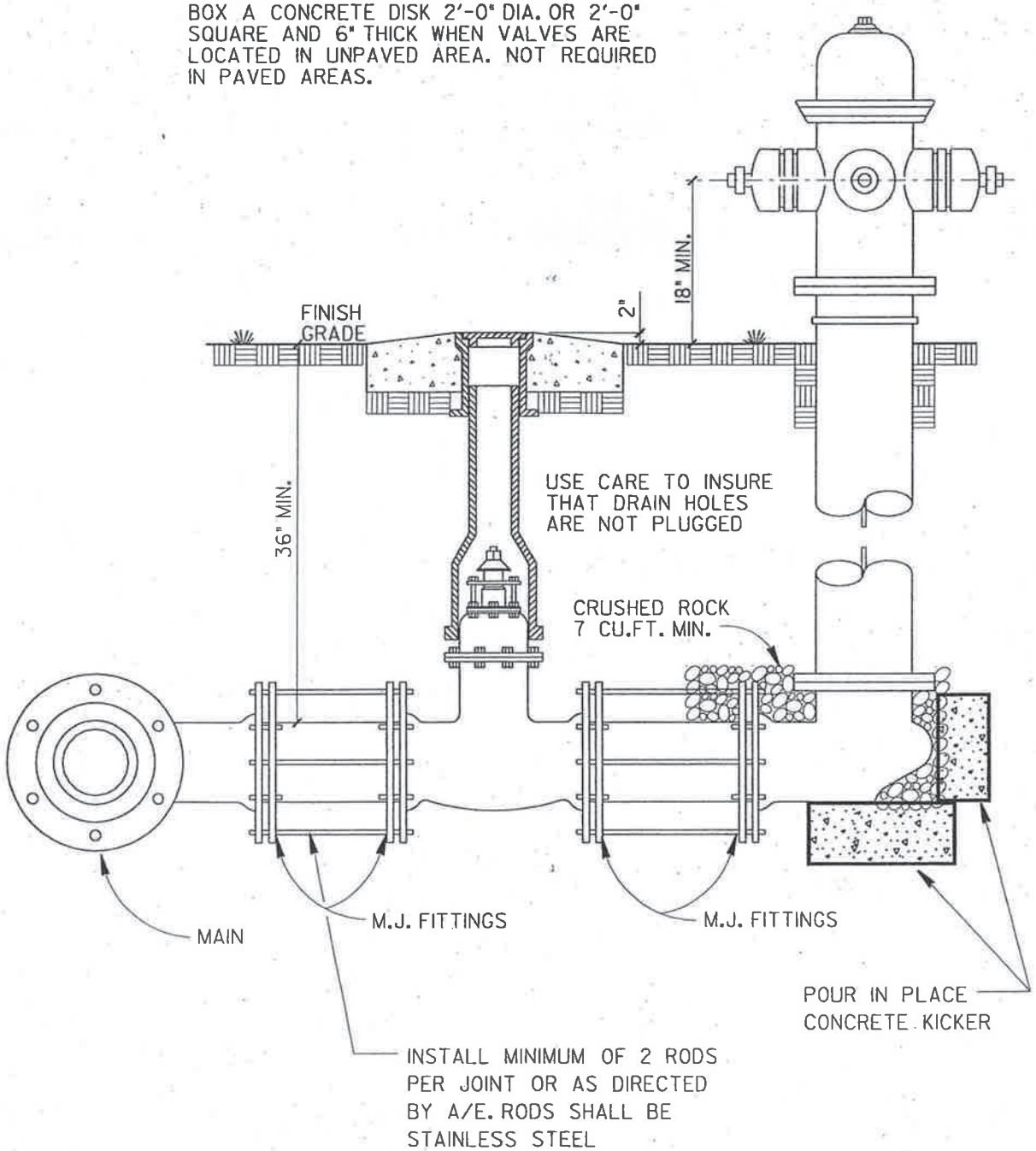
DETAIL NO.: C203

DATE ISSUED: NOV. 1999

DATE REVISED:

OPERATING NUT, DIRECTION OF OPENING, CAP NUT AND THREAD AND CONNECTIONS MUST BE APPROVED IN WRITING BY THE OWNER AS CONFORMING TO THEIR STANDARDS.

CAST AROUND THE TOP OF EACH VALVE BOX A CONCRETE DISK 2'-0" DIA. OR 2'-0" SQUARE AND 6" THICK WHEN VALVES ARE LOCATED IN UNPAVED AREA. NOT REQUIRED IN PAVED AREAS.



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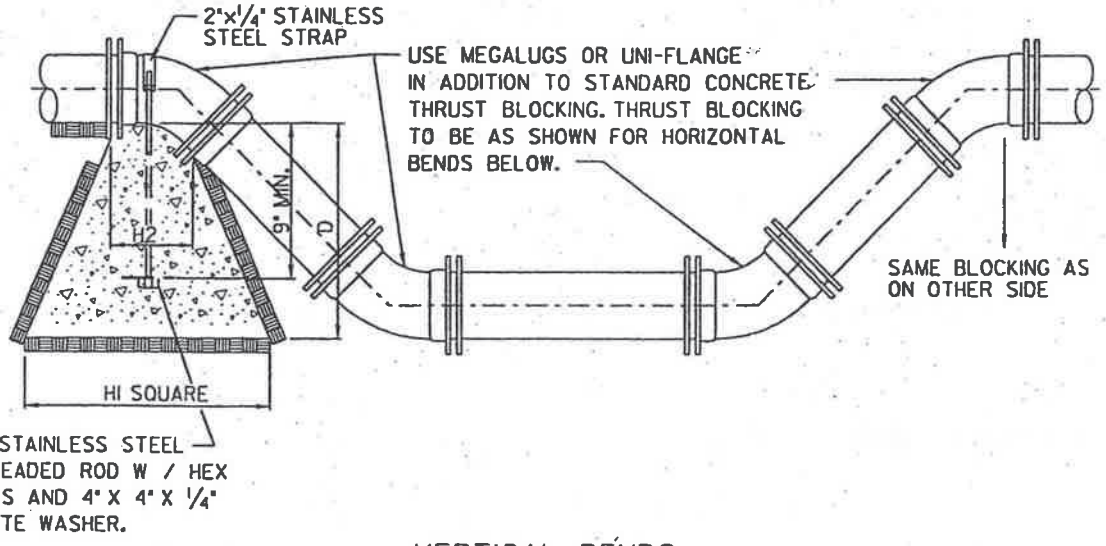
TYPICAL FIRE HYDRANT SETTING

OAK GROVE, KENTUCKY

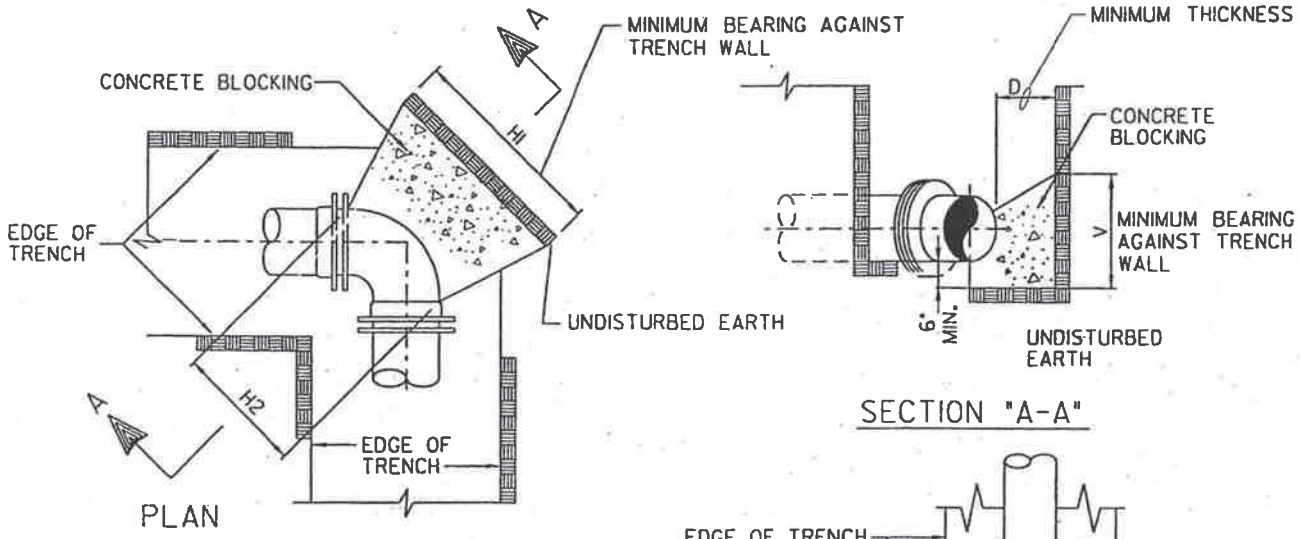
DETAIL NO.: C2/4

DATE ISSUED: NOV. 1999

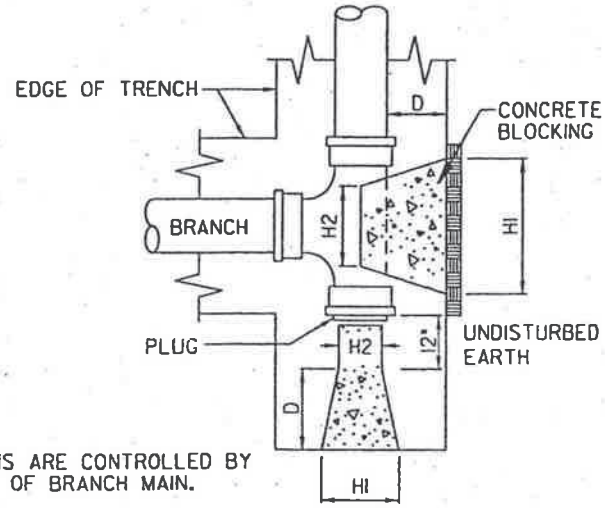
DATE REVISED:



VERTICAL BENDS



HORIZONTAL BENDS



NOTE:
DIMENSIONS ARE CONTROLLED BY DIAMETER OF BRANCH MAIN.

TEES, CROSSES & PLUGS

BWSC Barge Waggoner Sumner & Cannon, Inc. ENGINEERS ARCHITECTS PLANNERS LANDSCAPE ARCHITECTS AND SURVEYORS 211 Commerce Street, Suite 600 Nashville, Tennessee 37201 PHONE (615) 254-6500 FAX (615) 255-6572	CONCRETE THRUST BLOCKING OAK GROVE, KENTUCKY	DETAIL NO.: C22IA DATE ISSUED: DEC. 2002 DATE REVISED:

TABLE OF DIMENSIONS FOR CONCRETE BLOCKING

SIZE	TEES, PLUGS & CROSSES					90^ BENDS					45^ BENDS					22½^ BENDS					11¼^ BENDS					SIZE
PIPE	H	H_2	V	D	CU. FT.	H	H_2	V	D	CU. FT.	H	H_2	V	D	CU. FT.	H	H_2	V	D	CU. FT.	H	H_2	V	D	CU. FT.	PIPE
2"&2¼"	18"	10"	12"	18"	1.9	18"	10"	12"	18"	1.9	18"	6"	12"	18"	1.5	18"	6"	12"	18"	1.5	18"	6"	12"	18"	1.5	2"&2¼"
3"&4"	24"	12"	12"	18"	2.3	24"	12"	12"	18"	2.3	18"	8"	12"	18"	1.6	18"	8"	12"	18"	1.6	18"	8"	12"	18"	1.6	3"&4"
6"	24"	16"	18"	18"	3.5	30"	16"	18"	18"	4.1	24"	10"	16"	18"	3.2	24"	10"	16"	18"	3.2	24"	10"	16"	18"	3.2	6"
8"	36"	18"	18"	18"	5.1	39"	18"	24"	18"	7.3	30"	11"	18"	18"	4.0	24"	11"	18"	18"	3.5	24"	11"	16"	18"	3.4	8"
10"	48"	24"	18"	24"	7.2	54"	32"	24"	18"	10.3	24"	18"	21"	18"	4.6	24"	18"	21"	18"	4.6	24"	18"	21"	18"	4.6	10"
12"	54"	30"	24"	24"	13.4	54"	32"	36"	24"	18.2	42"	18"	24"	24"	9.6	24"	18"	24"	24"	6.6	24"	18"	21"	24"	6.1	12"
14"	60"	32"	30"	24"	17.9	60"	40"	42"	24"	25.0	44"	24"	30"	24"	13.2	30"	24"	24"	24"	9.2	27"	21"	24"	24"	7.9	14"
16"	66"	34"	36"	24"	22.5	69"	48"	48"	24"	29.0	48"	30"	36"	24"	17.0	36"	30"	27"	24"	11.8	27"	24"	27"	24"	9.1	16"
18"	72"	36"	40"	24"	30.0	72"	48"	60"	24"	38.0	48"	30"	42"	24"	21.0	42"	30"	30"	24"	15.0	30"	30"	36"	24"	13.0	18"
20"	84"	38"	42"	24"	36.0	84"	48"	66"	24"	48.0	54"	40"	46"	24"	27.0	48"	36"	36"	24"	19.0	42"	40"	36"	24"	18.0	20"
24"	108"	42"	48"	24"	45.0	108"	60"	72"	24"	68.0	60"	48"	56"	24"	41.0	54"	42"	42"	24"	25.0	48"	42"	42"	24"	23.0	24"
30"	132"	52"	60"	24"	70.0	132"	72"	92"	24"	104.0	72"	48"	76"	24"	58.0	60"	48"	48"	24"	32.0	50"	48"	54"	24"	32.0	30"
36"	162"	58"	72"	24"	100.0	162"	96"	108"	24"	150.0	84"	72"	84"	24"	85.0	66"	48"	60"	24"	50.0	52"	48"	60"	24"	40.0	36"
42"	166"	60"	84"	36"	168.4	190"	66"	108"	36"	190.0	122"	60"	84"	24"	90.0	72"	48"	72"	24"	56.0	56"	48"	66"	24"	44.0	42"
48"	172"	66"	96"	36"	200	220"	72"	120"	36"	230.0	136"	60"	90"	24"	98.0	78"	48"	84"	24"	66.0	60"	48"	72"	24"	50.0	48"

CONCRETE THRUST BLOCKING

1.– THIS TABLE IS BASED ON AN INTERNAL HYDROSTATIC PRESSURE OF 200 PSI AND AN ALLOWABLE SOIL BEARING CAPACITY OF 4,000 LB/SF.

2. SHOULD THE INTERNAL HYDROSTATIC PRESSURE EXCEED 200 PSI AND/OR THE ALLOWABLE SOIL BEARING CAPACITY BE LESS THAN 4,000 LB/SF, THE THRUST BLOCK SIZE MUST BE ENLARGED ACCORDINGLY. IF EITHER OR BOTH OF THESE CONDITIONS OCCUR, THE CONTRACTOR SHALL PROVIDE CALCULATIONS TO SUPPORT THE ENLARGED SIZE THRUST BLOCK PROPOSED.

3. BLOCKING WILL BE PAID AT THE CONTRACT UNIT PRICE FOR 4,000 PSI CONCRETE FOR THE VOLUME SHOWN IN THE ABOVE TABLE OR AS APPROVED BY THE A/E FOR EACH FITTING SO BLOCKED, IF A SEPARATE ITEM APPEARS IN THE SCHEDULE OF A PROPOSAL FOR A UNIT PRICE CONTRACT. IF NO UNIT PRICE FOR CONCRETE BLOCKING APPEARS, NO SEPERATE PAYMENT WILL BE MADE FOR THRUST BLOCKING.

4. ALL BENDS, TEES, CROSSES, AND PLUGS SHALL HAVE CONCRETE THRUST BLOCKING INSTALLED AS ON STANDARD DRAWINGS 221-A AND 221-B OR AS DIRECTED BY THE A/E.

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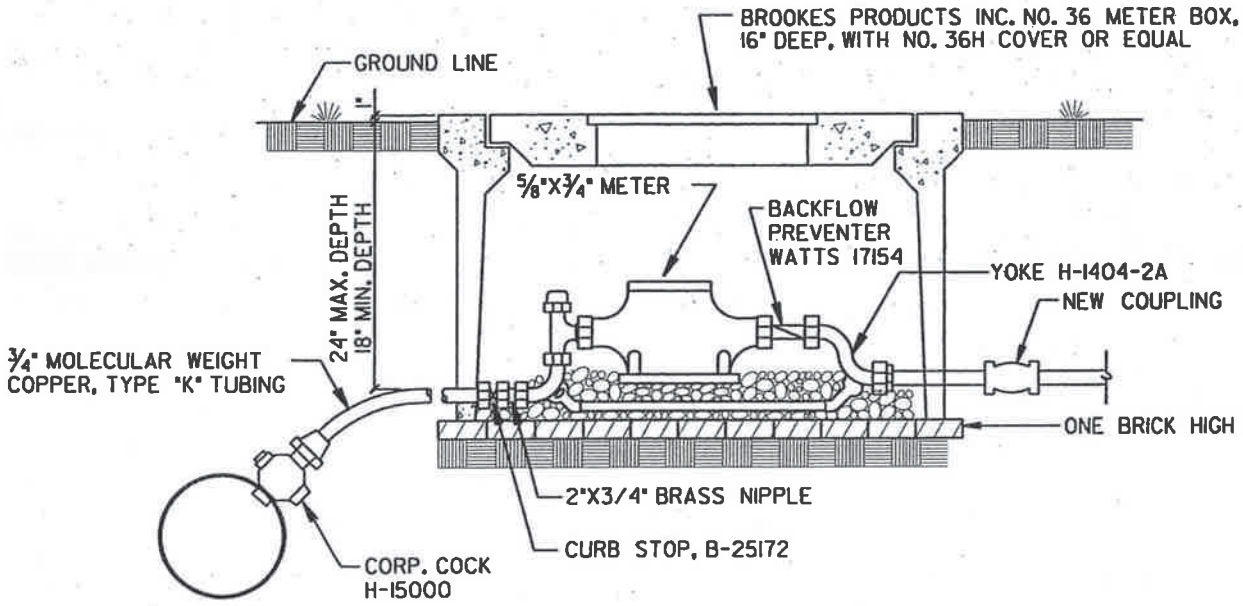
CONCRETE THRUST BLOCKING

OAK GROVE, KENTUCKY

DETAIL NO.: C221B

DATE ISSUED: DEC. 2002

DATE REVISED:



NOTES

1. NEATLY CUT EXISTING TUBING & CONNECT FEED SIDE OF THE LINESETTER TO THE TUBING. USE A COUPLING TO RECONNECT THE UNIT SIDE OF THE LINESETTER TO THE OTHER END OF THE TUBING.
2. USE SADDLE FOR TAPS IN PVC OR IN METAL PIPE LESS THAN 4" IN DIAMETER
3. PLACE CLEAN 1/2" TO 3/4" CRUSHED STONE 3" DEEP IN BOTTOM OF METER BOX.

3/4" SERVICE ASSEMBLY

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3/4" SERVICE ASSEMBLY

OAK GROVE, KENTUCKY

DETAIL NO.: C231

DATE ISSUED: NOV. 1999

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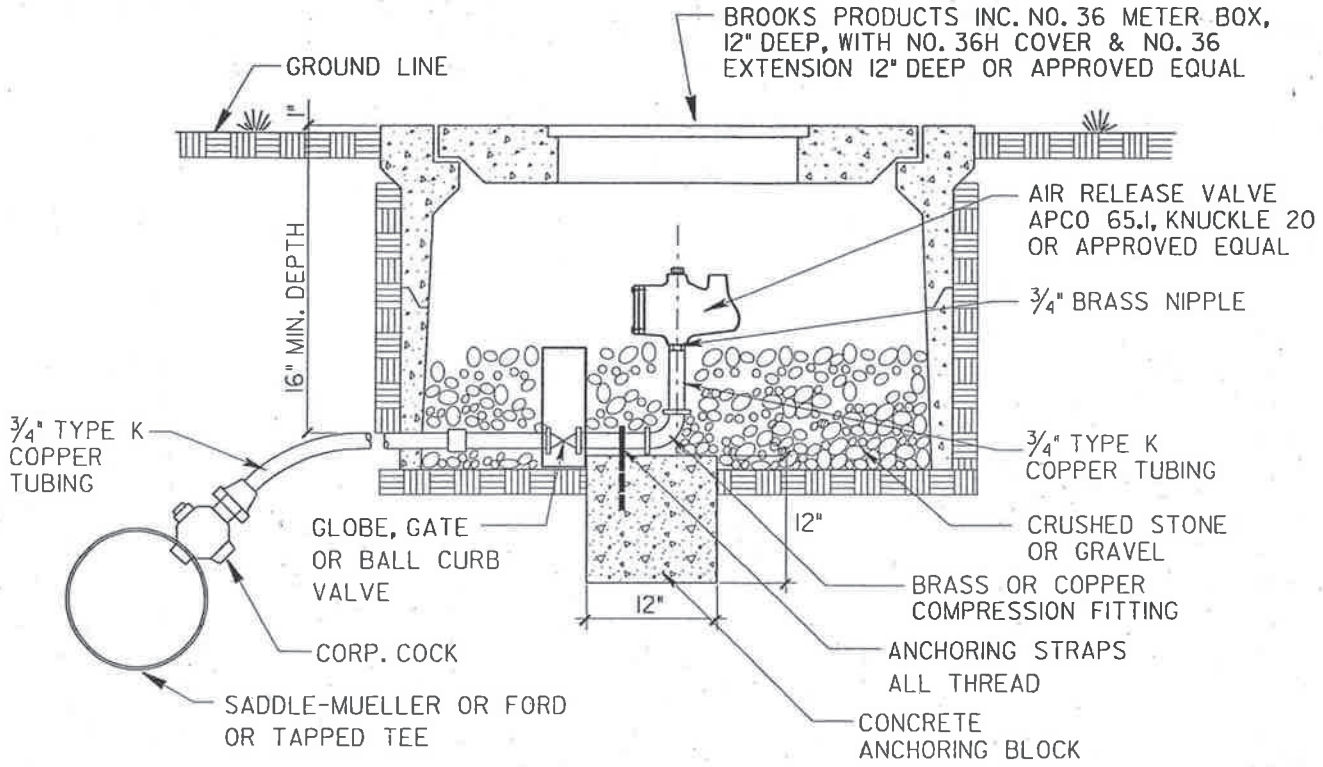

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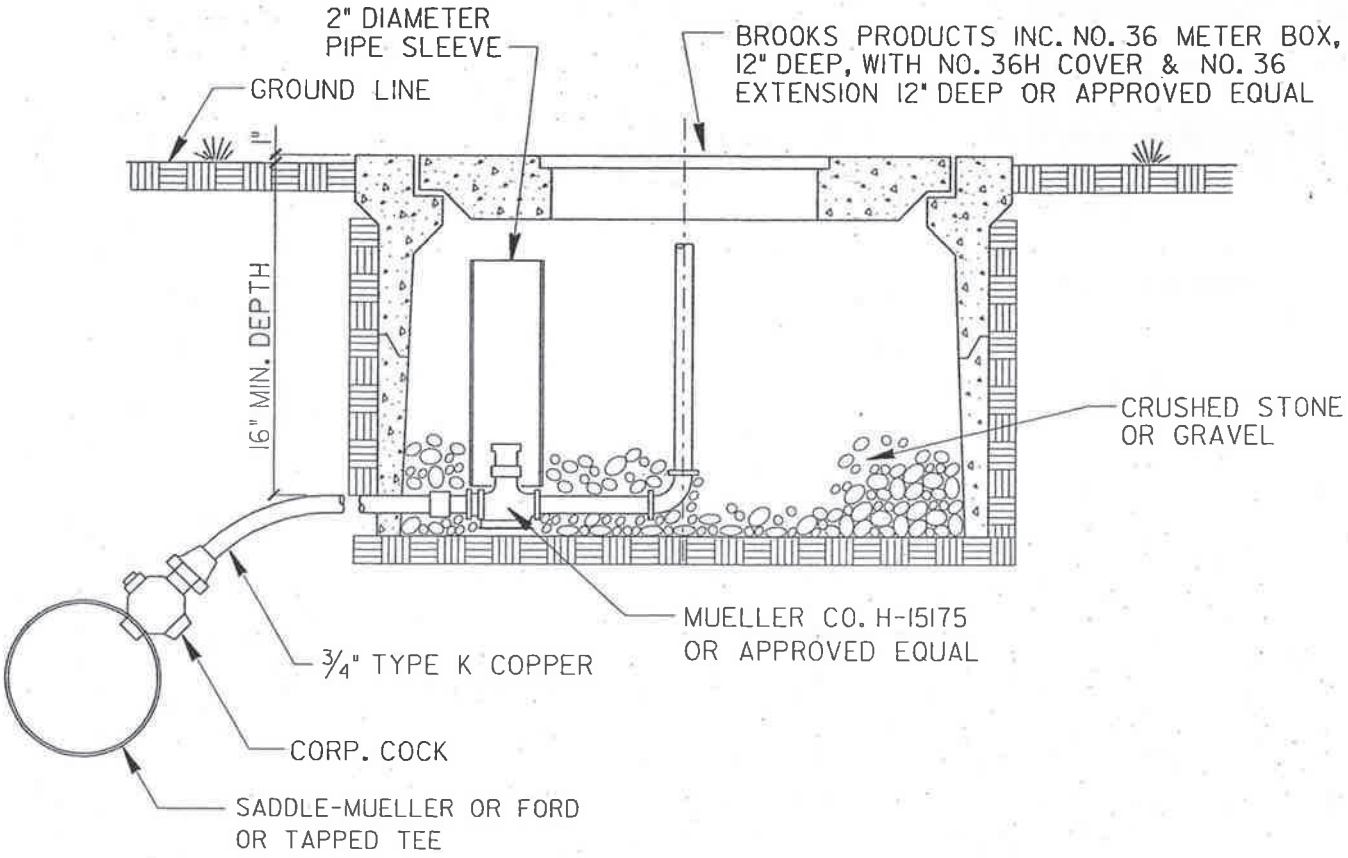
AUTOMATIC AIR RELEASE ASSEMBLY

OAK GROVE, KENTUCKY

DETAIL NO.: C261A
DATE ISSUED: APR. 2003
DATE REVISED:



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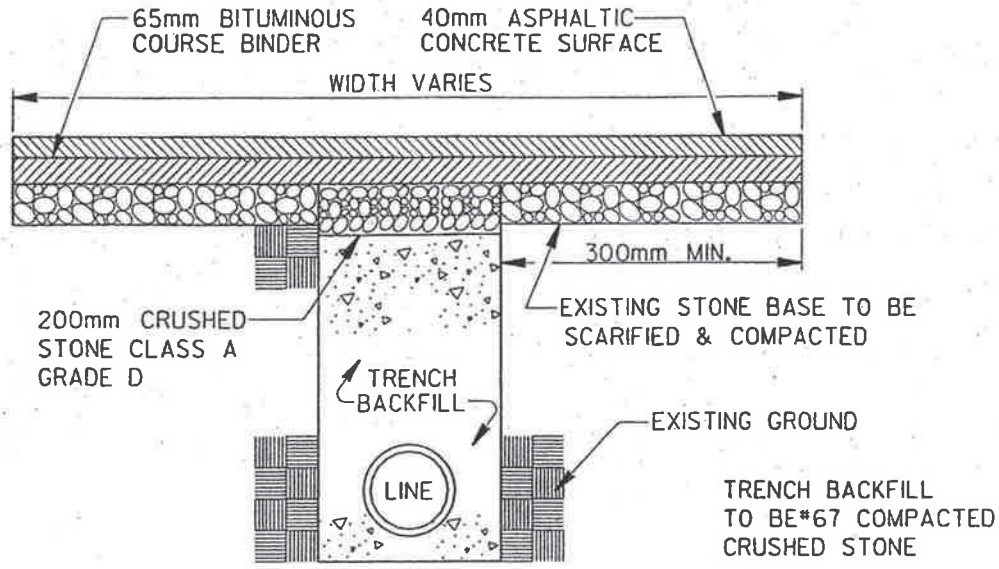
MANUAL AIR RELEASE ASSEMBLY

OAK GROVE, KENTUCKY

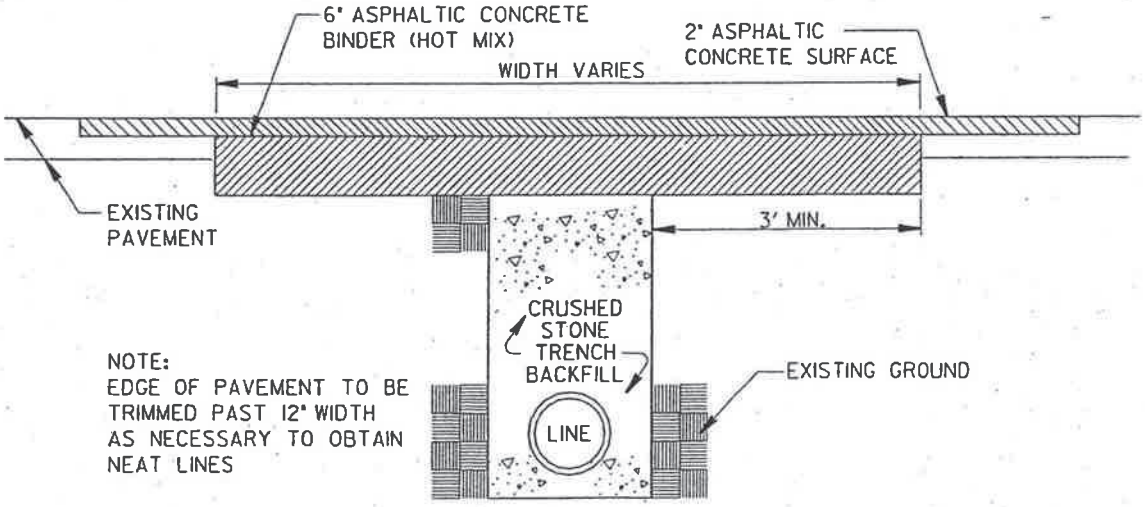
DETAIL NO.: C26IB

DATE ISSUED: APR. 2003

DATE REVISED:

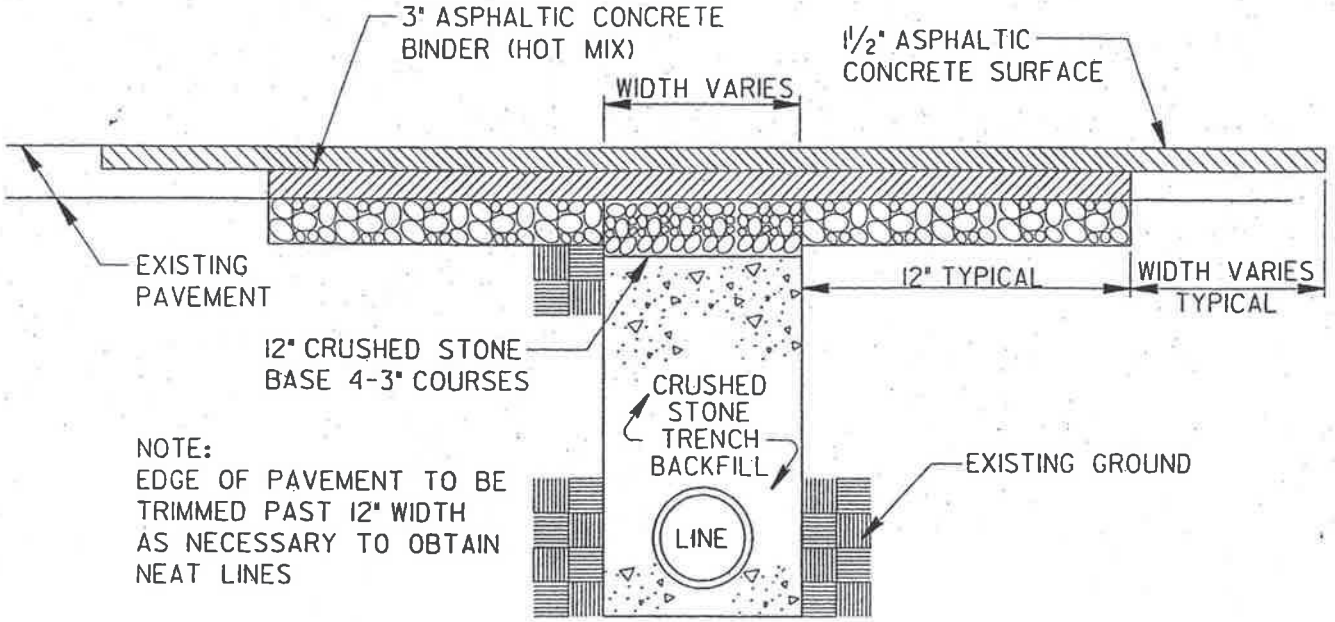


TYPICAL SECTION BITUMINOUS BASE WITH SURFACE
TYPE B

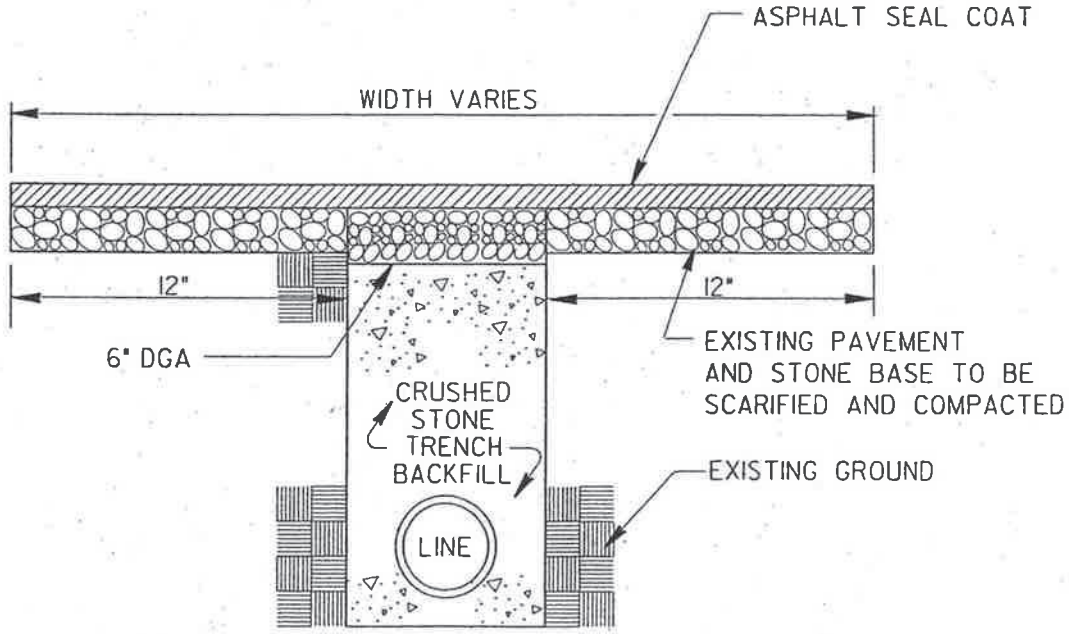


TYPICAL SECTION ASPHALT PAVEMENT
TYPE A

BWSC Barge Waggoner Sumner & Cannon, Inc. ENGINEERS ARCHITECTS PLANNERS LANDSCAPE ARCHITECTS AND SURVEYORS 211 Commerce Street, Suite 800 Nashville, Tennessee 37201 PHONE (615) 254-1500 FAX (615) 255-6372	PAVEMENT REPLACEMENT DETAILS OAK GROVE, KENTUCKY	DETAIL NO.: C617 DATE ISSUED: NOV. 1999 DATE REVISED:



TYPICAL SECTION ASPHALT PAVEMENT
TYPE C



TYPICAL SECTION ASPHALT SEAL COAT

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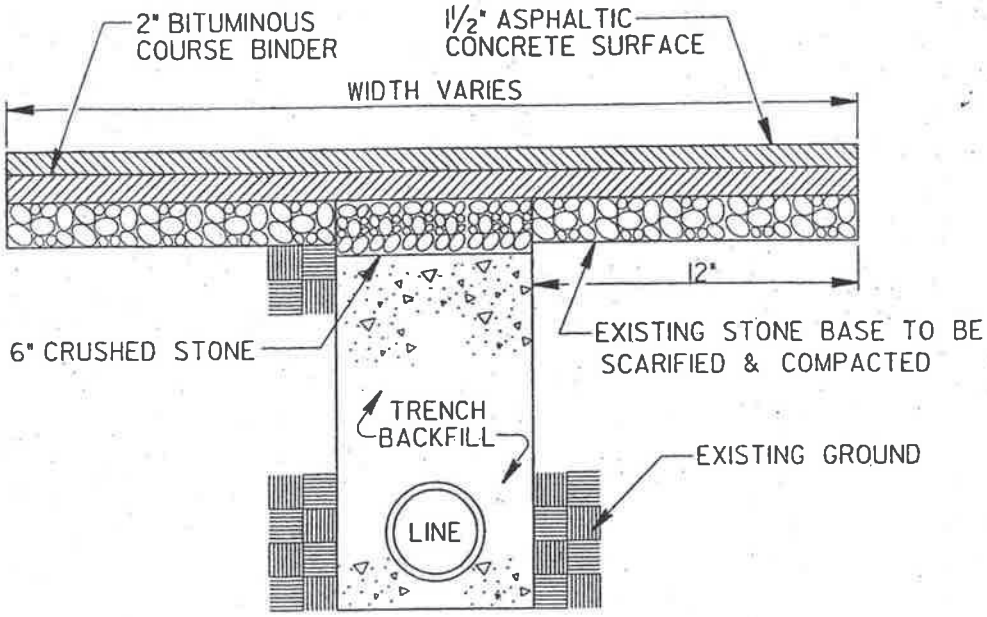
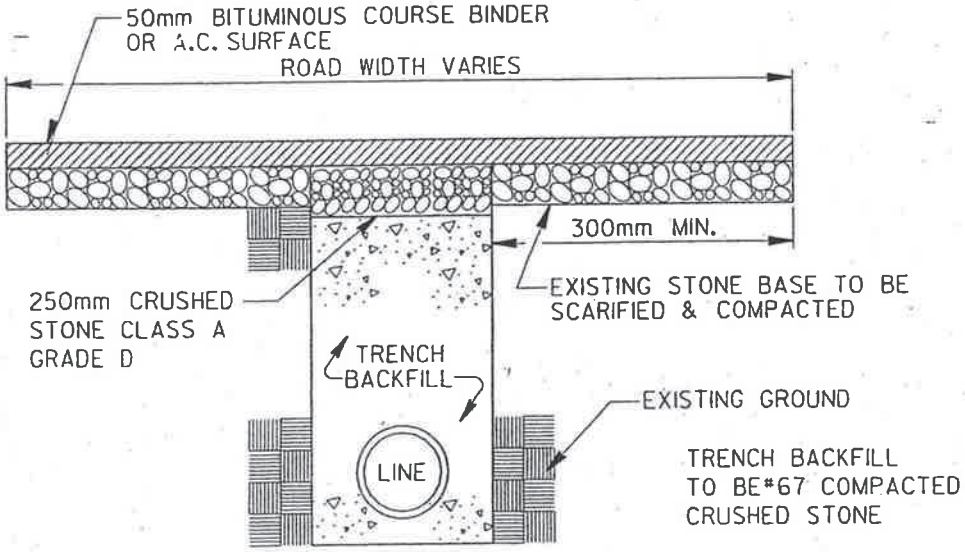
PAVEMENT REPLACEMENT DETAILS

OAK GROVE, KENTUCKY

DETAIL NO.: C618
DATE ISSUED: NOV. 1999
DATE REVISED:



TYPICAL SECTION BITUMINOUS BASE WITH SURFACE
TYPE D



TYPICAL SECTION BITUMINOUS BASE OR ASPHALTIC CONCRETE SURFACE
TYPE E

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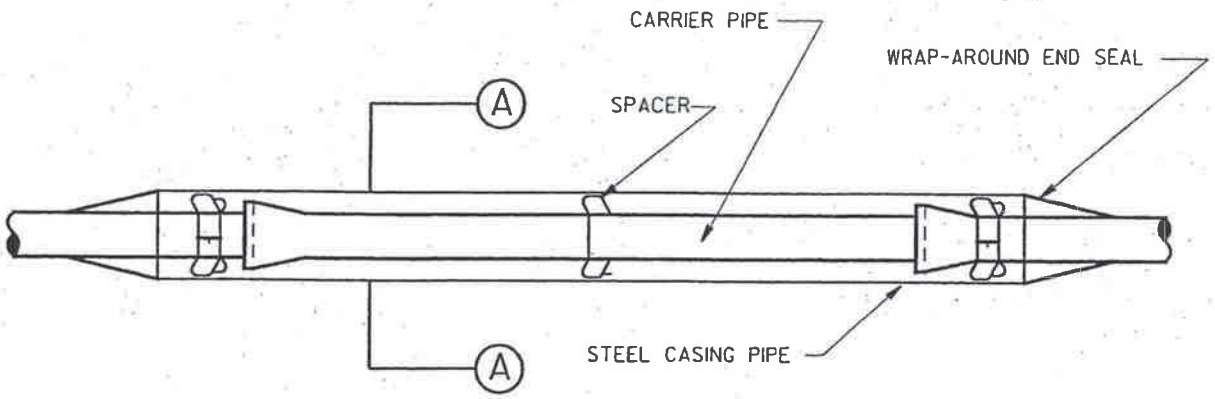
PAVEMENT REPLACEMENT DETAILS

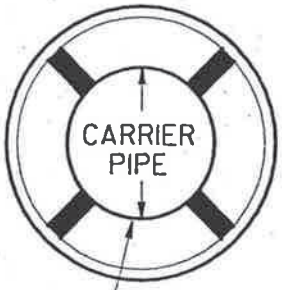
OAK GROVE, KENTUCKY

DETAIL NO.: C6/9
DATE ISSUED: NOV. 1999
DATE REVISED:



NOTE:

SPACERS FOR CARRIER PIPES UP THROUGH 36-INCHES IN DIAMETER SHALL BE INSTALLED WITHIN 1-FOOT ON EACH SIDE OF THE BELL AND IN THE CENTER OF JOINTS. IF THE CASING OR CARRIER PIPE IS ANGLED, BENT, OR DENTED SPACING SHALL BE AT 1/3 INTERVALS. IF SPACER IS MORE THAN 1-FEET FROM END OF CASING PIPE AN ADDITIONAL SPACER SHALL BE PLACED WITHIN 1-FOOT OF THE END OF THE CASING PIPE. SPACERS TO BE PIPELINE SEAL AND INSULATOR, INC METAL CASING SPACER MODEL SI2G-2-CR. END SEALS TO BE PIPELINE SEAL AND INSULTATOR, INC. WRAP-AROUND (MODEL W).



DUCTILE IRON CARRIER PIPE TO BE CENTERED IN STEEL CASING PIPE.

SECTION A-A

CASING SPACER INSTALLATION DETAIL

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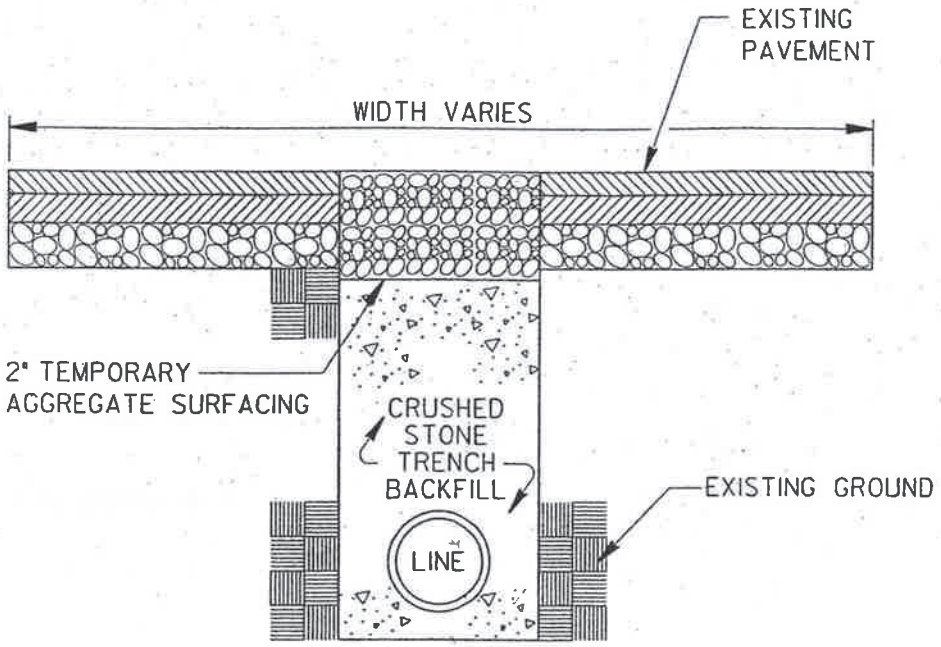
CASING SPACER DETAIL

OAK GROVE, KENTUCKY

DETAIL NO.: C1024

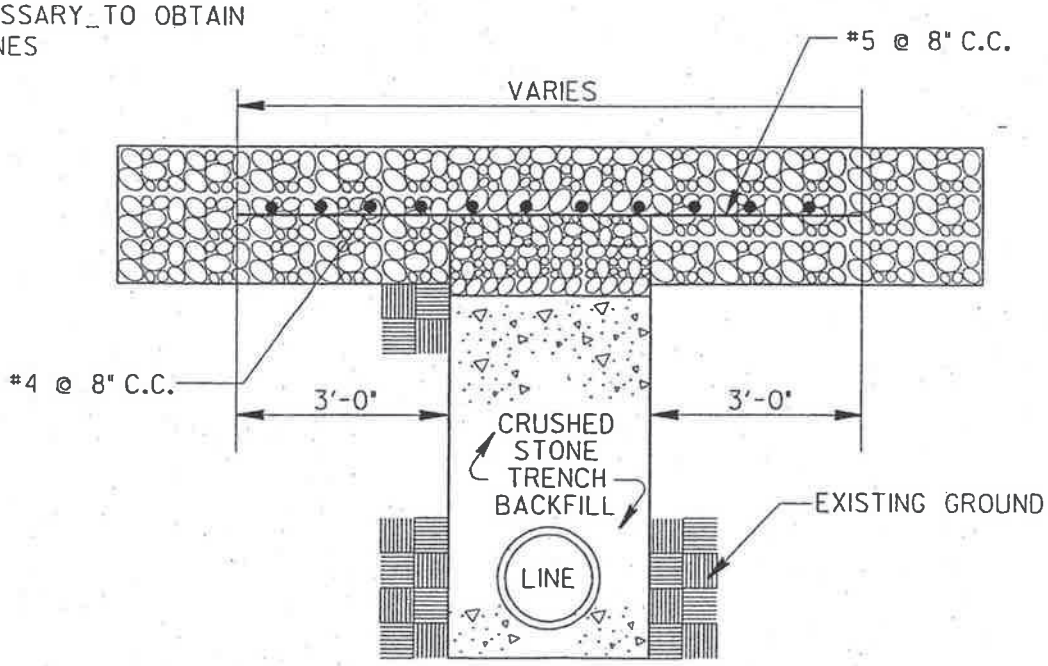
DATE ISSUED: DEC. 2002

DATE REVISED:



TYPICAL SECTION TEMPORARY PAVEMENT

NOTE:
EDGE OF PAVEMENT TO BE
TRIMMED PAST 36" WIDTH
AS NECESSARY TO OBTAIN
NEAT LINES



TYPICAL SECTION CONCRETE PAVEMENT

BWSC
BARGE
WAGGONER
SUMNER &
CANNON, INC.
ENGINEERS ARCHITECTS PLANNERS
LANDSCAPE ARCHITECTS AND SURVEYORS
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PAVEMENT REPLACEMENT DETAILS

OAK GROVE, KENTUCKY

DETAIL NO.: C616

DATE ISSUED: NOV. 1999

DATE REVISED:

CITY OF OAK GROVE
CHRISTIAN COUNTY, KENTUCKY

GENERAL GUIDELINES
COVERING THE INSTALLATION OF WATER MAINS APPURTENANCES

October 2003

I. GENERAL GUIDELINES

The purpose of these guidelines and specifications is to provide a guide to the Developers and their Engineers and Contractors in order to achieve an acceptable installation of water service to subdivisions and other developments. These guidelines shall not be superseded by actual ordinance, to which a more particular review is required. The word "Owner" refers to the City of Oak Grove. The word "A/E" is used to refer to the City's project representative or, when called upon by the City, will refer to the City's Engineer and/or representative.

The inspection services provided by the City is limited only for the installation of water lines and their appurtenances and small booster stations. The City's inspection should not be construed to be comprehensive in nature. Inspection by the City does not relieve the Contractor's responsibility to comply with the specifications nor does it guarantee against any failure during the construction phase or the one year warranty period due to inferior material or workmanship of the Contractor.

A. No valve or cutoff shall be operated except by the City Representative. Contractor shall make no tie to the existing water line until new lines have been tested and tie in is recommended by project representative. The use of a stainless steel tapping sleeve and valve, requiring no line shut down, is the preferred method for tie. As a secondary and less preferred method, "cut-ins" to live mains may be allowed if approved by the City. Taps in lines 2-inches or smaller will be made by the City, at the Developer's cost, after the tapping sleeve and valve has been installed by the Developer's Contractor. Taps in lines larger than 2-inches shall be made by the Developer's Contractor and under the direct supervision of the City. No tap shall be made without a representative of the City present. "Cut-ins" to live mains shall be made only in the presence of the City Representative. To shut down a live main for a "cut-in" the contractor shall make the request a minimum of seventy-two (72) hours in advance of the proposed shut down. The City has the right to approve or disapprove this request. The City will approve the request unless the water usage at that time is such that a shut down would cause a burden on the water system.

B. No utility plans will be reviewed until the development plans have received preliminary approval by the Planning Commission having jurisdiction.

C. Nine (9) sets of plans and specifications, including a vicinity map, shall be submitted to the City Planner for the initial review. If the plans are in order, with no major changes, the Developer or his Engineer will submit the number of additional sets of plans needed for the project approval.

D. After approval by the City, approval of the plans and specifications by the Planning Commission and by the Kentucky Division of Water, Kentucky Transportation Cabinet, Railroads, Corps of Engineers, Pennyrile Rural Electric Cooperative, and any other agency having jurisdiction is required before beginning construction. Two (2) state-approved sets of plans and a copy of the state approval letter from the Kentucky Division of Water are to be provided to the City before any construction begins.

E. Sizes and locations of mains, valves, fitting, plugs, hydrants, and blow-offs shall be in accordance with the plans approved by the city. Reduced pressure principle backflow prevention devices shall be provided and installed in accordance with the Foundation for Cross Connection Control and Hydraulic Research (FCCC & HR) Manual for Cross-Connection Control and the Kentucky Division of Water. A double check valve assembly may be used as a backflow prevention device serving a private fire hydrant when approved by the City. A "Hot Box" or "Hydrocowl" of approved size shall be used to enclose each preventor, unless otherwise approved by the City. Provide insulation and/or electric heater as required to protect system from freezing.

F. Detailed plans and specifications are to be submitted by the Engineer employed by the Developer for any special condition or structures such as pump stations, creek crossings, etc., or as requested by the City, and must be approved by the City and other agencies prior to the preconstruction conference.

G. Permits for pavement cuts or crossing of public roads including any special backfill and pavement repair as required by the Agency having jurisdiction are the responsibility of the Developer. A bond shall be provided to the City by the Developer to cover all costs of repair and maintenance for a period of one year from date of acceptance of the project for all work performed in existing rights-of-way of all roads in Christian County and all State Highways. The amount of this bond shall be determined by the City after it receives all requirements for repairs from the Christian County Highway Department or the Kentucky Transportation Cabinet.

H. Backfill requirements for utilities in proposed roads and adjacent to proposed roads must meet the requirements of the Agency having jurisdiction of the roads upon completion of the project.

I. All applicable federal and state laws, municipal ordinances, the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

J. If construction has not started within one year from the date of approval, utility plans shall be resubmitted to renew approval.

K. The Contractor's name, project cost, and estimated working time for each project will be submitted to the City. The City shall be reimbursed two hundred dollars ($200.00) for each day beyond the approved working time that a City Representative is required on the job site until completion of the project.

L. Meters 5/8" x 3/4" shall be purchased by the Developer from the City at the market price for each lot or for each dwelling in a multi-family development. The meter assembly is to be installed by the Contractor. The meter assembly is to be installed as near the side property lines in utility right-of-way as possible, and outside of any driveways.

M. Laboratory and mill tests reports shall be provided on all pipe to assure that it meets the requirements of the City's specifications.

N. Shop drawings for pipe, manholes, etc. shall be submitted to the City's Engineers a minimum of 14 days prior to the preconstruction conference for review and approval after being thoroughly checked by the Contractor and Developer's Engineer and stamped with the date of their approval.

O. Water lines and appurtenances connected to the City's system, both public and private, shall be in accordance with the specifications of the City of Oak Grove. Since the capacity and operation of water booster stations, pressure tanks and standpipes or elevated tanks affect the overall operation of the City's system, the sizes, capacity, material, and construction shall be approved by the City's Engineer.

P. All grading work shall be completed and all roads constructed to subgrade and lot corners are to be marked prior to the installation of water mains.

Q. The Contractor shall be responsible for locating and verifying the elevations of existing utilities prior to construction.

R. Contractor shall provide competent, suitably qualified personnel to survey, lay out and construct the work. Contractor shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the work or property at the site or adjacent therefore, all work at the site shall be performed during regular working hours and contractor will not permit overtime work or the performance of work on

Saturday, Sunday or any legal holiday without City's approval. A request to work outside regular working hours must be made two (2) working days prior to the time they propose to do this work.

S. The Developer's Engineer shall provide a complete set of Record Drawings (including private developments) upon completion of construction and they shall include the distance of the meter box to the nearest property line. This record drawing must be completed and submitted prior to acceptance of the water mains into the public system and any connections being made thereto. The Developer will furnish a recorded plat on mylar to the City Planner immediately after plat has been recorded. The Developer is to submit all approved Record Drawings and final plats on computer disks (dgn or dwg format).

T. Temporary construction water service may be provided from a metered fire hydrant after new lines have had preliminary pressure and leakage tests and satisfactory bacteriological results.

U. All proposed lot corners shall be field staked prior to construction of water lines.

V. The binder pavement shall be replaced prior to the final inspection unless approved otherwise by the City's Planner or City's Engineer.

W. When the developer completes the construction of all lines, a semi-final inspection will be held by the City and the Contractor. Upon completion of the "punch list" by the Contractor from this semi-final inspection, a final inspection with the Developer or his representative, the Contractor, the City, and the City's Engineer when requested by the City, will be held.

X. A one year warranty period will begin upon the date of acceptance of the project by the City.

Y. All excavated areas prone to erosion, in the opinion of the City or the City's Engineer must be sodded.

Z. All offsite work on all public or private properties including driveways must be restored to original condition or better.

II. PLAN SUBMITTALS

The plans must be submitted to the City Planner at City Hall. The Oak Grove Utility Committee meets the second Wednesday of each month. Plans must be received

two (2) weeks prior to a meeting to be considered at the meeting. The submittal should include, but not be limited, to the following:

A. 9 copies of the plan.

B. Specifications for items not contained herein.

C. Engineering reports including hydraulic calculations and design criteria used in sizing mains, pumping stations, and/or storage facilities.

D. Preliminary Plat

III. EASEMENTS

A. Water mains: When required, permanent easements must be provided with a minimum width of 10 feet and when a main is proposed in a developed area a minimum of 5 feet wide temporary construction easement on each side of the permanent easement must also be provided.

B. Easements for water line extensions may be provided in either of two (2) ways:

1. Easement Document on a form, provided or approved by the City, which must include legal description of the easement(s), legal Owner's name, map and parcel numbers, and must be signed by the Owner; and then notarized and recorded.

2. Record with Subdivision Plat: If this method of recording easements is chosen, a preliminary plat of the subdivision must be provided at the time of plans submittal, which clearly defines the easements to be recorded, along with a letter of intent from the Licensed Engineer or Licensed Surveyor who will stamp the final subdivision plat, assuring that easements will be recorded as shown on the preliminary plat.

I. Show all topographic features, such as driveways, pavement, rights-of-way, property lines, storm drainage structures, trees, etc.

J. Provide grading and drainage plans of subdivisions including typical section of roadway.

K. Provide detailed drawings for unusual conditions such as stream crossing, etc.

L. Water mains shall be a minimum of 8 inches in diameter unless specifically approved by the Utilities Department.

M. Fire hydrants shall be supplied by not less than a 6 in. diameter main installed on a looped system or by not less than an 8 in. diameter main if the system is not looped or the fire hydrant is installed on a dead-end main exceeding 300 ft. in length unless otherwise specifically approved by the Utilities Department.

N. Fire hydrants shall be installed at a spacing not to exceed 660 ft of vehicle travel distance.

O. The fire department shall approve the required fire flow and designate the location of hydrants so that at least one hydrant will be within 330 ft of any point of entry into the building.

P. Dead-end mains shall not exceed 600 ft in length for main sizes less than 10 in. in diameter.

Q. Water valves should generally be spaced a maximum of 1,000 feet along a water main and on all lines at each intersection.

R. Generally, the following locations should be utilized unless field conditions such as other utilities, etc. make it impractical to do so and the alternate location is approved by the City.

1. New Subdivisions – New mains to be in the right-of-way parallel to the property line unless approved otherwise by the City and shall not be located under sidewalks or pavement.

2. In older roads in existing subdivisions which have open ditches, the main shall be located in easements unless approved otherwise by the City.

3. Where underground electrical exists or is proposed, the water line must be located on the opposite side of the road.

4. Where gas lines exist or are proposed there must be at least 6 feet horizontal separation between the water line and gas line and a minimum 12 inches vertical separation between the two lines.

5. Where sewer lines exist or are proposed there must be at least 10 feet horizontal separation between the two lines.

S. On proposed transmission mains, air release at high points must be provided along the main where the elevation differential is in excess of 40 vertical feet and there are no connections.

T. The fire hydrant location in subdivisions must be approved by the Oak Grove Fire Department.

U. When water extensions are proposed in new subdivisions, provide Master or Preliminary Plat as approved by the Planning Commission.

V. Hydraulic calculations and data should be submitted for the proposed system including estimated flow demands, including both domestic and fire flows, based on State Design criteria and recommendations of the National Board of Fire Underwriter.

W. Clearly define which roads in proposed subdivisions are to be public and which are to be private. After plans have been approved by the City, they will be returned to the Developers Engineer for submittals to the Kentucky Division of Water. The Developer's Engineer will pay all state required fees.

V. PRECONSTRUCTION CONFERENCE

Before beginning any construction, the Developer shall contact the City and execute a contract with the City paying all fees as required. After this contract is executed and before beginning any construction, the Developer or his Engineer shall schedule a Preconstruction Conference to be held between the Contractor, Developer, Developer's Engineer, and the City and the City's Engineer. At this meeting, the Contractor will be informed of the City's policies and any special requirements. Listed below is a CHECKLIST of items relating to the project.

A. BEFORE Pre-Construction Conference:

1. Developer is to coordinate conference.

2. Developer, or his Engineer, is to have project plans approved by all Agencies.

3. Developer is to have a contract with the utility contractor, in order to determine the administration, engineering and inspection fees.

4. Developer to provide the City with a copy of Contractor's contract both off-site and on-site.

5. Contractor is to have shop drawings approved by the City's Engineer. The Developer shall retain one (1) copy and the City will retain two (2) copies. Shop drawings, including but not limited to, pipe, valves, and valve boxes, fittings, fire hydrants, corporation, meter box, and service pipe will not be reviewed unless they have been checked by the Contractor and the Developer's Engineer and stamped by both to indicate they meet the specifications. The City may waive this requirement on pump stations or plants.

6. Developer must sign contract with the City and produce a check to the City for tapping privilege fees and other administration fees (all Contracts are subject to final approval by Oak Grove's City Council).

B. Developer is to have at conference:

Plans that have been recommended for approval by the City's Engineer, and approved by the City and the Kentucky Division of Water and the State approval letter.

C. To Attend Conference:

1. The Developer.

2. The Developer's Engineer.

3. The Developer's Contractor.

4. City's Engineer.

5. City's Representative.

VI. ABILITY TO PERFORM

The Developer may be asked to establish to the satisfaction of the City that the Contractor, including all subcontractors, proposed to be used on any project which is to be approved by the City is one who has the ability to perform the Contract and meets at least the minimum standards set forth. Such factors as judgment, skill, and integrity will play an important part in the overall determination. Although additional criteria may be used, a responsible Contractor must at least:

a. Have adequate financial resources or the ability to secure such resources;

b. Have the necessary experience, organization, and technical qualifications and have or show proof that he can acquire the necessary equipment to perform the proposed Contract;

c. Be able to comply with all required performance schedules or completion dates, taking into account all existing commitments;

d. Have a satisfactory record of performance, integrity, judgment, and skills;

e. Be otherwise qualified and eligible to receive an award under the applicable laws and regulations; and

f. Maintain a permanent place of business.

The Developer may be required to furnish the City information sufficient to show that the proposed Contractor and it's subcontractors and supplies currently meet these minimum standards.

VII. FINAL INSPECTION

A. Before a final inspection is scheduled, the following must take place:

1. Developer must submit to the City's Engineers, the Contractor's "as-built" plan of the project to be inspected.

2. The City's Engineer will prepare a punch list of items that need attention.

3. When the list of deficiencies, if any, are corrected, the City Representative will arrange for the City's Engineer to set up a final inspection.

4. Binder pavement must be in place in road sections where sewer lines are installed.

5. A recorded plat on mylar shall be provided.

6. All other utilities have been installed.

7. After all deficiencies have been corrected, the City shall send the Developer a letter stating their approval.

VIII. ANNUAL INSPECTION

Approximately twelve (12) months following acceptance of the water line, a follow-up inspection will be made to determine if any failures/deficiencies have occurred as

a direct result of the Contractor's work and/or materials. Present at this inspection will be a Representative(s) of the City, the City's Engineer and the Developer and/or Contractor. The Developer and/or Contractor will be responsible for correction of all failures/deficiencies that have occurred during the first year after acceptance.

IX. JOBSITE SAFETY

Neither the professional activities of the A/E, nor the presence of the A/E or his or her employees and subconsultants or the City's personnel at a construction site, shall relieve the General Contractor and any other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. Neither the A/E nor the City and their personnel have authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The City agrees that the General Contractor is solely responsible for jobsite safety. The City also agrees that the City, the A/E, and the A/E's consultants shall be indemnified and shall be made additional insureds under the General Contractor=s general liability insurance policy.

X. STANDARDS FLEXIBILITY

Interpretations of These Standards and Design Criteria

Interpretations of these Standard Specifications or the determination of any other standards and design criteria not covered under these Standards shall be at the discretion of the City's Engineer. The decision of the City's Engineer shall be based on past practices, traditional policies, widely accepted professional principles and practices of the industry.

CITY OF OAK GROVE
INSTALLATION OF FIRE HYDRANTS

1. Connect fire hydrants only to water mains adequately sized to handle fire flows (8 inch or larger).
2. Install hydrants as plumb as possible.
3. Install hydrants away from the curbs far enough to avoid damage from vehicles as they turn. The recommended setback is 2 feet minimum from the curb to the point on the hydrant nearest to the curb.
4. The pumper outlet nozzle should face the street in order to provide a quick connection to the fire trucks.
5. The center of a hose outlet shall be not less than 18in. (457mm)above final grade There should be no obstructions that prevent or retard hydrant operation or hinder removal of outlet nozzle caps.
6. Always install an auxiliary valve between the hydrant and the main supply to permit isolation of the hydrant for maintenance purposes.
7. Provide thrust restraint for the auxiliary valve so that the hydrant may be removed without shutting down the main.
8. Remove foreign matter from the hydrant lead before installing the auxiliary valve and hydrant.
9. Locate the auxiliary valve as close to the main as possible.
10. When setting a hydrant use a firm footing, such as stone slab or concrete base on firm ground, to prevent settling and strain on the hydrant lead joints.
11. Provide for thrust restraint of the hydrant by strapping, blocking, threaded rod, or using a restraining type of joint.
12. When pouring thrust blocks for dry-barrel hydrants with drains, exercise care not to plug or block drain holes.
13. Install traffic hydrants with extra care to ensure there is adequate soil resistance to avoid transmitting shock to the hydrant's lower barrel and hydrant inlet. In loose or poor load bearing soil it is suggested that a concrete collar, about 6 inches thick, with a diameter of 2 feet, be installed around the hydrant lower barrel at or near the ground line.
14. When installing hydrants on PVC mains, the hydrant lead will be made of the same material as the main.
15. Hydrant spacing is usually 800 feet in closely built areas, 500 feet or less is realistic. The Fire Chief will determine the spacing on case-by-case bases.

16. Provide for drainage from dry-barrel hydrants. Excavate the area around the hydrant base, then place about 1/3 yard of clean stone to level of 6 inches above the drain outlet. The stone should extent at least 1 foot on all sides of the hydrant.

17. In areas where there is no curd exists, use a setback of 3 feet or other means to protect the hydrants from the traffic, always being sure that the hydrant is accessible to fire fighting equipment.

18. Hydrants must be highly visible and unobstructed at all times. Hydrants should be painted with colors that are easily visible both day and night.

19. Hydrants installed as part of a new main construction can be disinfected by opening and closing the main valve during disinfections of the main. The hydrant should be flushed after the disinfections of the main valve to remove the high concentration of chlorine solution.

20. Hydrants installed on a existing main should be disinfected before installation. This may be accomplished by spraying a solution of 300mg/l chlorine into the hydrant inlet and through the outlet nozzle openings. The chlorine should be flushed from the hydrant immediately after installation.

21. Foreign material may have been left in the newly laid lines or hydrant leads. After backfilling and before disinfecting the main, operate the hydrant to flush out any foreign material.

22. Hydrants shall be placed at least 40 ft (12.2m) from the buildings protected by the hydrant.

Gregory Bequette
Fire Chief
O.G.V.F.D.

Standard Sanitary Sewer Bid Item Descriptions

THESE BID ITEM DESCRIPTIONS SHALL SUPERCEDE ANY BID ITEM DESCRIPTIONS CONTAINED IN UTILITY OWNER SUPPLIED SPECIFICATIONS PROVIDED ELSEWHERE IN THIS PROPOSAL.

S BYPASS PUMPING This item shall include all labor, equipment, and materials needed to complete a bypass pumping and/or hauling operation for diversion of sewage during sanitary sewer construction. Examples of such operations when bypass pumping and/or hauling may be necessary during force main tie-ins, manhole invert reconstruction, insertion of new manholes into existing mains, or other similar construction. There may be more than one bypass pumping/hauling operation on a project. This item shall be paid for each separate bypass pumping/hauling operation occurrence as called out on the plans or directed by the engineer and actually performed. There will be no separate bid items defined for length, duration, or volume of sewage pumped or hauled in each occurrence. If a bypass pumping/hauling operation is called out on the plans, but conditions are such that the bypass pumping/hauling operation is not needed or utilized, no payment will be made under this item. The contractor shall draw his own conclusions as to what labor, equipment, and materials may be needed for each bypass pumping/hauling occurrence. The contractor should be prepared to handle the maximum volume of the sewer being bypassed, even during a storm event. This item shall not be paid separately, but shall be considered incidental, when bypass pumping and/or hauling is needed during cast-in-place-pipe (CIPP) and/or point repair operations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S CIPP LATERAL SERVICE INVESTIGATION This item shall include all equipment, materials, labor, and incidentals necessary to enter the sewer, in compliance with all safety/confided space requirements to perform the identification, assessment, and pre-measurement of all existing and abandoned laterals for the placement of Cured-In-Place-Pipe lining. This item shall be payment for all lateral service investigation for all sewer segments to be lined as a part of this contract. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be LUMP SUM (LS).

S CIPP LATERAL REINSTATEMENT This item is to pay for installing a Cured-In-Place-Pipe liner in service laterals and service/mainline connections to stabilize structural defects and construction inadequacies. This bid item shall include all labor, equipment, materials and incidentals necessary to perform the service lateral reinstatement, in accordance with the plans and specifications. Work under this item shall include bypass pumping, sewer flow control, pre-installation cleaning, sealing connections to existing sewer main, pre- and post- construction CCTV inspection, and final testing of the CIPP system. This item shall also include the "top hat" required by the specifications. All CIPP lateral reinstatements shall be paid under this item, regardless of the size or length of reinstatement. No separate bid items of varying sizes or length of CIPP lateral reinstatement will be provided in the contract. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each CIPP lateral reinstatement, complete and ready-for-use.

S CIPP LINER This item is to pay for rehabilitation of existing sanitary sewers using the Cured-In-Place-Pipe method. This bid item description applies to all CIPP sizes included in the contract. All CIPP Liner items, of all varying sizes, shall include all labor, materials, customer notification, testing, necessary permits,

ingress and egress procedures, bypass pumping, pre-construction video, sediment and root removal, dewatering, traffic control, erosion and sediment control, excavation pits, removal and replacement of manhole frames and covers as necessary to facilitate the lining work, sealing at manholes and service connections, clearing and grubbing, pipeline cleaning, re-cleaning, video inspection as many times as necessary, debris collection and disposal, root removal, pre- and post-construction video inspection, all digital inspection footage, final report preparation and approval, the cost of potable water from the Owner, required compliance tests, site restoration, site cleanup, sealing of liner at manholes, acceptance testing, and all other rehabilitation work and incidentals not included under other pay items, necessary to complete the rehabilitation per the plans and specifications. There will be no separate payment for acceptance testing of the lined pipe but shall be considered incidental to this item. Pay under this item shall be by each size bid in the contract. Pay measurement shall be from center of manhole to center of manhole. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S CIPP PROTRUDING LATERAL REMOVAL This item includes all equipment, materials, labor, and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements, remove a sufficient amount of the protruding tap to insure a proper and safe Cured-In-Place-Pipe lining insertion, and perform pre-installation CCTV. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each protruding lateral removed.

S CONCRETE PIPE ANCHOR This item shall be constructed on the sewer pipe at the locations shown on the plans, in accordance with sanitary sewer specifications and standard drawings. Payment for concrete anchors will be made at the contract unit price each, in place, complete and ready-for-use. Each concrete anchor of sewer pipe or force main shall be paid under one bid item per contract regardless of the sizes of carrier pipe being anchored in the contract. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open-cut for the installation of force main or gravity sewer under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore, whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore, when specified, to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract, regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT CONCRETE This item includes all labor, equipment, excavation, concrete, reinforcing steel, backfill, restoration, etc. to construct the concrete encasement of the sewer or force main, as shown on the plans and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe, as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasements shall be paid under one bid item, included in the contract, regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of

pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

S ENCASEMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement, in accordance with the plans and specifications, complete and ready-for-use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately, but shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open-cut install the encasement, in accordance with the plans and specifications, complete and ready-for-use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately, but shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN This item description shall apply to all PVC, ductile iron, and polyethylene/plastic pipe bid items of every size and type, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test stations (if required by specifications), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, backfill, etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and

proposed pavement, and wherever else specified on the plans or in the specifications. This item shall also include pipe anchors on polyethylene pipe runs, as shown on the plans or required by the specifications, to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN AIR RLS/VAC VLV This item description shall apply to all force main air release/vacuum valve installations of every size, except those defined as "Special".
This item shall include the air release/vacuum valve, main to valve connecting line or piping, manhole/vault/structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill, and restoration required to install the air release/vacuum valve at the location shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. All air release/vacuum valves on a project shall be paid under one bid item, regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release/vacuum valve would a separate bid item be established. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open-cut for the installation of sewer or force main under streets, buildings, creeks, etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore, whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore, when specified, to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract, regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the location shown on the plans. This bid item is to be used when the existing pipe material is to be reused when relocating an existing force main at point locations, such as to clear a conflict at a proposed drainage structure, pipe, or any other similar short relocation situation. The contractor shall provide any additional pipe or fitting material needed to complete the work as shown on the plans and specifications. The materials provided shall be of the same type and specifications as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case-by-case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation, as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically, regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Force Main Relocate shall not be paid on a linear feet

basis, but shall be paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

S FORCE MAIN TAP SLEVE/VALVE RANGE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready-for-use, in accordance with the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Range 1 = All live tapped main sizes up to and including 8 inches
Range 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN TIE-IN This item description shall be used for all force main tie-in bid items of every size, except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, testing, and backfill required to make the force main tie-in as shown on the plans and in accordance with the specifications, complete and ready-for-use. This bid item shall include purge and sanitary disposal of any sewage from any abandoned segments of force main. Pipe for tie-ins shall be paid under separate bid items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Plugging of existing abandoned mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

S FORCE MAIN VALVE This item description shall apply to all force main valves of every size required in the plans and specifications, except those bid items defined as "Special". Payment under this description is to be for gate or butterfly force main valves being installed with new force main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specification), restoration, testing, etc., required to install the specified valve at the location shown on the plans, in accordance with the specifications and standard drawings, complete and ready-for-use. If required on plans and/or proposed adjoining DIP is restrained, force main valves shall be restrained. Force main valve restraint shall be considered incidental to the force main valve and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN VALVE BOX ADJUST This item includes all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, etc., to adjust the top of the force main valve box to finished grade, complete and ready-for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LAMPHOLE Payment under this item is for the installation of a lamphole along or at the end of a gravity sewer pipe for inspection and cleaning of a sewer pipe. Lampholes shall include, but are not limited

to bends, tees, vertical pipe, casting, any other materials specified, excavation, backfilling, air testing, restoration, and cleanup in accordance with the plans, specifications, and standard drawings, complete and ready-for-use. Payment shall be made under this bid item regardless of lamphole size. No separate pay items will be established for size variations. All materials shall be new and unused. No additional compensation will be paid for lamphole height variations. All vertical pipe required to construct the lamphole, regardless of height, shall be considered incidental to this item. No additional payment will be made for rock excavation. Cleanouts on pipes 6 inches or less are not considered lampholes and are not to be paid under this item. Only lampholes on pipes 8 inches or larger are to be paid under this item. Cleanouts on pipes 6 inches or less are to be paid under pay item S LATERAL CLEANOUT. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL CLEANOUT This item shall be for payment for installation of a cleanout in a service lateral line. This item shall include furnishing and installation of a tee, vertical pipe of whatever length required, and threaded cap. The cleanout shall extend from the lateral to final grade elevation. The size of the cleanout shall be equivalent to the size of the lateral. The cleanout materials shall meet the same specification as those for the lateral. The cleanout shall be installed at the locations shown on the plans or as directed by the engineer. Only one pay item shall be established for cleanout installation. No separate pay items shall be established for size or height variations. Payment under this item is for cleanouts on pipe of 6 inches or less. Cleanouts on pipes of 8 inches or greater are considered lampholes and shall be paid under the S LAMPHOLE bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL LOCATE This item description is to pay for all labor, equipment, and materials needed in locating an existing sanitary sewer service lateral for tie-in of the lateral to new mainline sewers and/or for the relocation of a lateral. This bid item shall be inclusive of all methods and efforts required to locate the lateral for tie-in or relocation of the lateral. Locating methods to be included under this item shall include, but are not limited to those efforts employing the use of video cameras from within an existing sanitary sewer main or lateral, electronic locating beacons and/or tracers inserted into the sanitary sewer main or lateral, careful excavation as a separate operation from mainline sewer or lateral excavation, the use of dyes to trace the flow of a lateral, or any combination of methods required to accurately locate the lateral. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S LATERAL LONG SIDE This item description shall apply to all service lateral installations of every size up to and including 6-inch internal diameter, except those lateral bid items defined as "Special". This item includes the specified piping material, main tap, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready-for- use. This bid item is to pay for service lateral installations where the ends of the lateral connection are on opposite sides of the public roadway. The new lateral must cross the centerline of the public roadway to qualify for payment as a long side lateral. The length of the service lateral is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service lateral across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL SHORT SIDE This item description shall apply to all service lateral installations of every size up to and including 6-inch internal diameter, except those lateral bid items defined as "Special". This item includes the specified piping material, main tap tee, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready- for-use. This bid item is to pay for lateral installations where both ends of the lateral connection are on the same side of the public roadway, or when an existing lateral crossing a public roadway will remain and is being extended, reconnected, or relocated, with all work on one side of the public roadway centerline as shown on the plans. The length of the service lateral is not to be specified and shall not be restricted to any minimum or maximum length. Placement of a service lateral across a private residential or commercial entrance along shall not be reason to make payment under this item Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LINE MARKER This item is for payment for furnishing and installing a sewer utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

S MANHOLE Payment under this item is for the installation of new 4-foot interior diameter sanitary sewer manhole. Payment for manholes will be at the contract unit price, in-place, complete and ready-for-use at the locations shown on plans, in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup, in accordance with the specifications and standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused when available and shall be considered incidental to this item. When an existing casting is unavailable or a new casting is specified on plans or elsewhere in the contract, a new casting shall be paid as a separate bid item. Anchoring of a casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. In cases where a manhole is to be located within a grade-sensitive area such as roadway pavement, sidewalks, shared-use-paths, etc., the final casting grade given on plans shall be considered approximate. Any readjustment of a manhole casting to meet field conditions shall be incidental to this item. No additional payment shall be made for casting adjustments on new manholes. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ABANDON/REMOVE Payment under this item is for the full or partial removal, disposal, and/or filling of any sanitary sewer manhole, regardless of size or depth, that no longer serves any purpose. All manholes partially removed shall be removed to a point at least 12 inches below final grade, 12 inches below roadway subgrade, or 12 inches clear of any other underground infrastructure, whichever is lowest. If partial removal of an abandoned manhole is elected, the remaining manhole structure shall be filled with flowable fill. Flowable fill shall be considered incidental to this bid item. Plugging of pipes entering and exiting within an abandoned manhole that is left in place partially or in whole shall be considered incidental to this item. All sanitary sewer castings shall be salvaged and securely stockpiled for reuse on new sanitary sewer manholes. Salvage of manhole castings for reuse on the project shall be considered incidental to this

bid item. Any casting that is not needed for reuse, is not reusable, or is directed by the engineer not to be reused shall be disposed of by the contractor. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Plugging or safeloading of pipes required at locations outside of manholes when manholes are removed in total shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications for Road and Bridge Construction, using Bid code 01314, Plug Pipe.

S MANHOLE ADJUST TO GRADE Payment under this item is for the adjustment of sanitary sewer casting elevation on all sizes of existing sanitary manholes. This work shall be performed in accordance with the sanitary sewer specifications. Payment shall be made under this bid item regardless of the amount of adjustment necessary to a sanitary sewer manhole casting or diameter of the manhole. Work under this pay item may be as simple as placing a bed of mortar under a casting, but shall also be inclusive of installation of adjusting rings, and /or addition, removal, or replacement of barrel sections. The existing casting is to be reused unless a new casting is specified on the plans. New casting, when specified, shall be paid as a separate bid item. Anchoring of the casting shall be incidental to this item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE CASTING STANDARD Payment under this item is for the furnishing of a new, standard, traffic-bearing casting for sanitary manholes that meets the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE CASTING WATERTIGHT Payment under this item is for the furnishing of a new, watertight, traffic-bearing casting for sanitary manholes that meets the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE OVERSIZED Payment under this item is for the installation of a new manhole greater than the standard 4-foot interior diameter. Payment for oversized manholes will be made at the contract unit price in-place, complete and ready-for-use at the locations shown on plans, in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup, in accordance with the specifications and standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused when available and shall be considered incidental to this item. When an existing casting is unavailable or a new casting is specified on plans or elsewhere in the contract, a new casting shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. In cases where a manhole is to be located within a grade-sensitive area such as roadway pavement, sidewalks, shared-use-paths, etc., the final casting grade given on plans shall be considered approximate. Any readjustment of a manhole casting to meet field conditions shall be incidental to this item. No additional payment shall be made for casting adjustments on new manholes. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE RECONSTRUCT INVERT This item is to pay for all labor, equipment, and material for

the rework of an existing manhole bench to redirect or eliminate flow, such as when the flow of a pipe or pipes are being removed or redirected. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in elimination or redirect of flow. This item shall also include providing and placement of a rubber seal or boot, as required by utility specifications, standard drawings, or plans. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. No payment shall be made under this bid when MANHOLE TAP EXISTING or MANHOLE TAP EXISTING ADD DROP are being paid at the same location, as this type of work is included in those items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING This item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each core opening added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING ADD DROP This item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base and one opening in a manhole wall for cleanout, addition of rubber seals as specified, addition of a vertical drop pipe to the outside of the manhole, placement of reinforcing steel and concrete to encase vertical pipe, and rework of the manhole bench to direct the additional pipe flow. This bid item shall be paid for each drop added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, standard drawings, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH DROP Payment under this item is for the installation of new 4-foot interior diameter sanitary sewer manhole with drop. Payment for drop manholes will be made at the contract unit price, in-place, complete and ready-for-use at the locations shown on plans, in accordance with specifications, and standard drawings. Drop manholes shall include concrete base, barrel sections, drop materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting salvaged from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH LINING Payment under this item is for the installation of a new 4-foot interior

diameter sanitary sewer manhole with corrosion-resistant lining. Payment for manholes with lining will be made at the contract unit price, in-place, complete and ready-for-use at the locations shown on plans, in accordance with specifications, and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, lining, excavation, backfilling, air testing, restoration, and cleanup. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH TRAP Payment under this item is for the installation of a new manhole with trap. Payment for trap manholes will be made at the contract unit price each, in-place, complete and ready-for-use at the locations shown on plans, in accordance with specifications, and standard drawings. Trap manholes shall include concrete base, manhole structure and trap materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. All materials, except casting, shall be new and unused. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be made for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S PIPE This item description shall apply to all gravity and force-main sewer pipe bid items, of every size and type of material 8 inches internal diameter and larger, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, tap tees and couplings for joining to existing similar or dissimilar pipes), polyethylene wrap (if required by specification), labor, equipment, excavation, bedding, backfill, restoration, pressure or vacuum testing, temporary testing materials, video inspection, etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings, complete and ready-for-use. This bid item shall include material and placement of flowable fill under existing and proposed pavement, and wherever specified on the plans or in the specifications. No additional payment will be made for rock excavation. Measurement of quantities under this item shall be through fittings and encasements to a point at the outside face of manhole barrels, or to the point of main termination at dead ends or lampholes. Carrier pipe placed within an encasement shall be paid under this item and shall include casing spacers and end seals. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PIPE POINT REPAIR This item is to be used to pay for repair of short lengths of existing sanitary sewer pipe that, through prior video inspection or other means, are known to have pre-existing failure. Pipe Point Repair may be needed in preparation for installation of cured-in-place-pipe (CIPP) lining, or other instances where failure is known and repair is prudent. The size of pipe shall not be defined in separate bid items. All diameter sizes of point repair shall be paid under this one item. The materials to be used to make the repair shall be as defined on the plans or in the specifications. This bid item shall include all excavation, pipe materials, joining materials to connect old and new pipe, bedding, and backfill to complete the repair at the locations shown on the plans or as directed by the engineer, complete and ready-for-use.

This bid item shall include bypass pumping when required. Measurement shall be from contact point to contact point of old and new pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PUMP STATION This item is for payment for installation of sanitary pump stations, including above or below ground structures for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready- for-use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LUMP SUM (LS) for each when complete.

S STRUCTURE ABANDON This item is to be used to pay for abandonment of larger above or below ground sewer structures such as air release/vacuum valve vaults, pump stations, tanks, etc. Payment under this item shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item but shall be considered incidental to sewer construction (i.e., abandonment of standard air release/vacuum valves, up to and including 2 inches, would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in place and complete restoration. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Manhole abandonment shall not be paid under this item but shall be paid under the bid item S MANHOLE ABANDON/REMOVE.

S STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground sewer structures, such as air release/vacuum valve vaults, pump stations, tanks, etc. Payment under this item shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item but shall be considered incidental to sewer construction (i.e., removal of standard air release/vacuum valves and their structures, up to and including 2 inches, would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and complete restoration. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Manhole removal shall not be paid under this item but shall be paid under the bid item S MANHOLE ABANDON/REMOVE.

SPECIFICATIONS FOR
CONTRACT 135-2021-01

SANITARY SEWER UTILITY RELOCATIONS FOR KY911 WIDENING IN OAK GROVE, PHASE 2 (DOD RAILROAD TO KY 115)

HOPKINSVILLE WATER ENVIRONMENT AUTHORITY
HOPKINSVILLE, KENTUCKY

March 2022

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135-2021-01 (03/2022)

INDEX
SPECIFICATIONS FOR
CONTRACT 135-2021-01
SANITARY SEWER UTILITY RELOCATIONS
FOR KY 911 WIDENING IN OAK GROVE,
PHASE 2 (DOD RAILROAD TO KY115)
HOPKINSVILLE WATER ENVIRONMENT AUTHORITY
HOPKINSVILLE, KENTUCKY

135-2021-01 (03/2022)

END

135-2021-01 (03/2022)

SECTION 00820

SPECIAL CONDITIONS

1. DESCRIPTION OF THE WORK; DESIGNATION OF OWNER AND ENGINEER

1.1 These Specifications and the accompanying Drawings describe the work to be done and the materials to be furnished for the construction of Contract 135-2021-02, Sanitary Sewer Utility Relocations for KY911 Widening in Oak Grove, Phase 2 (DOD Railroad to KY115), Hopkinsville Water Environment Authority, Hopkinsville, Kentucky.

1.2 All references to the OWNER in these Specifications, Contract Documents and Drawings shall mean the Hopkinsville Water Environment Authority.

1.3 All references to the ENGINEER in these Specifications, Contract Documents and Drawings shall mean Bell Engineering.

2. AVAILABLE FUNDS

2.1 The attention of all Bidders is directed to the fact that funds will be made available for the award of this Contract from the following source:

Kentucky Transportation Cabinet (KYTC) Transportation Funds

3. TIME OF COMPLETION

3.1 The time allowed for completion of this Contract and/or portions thereof shall be as provided in the KYTC contract.

3.2 The time allowed for completion shall begin at midnight, local time, 10 calendar days from the date on which the OWNER, or his authorized representative, the ENGINEER, shall instruct the CONTRACTOR in writing to start work. In case of awarding more than one Contract to a CONTRACTOR, periods of construction are not additive, but will run concurrently. The same applies to divisions within a Contract.

4. LIQUIDATED DAMAGES

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

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

135-2021-01 (03/2022)

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

4.4 Liquidated damages are fixed at the following amounts per calendar day of overrun beyond the date set for completion or authorized extension thereof for each of the Contracts, divisions, sections, or combinations thereof:

Liquidated damages shall be as set in the KYTC contract.

5. METHOD OF BIDDING

5.1 The Form of Proposal and the Project are in 1 Contract and shall be bid by unit price, the sum of extension of unit prices determining the amount of the bid. The sum of the unit price extensions shall cover the complete construction of the work as estimated, planned and specified.

5.2 The CONTRACTOR must bid all divisions and all listed unit price items and/or lump sums to complete a Contract. The OWNER will not award the work on divisions or sections within a Contract separately. Each Contract shall be bid separately and in full on the Form of Proposal provided.

5.3 In the case of major equipment item bidding, the CONTRACTOR must bid the base bid item.

5.4 The OWNER reserves the right, should financing considerations require or allow, to delete or add physical units to the unit price items bid. However, the monetary value of such deletions or additions shall not exceed 25 percent of the total amount bid for the Contract without specific approval of the CONTRACTOR.

5.5 If deletions or additions are made, comparison of bids will be made on the basis of portions of the Contract to be awarded and not on the total of the base bid made by the CONTRACTOR.

6. MINIMUM WAGE RATES

6.1 Minimum wage rates shall be as determined by the KYTC.

7. SALES AND USE TAX

7.1 Sales and Use Tax shall be as determined by the KYTC.

8. EXCAVATION

8.1 It is to be specifically noted that no separate payment for solid rock excavation will be made under this Contract. All excavation shall be considered

unclassified, and payment for same included in the appropriate furnishing and laying or other items containing excavation.

9. PERMISSION TO USE PROPERTY OTHER THAN THAT PROVIDED BY OWNER

9.1 Should the CONTRACTOR desire or elect to use, pass over and/or encroach on private property other than that provided by the OWNER, either by fee simple title or right-of-way for a specific purpose, he shall obtain such rights and permission from the individual property owner at his own expense and risk.

10. EXTRA FILL MATERIAL

10.1 Extra fill material required to complete the finished grading to the line and grade shown on the Drawings shall be obtained by the CONTRACTOR at no extra cost to the OWNER above that included in his lump sum bid.

11. USE OF SPECIALS IN VERTICAL PLANE OPTIONAL

11.1 Where specials (fittings) are shown at change in grade of pipeline, the CONTRACTOR, at his option, may use fittings as shown with blocking, or he may, where possible without exceeding maximum allowable deflection in pipe joints, avoid the use of specials at grade changes, by increasing the trench depth, provided the pipe installed to such extra depth is designed to withstand the extra depth cover and the maximum internal pressure specified. No additional compensation will be given for installing the pipe at an extra depth to avoid the use of fittings and thrust blocking.

12. ACCESS TO THE WORK

12.1 The representatives of the OWNER, the ENGINER, and KYTC shall have access to the work wherever it is in preparation or progress, and the CONTRACTOR shall provide proper facilities for such access and inspection.

13. ELECTRICAL SERVICE TO SEWAGE PUMPING STATION

13.1 It shall be the CONTRACTOR'S responsibility to coordinate electrical service to the sewage pump station. All costs to provide electrical service to the sewage pumping station shall be included in the CONTRACTOR'S bid.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02110

SITE CLEARING AND GRUBBING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Furnish all labor and equipment required and perform all clearing, grubbing and stripping of topsoil complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Earth and rock work shall be in accordance with the specifications of the KYTC.

1.03 SUBMITTALS

A. None required for this Section.

PART 2 PRODUCTS

None in this Section.

PART 3 EXECUTION

3.01 GENERAL

A. The proposed building sites, paved areas, areas designated for ditches and channel changes, borrow pits, etc., (except any portions thereof that may be reserved) shall be cleared of all trees, timber, brush, stumps, rubbish and other debris. All this material, unless otherwise specified, shall be removed and disposed of away from the site.

B. Open burning is not allowed on this project.

C. Where clearing is to be done, stumps shall be grubbed where embankments are less than 5 feet in height, where the profile indicates excavation, in all areas designated for the construction of other facilities and in borrow areas. In all other areas the stumps may be cut off even with the ground. In areas to be grubbed, all stumps and roots must be removed.

D. No debris will be allowed to be left under or in the embankments.

E. In felling trees near tracks, structures and wire lines, necessary precaution must be exercised in order to prevent damage to wire lines, structures, the facilities of others, or obstruct tracks.

F. No extra payment for clearing and grubbing shall be included in the lump sum bid.

135-2021-01 (03/2022)

3.02 TREES

A. Trees (3-inch caliper and larger) shall not be disturbed by construction without written permission from the OWNER, except in those areas to be cleared. Trees disturbed by construction shall be replaced by the CONTRACTOR with same size and type at no additional cost to the OWNER.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02140

DEWATERING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Furnish all labor and equipment required to dewater all excavations. Dewatering of all excavations shall be the responsibility of the CONTRACTOR, and no additional compensation will be allowed for same unless specifically included as a bid item.

B. Leaking pipes and structures are to be anticipated on this project. For this reason, no additional payment will be made for dewatering associated with leakage from any existing facility.

1.02 RELATED WORK

A. Crushed stone and DGA are included in Section 02235.

B. Erosion and sedimentation control is included in the roadway contract.

1.03 SUBMITTALS

A. None.

PART 2 PRODUCTS

None in this Section.

PART 3 EXECUTION

3.01 GENERAL

A. Dewatering equipment shall be of adequate size and quantity to assure maintaining proper conditions for installing pipe, concrete, backfill or other material or structure in the excavation. Dewatering shall include proper removal of any and all liquid, regardless of source, from the excavation and the use of all practical means available to prevent surface runoff from entering any excavation.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02235

CRUSHED STONE AND DENSE GRADED AGGREGATE (DGA)

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish and install crushed stone aggregates and DGA as indicated on the Drawings and/or required in the Specifications for such uses as surfaces and/or bases of roads, parking areas and walkways; temporary and permanent traffic bound surfacing over trenches; permanent traffic bound roadway surface maintenance; replacement of unsuitable material; and other miscellaneous applications required in the work.

B. Various sizes, types and quality of crushed stone aggregates are specified in this Section depending on applicability which may be specified in detail in other sections of these Specifications.

C. The ENGINEER may require the use of crushed stone aggregates for purposes other than those specified in this or other Specification sections if such use is advisable in his opinion. Payment for crushed stone aggregate shall be by negotiation unless agreed pricing has been previously established.

1.02 RELATED WORK

A. Dewatering is included in Section 02140.

1.03 SUBMITTALS

A. Testing Service shall submit required test reports directly to the ENGINEER with copy to CONTRACTOR.

PART 2 PRODUCTS

2.01 MATERIALS

A. intended use in accordance with Section 805 of the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction.

B. Unless otherwise referred to on the Drawings or in these Specifications, crushed stone aggregate shall be graded size No. 57 according to the table below.

C. When referred to on the Drawings or in these Specifications, dense graded aggregate (DGA) shall have a sand equivalent value of not less than 25 and shall be graded according to the table below.

D. Coarse aggregate gradations referred to by number size on the Drawings or in these Specifications shall conform to the following table (as copied from the above Kentucky Transportation Cabinet Specifications, Table 805.07, 1994 Edition):

135-2021-01 (03/2022)

TABLE I - SIZES OF COARSE AGGREGATES - KENTUCKY

Size	Max. Size Square Openings (1)	AMOUNTS FINER THAN EACH LABORATORY SIEVE (SQUARE OPENINGS) PERCENTAGE BY WEIGHT																	
		100 (4)	90 (3 1/2)	75 (3)	63 (2 1/2)	50 (2)	37.5 (1-1/2)	25 (1)	19 (3/4)	12.5 (1/2)	9.5 (3/8)	4.75 (No. 4)	2.36 (No. 8)	2 (No. 10)	1.18 (No. 16)	600 (3) (No. 30)	425 (3) (No. 40)	150(3) (No. 100)	75 (3) (No. 200)
1	90 (3 1/2)	100	90-100		25-60		0-15		0-5										
2	63 (2 1/2)			100	90-100	35-70	0-15		0-5										
23	63 (2 1/2)			100		40-90		0-15		0-5									
3	50 (2)				100	90-100	35-70	0-15		0-5									
357	50 (2)				100	95-100		35-70		10-30		0-5							
4	37.5 (1-1/2)					100	90-100	20-55	0-15		0-5								
467	37.5 (1-1/2)					100	95-100		35-70		10-30	0-5							
5	25 (1)						100	90-100	20-55	0-10	0-5								
57	25 (1)						100	95-100		25-60		0-10	0-5						
610	25 (1)						100	85-100		40-75		15-40							
67	19 (3/4)							100	90-100		20-55	0-10	0-5						
68	19 (3/4)							100	90-100		30-65	5-25	0-10		0-5				
710	19 (3/4)							100	80-100		30-75	0-30							
78	12.5 (1/2)								100	90-100	40-75	5-25	0-10		0-5				
8	9.5 (3/8)									100	85-100	10-30	0-10		0-5				
9-M	9.5 (3/8)									100	75-100	0-25	0-5						
10	4.75 (No. 4)										100	85-100						10-30	
11	4.75 (No. 4)										100	40-90	10-40					0-5	
DGA(2)	19 (3/4)							100	70-100		50-80	30-65				10-40			2-10
GRAVEL BASE(2)	37.5 (1-1/2)					100						25-65					6-30	5-20	
CSB(2)	50 (2)				100		90-100		60-95		30-70	15-55				5-20			0-8

(1) Nominal size in mm (inches), unless otherwise shown (2) Gradation performed by wet sieve KM 64-420 (3) micrometers

E. Testing

1. Unless otherwise required in this Section, the ENGINEER shall determine the tests required for crushed stone aggregates according to Section 805. The CONTRACTOR shall be responsible, initially and periodically at no cost to the OWNER, to deliver materials proposed for use or being used in the work to a testing laboratory selected by the OWNER. This provision shall apply to any other aggregate tests required in this Section.

2. The KYTC shall be responsible to pay the laboratory testing costs. However, once a material has been tested and accepted for use, the CONTRACTOR shall be responsible throughout the job to use materials which are equal in all respects and from the same source as that accepted material delivered to the testing laboratory.

3. The CONTRACTOR shall pay for additional tests ordered by the ENGINEER after acceptance of tested materials when such tests show the quality of materials has become deficient or when the CONTRACTOR requests a change of material supplier and/or source.

4. The ENGINEER shall request tests on Form HKB DE-16 "Requisition for Material and Design Mix Tests."

135-2021-01 (03/2022)

PART 3 EXECUTION

3.01 INSTALLATION

A. Compacted Crushed Stone Aggregate

1. Crushed stone shall be placed in uniform layers not greater than 6 inches deep and shaped by power equipment to required lines, grades, cross connections, and depths. No minimum compacted density, method of compaction, or compaction equipment is required since a nominal amount of compaction effort with vibration can establish the desired intergranular locking of the aggregate under controlled placement depth. Acceptable compaction can be achieved with pneumatic-tired and tracked equipment and rollers.

2. All compaction operations shall be performed to the satisfaction of the ENGINEER.

3. Crushed stone shall be placed in those areas as shown on the Drawings and as may be directed by the ENGINEER.

B. Compacted Dense Graded Aggregate (DGA)

1. Dense graded aggregate shall be plant mixed with water, transported in such a manner as to deliver the mix to the project without loss or segregation, spread, and compacted to produce a density throughout not less than 84 percent of solid volume. Minimum dry density for compacted limestone DGA shall be 139 pounds per cubic foot when S.G. of limestone is 2.65.

2. Density tests shall be required in such number as determined by the ENGINEER. Density tests shall be made by the sand cone method or by nuclear gauges. The CONTRACTOR shall furnish all necessary labor, equipment and materials for making the density tests under observations of the ENGINEER.

3. In the event compacted material does not meet the required density of an area, the CONTRACTOR shall either continue compaction efforts or rework the entire area until the required density is obtained. If material has to be removed and reworked, the ENGINEER shall determine if removed material can be remixed and used again for fill.

4. All compacted DGA fill shall be included in the CONTRACTOR'S lump sum bid unless otherwise indicated on the Drawings.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02326

STEEL COVER PIPE

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Steel cover pipe shall be furnished and installed as shown on the Drawings and specified herein.

1.02 RELATED WORK

A. Sewer and Drain Pipe is specified in Section 02700.

B. Pressure pipe is specified in Section 02610.

PART 2 PRODUCTS

2.01 STEEL COVER PIPE

A. Steel cover or jack pipe shall be plain end steel pipe with minimum yield strength of 35,000 psi and tensile strength of 60,000 psi per API-5L Grade B, ASTM A252 Grade 2, ASTM A139 Grade B, ASTM A135 Grade B, ASTM A106 Grade B, and ASTM A53 Grade B material. The steel pipe supplied shall be manufactured by the seamless, electric resistance weld, submerged arc weld or gas metal-arc weld process as specified in API-5L, ASTM A252, A139, A135, A106, and A53. Certification of 35,000 psi minimum yield strength shall be furnished by the supplier through the CONTRACTOR to the ENGINEER in sufficient copies before pipe is shipped to job to permit the ENGINEER to retain 3 copies.

B. Used pipe is not acceptable. All steel cover pipe shall be new with bitumastic asphalt coating.

C. The minimum inside diameter of steel cover pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe, joints or couplings, except for carrier pipe 6 inches or greater in diameter under railroads, the difference shall be 4 inches instead of 2 inches. In the case of fused polyethylene or welded steel carrier pipe, the cover pipe inside diameter shall be a minimum of 4 inches greater than the largest actual outside diameter of the carrier pipe.

D. Cover pipe shall have a **minimum** wall thickness as shown in the following table, unless noted thicker on the Contract Drawings:

135-2021-01 (03/2022)

Cover Pipe Diameter	For KYTC Road Crossings Minimum Nominal Wall Thickness (in.)
Under 10	0.500
10 & 12	0.500
14	0.500
16	0.500
18	0.500
20	0.500
22	0.500
24	0.500
26	0.500
28	0.500
30	0.500
32	0.532
34 & 36	0.532
38	0.625
40	0.625
42	0.625

PART 3 EXECUTION

3.01 TUNNELING, BORING OR JACKING

A. Boring or jacking as specified herein will be allowed at locations other than those noted on the Drawings, where advantageous to lay pipe under streets, driveways, and sidewalks, without their monolithic structure being destroyed.

B. Tunneling under paving, railroads, buildings and underground structures is included as an alternate to boring or repaving required by open cut trenching at no extra cost to the OWNER. Bore and cover pipe is also included as an alternate to tunneling. Backfilling of tunnels shall be mechanically tamped in not more than 3 inch layers and with materials rendered suitable for tamping before being placed in tunnel unless otherwise shown on the Drawings. No payment will be made for tunnels less than 3 feet long.

C. In tunneling under buildings, the CONTRACTOR will be held responsible for all damage by his operations and methods of excavation and backfilling. No payment will be made for tunnels less than 3 feet in length.

D. Should the CONTRACTOR elect and receive permission to tunnel or bore, other than at locations designated on the Drawings or required by the ENGINEER to be tunneled or bored, the entire compensation therefor shall be the same as the unit prices bid for installation in open trench, including paving replacement, but not including bore or tunnel unit prices.

135-2021-01 (03/2022)

E. At locations where tunneling or boring or jacking is called for on the Drawings, in addition to the unit prices for permanent tunnel, tunnel liner, temporary tunnel, boring or jacking and/or cover pipe, payment will be made for furnishing and laying sewer lines inside the tunnel or cover pipe. No payment will be made for separate trench and backfill unit price items where permanent tunnel, tunnel liner, temporary tunnel, boring or jacking and/or cover pipe unit prices are paid.

F. Boring or jacking under highways, railroads, sidewalks, pipelines, etc., shall be done at the locations shown on the Drawings. It shall be performed by mechanical means and accurate vertical and horizontal alignment must be maintained. When shown on the Drawings, cover pipe shall be used and shall be installed inside bored holes concurrently with boring, or jacking.

3.02 STEEL COVER PIPE INSTALLATION

A. Steel cover pipe shall be of the size and wall thickness as shown on the Drawings.

B. When cover pipe is jacked, concurrent with boring, all joints shall be solidly welded. The weld shall be such that the joint shall be of such strength to withstand the forces exerted from the boring and jacking operation as well as the vertical loading imposed on the pipe after installation. The weld shall also be such that it provides a smooth, nonobstructing joint in the interior of the pipe which will allow easy installation of the carrier pipe without hanging or abrasion to the carrier pipe upon installation.

C. When cover pipe is installed in open trench or permanent tunnel, it shall be bedded and backfilled per Specifications applying to sewer pipe in such locations. When cover pipe is installed in temporary tunnel, it shall be laid accurately to alignment of proposed sewer and at an elevation below sewer necessary to support it at the planned elevation. Bedding and backfill for cover pipe in temporary tunnel shall be per Specifications for sewer in temporary tunnel.

D. Cover pipe in open trench, permanent tunnel and temporary tunnel shall be joined in such manner that they will not be moved out of alignment or grade and that will prevent backfill material from entering joint. Where cover pipes are shown on the Drawings to be equipped with vent pipes, vents shall be installed as shown on the Drawings with cost of same included in the price bid for the cover pipe unless otherwise specified.

3.03 CARRIER PIPE IN COVER PIPE INSTALLATION

A. Pipeline Spacers

1. Spacers used shall be Casing Chock (Spacer) Power Seal Model 4810, Type 304 stainless steel, center restrained, or OWNER approved equal. Pipes installed inside cover pipes shall be centered throughout the length of cover pipe. Centering shall be accomplished by the installation of bolt on style spacers with a 2-piece solid shell made from T-304 stainless

steel of a minimum 14 gauge thickness. The shell shall be lined with a ribbed PVC sheet of a 0.090 inch thickness that overlaps the edges. Runners, made from UHMW polymer, shall be attached to the pipe in such a manner as to prevent the dislodgement of the spacers as the carrier pipe is pulled or pushed through the cover pipe. Risers shall be made from T-304 stainless steel of a minimum 10 gauge thickness and shall be attached to the shell by MIG welding. All welds shall be fully passivated to ASTM A380. All fasteners shall be made from T-304 stainless steel.

2. Spacers shall be of such dimensions to provide 1) full supportive load capacity of the pipe and contents; 2) of such thickness to allow installation and/or removal of the pipe; and 3) to allow no greater than 1/2-inch movement of the carrier pipe within the cover pipe after the carrier pipe is installed.

3. Spacers shall be located immediately behind and within 2 feet of each bell and at a maximum spacing distance as shown below unless a lesser maximum spacing distance is recommended by the pipe manufacturer:

Pipeline Diameter (in.)	**Maximum Spacing (ft.)**
2 to 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

4. Spacers on all plastic pipe, PVC, HDPE, etc., shall be no more than 5 feet apart regardless of size. Spacers shall be no more than 8 feet apart for steel pipe and 6 feet for ductile iron pipe when the distance between the carrier pipe and the cover pipe is greater than 5 inches unless 12-inch wide spacers are used. A minimum of 3 spacers will be required.

5. The materials and spacing to be used shall be accepted by the ENGINEER prior to installation. The pipeline spacers shall be manufactured by Power Seal model 4810, center restrained, stainless steal, or OWNER approved equal. Installation shall be in accordance with manufacturer's recommendations.

B. End Seals for Carrier Pipe

1. Upon completion of installation of the carrier pipe, the annular space at the ends of the cover pipe shall be sealed to prevent the entrance of groundwater, silt, etc., into the cover pipe. The seal shall be a manufactured product specially made for this purpose. The seal shall be Link Seal, Model WL-SS Wrap-It Link, as manufactured by the CCI Pipeline

135-2021-01 (03/2022)

Systems LLC, or equal. All models used shall be rated for corrosive services.

2. The device shall have composite pressure plates and modular seals to be corrosion resistant EPDM suitable for use in water, direct ground burial, and atmospheric conditions. In areas where hydrocarbon resistant is specified, the seals shall be of nitrile and rated for the application (Model WL-O-55). All nuts and bolts for all models shall be 316 stainless steel (ANSI Type 316 per ASTM F695-95, 85,000 psi average tensile strength).

3. Seal sizes shall be per manufacturer's recommendations for each size of cover pipe and installed per manufacturer's recommendations to provide a watertight seal.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02500

ASPHALT PAVING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall be required to supply all materials and equipment and perform all work for the placement of the base, binder, and surface course(s) for restoring to the preconstruction condition the surface of the existing streets, roads, drives and parking areas to the depths as shown in the detailed Drawings and as specified herein.

1.02 REFERENCES

A. Unless noted, all Specifications designations denoted KTCSSRBC refer to the Kentucky Transportation Cabinet Department of Highways Standard Specification for Road and Bridge Construction. Appropriate technical portions of the referenced sections of the Specifications shall apply, but all work and method of payment shall be as described herein unless otherwise specified or shown on the Drawings.

1.03 RELATED WORK

A. Crushed stone surfacing requirements, temporary and permanent replacement, are specified in Section 02235 of these Specifications.

1.04 WORK DESCRIPTION

A. Asphalt shall be used for surfacing new roads and parking areas, for replacement of city streets, drives, parking areas and state highways of asphalt construction and for resurfacing existing roads and state highways at locations shown on the Drawings or specified.

1.05 QUALIFICATIONS

A. The pavement design mixture shall be used as determined by local plant mix availability. The design mixture shall have been approved recently by the Kentucky Transportation Cabinet Department of Highways and used recently on a state paving project.

B. The design mix shall be submitted to the ENGINEER for review and acceptance. The submittal shall include the following:

1. The last date the mixture was approved by the Kentucky Transportation Cabinet Department of Highways for use on a state road project.

2. The location where the mixture was recently used, and the name and address of the paving contractor.

135-2021-01 (03/2022)

1.06 SUBMITTALS

A. Prebid submittals, when required, are specified in Section 00820 - Special Conditions of these specifications.

B. Shop Drawings, manufacturers data and other items needed to establish compliance with the Drawings and Specifications shall be submitted to the ENGINEER.

PART 2 PRODUCTS

2.01 ASPHALT PAVING

A. Mixture

1. The asphaltic paving provided for use on this Contract shall conform to the applicable requirements of KTCSSRBC Section 401, Asphalt Plant Requirements; Section 402, Control and Acceptance of Asphalt Mixtures; and Section 403, Production and Placement of Asphalt Mixtures. The pavement mixture shall meet the requirements of Section 403.03.03.

B. Fine aggregates shall meet the requirements of KTCSSRBC Section 804.

C. Coarse aggregates shall meet the requirements of KTCSSRBC Section 805.

D. Asphaltic materials shall meet the requirements of KTCSSRBC Section 806.

E. Asphaltic materials for tack coat shall be one of the following: SS-1, SS-1h, CSS-1, CSS-1h, AE-60, RS-1, or CRS-1, conforming to Section 406.

2.02 FACILITIES ADJUSTMENT MATERIALS

A. Manhole adjusting rings shall be precast concrete, Utility Precast (P736). Maximum adjustment shall be 6 inches.

B. Valve box adjusting rings shall be cast iron, Tyler Type MWW riser with 3 inches maximum adjustment. Valve box adjusting rings shall be slide type only.

2.03 PAVEMENT STRIPING MATERIALS

A. Pavement striping for all areas to receive asphalt paving, whether full width pavement overlay, trench width pavement replacement, or newly constructed access roads or parking areas, shall meet the requirements of Section 748 of the KTCSSRBC for placement and Section 842 for striping material.

2.04 TRAFFIC CONTROL SIGNAL LOOPS

A. Where possible, traffic control signal loops shall be avoided in the location of new or replacement pipelines. Should the traffic control loops be damaged or destroyed by pipeline construction, they shall be replaced to the specification of the requirements of the entity who is the owner and operator of the traffic control facilities.

135-2021-01 (03/2022)

PART 3 EXECUTION

3.01 GENERAL

A. Construction requirements shall conform to applicable requirements of Section 403 of KTCSSRBC.

B. A tack coat shall be required to bond new paving to the surface of concrete or brick pavements and bases or existing asphalt surfaces. It shall be applied at the rate of 0.8 pound (0.1 gallon) per square yard at the following range of application temperatures:

SS-1, SS-1h, CSS-1, CSS-1h, AE-60	70-160°F
RS-1	70-140°F
CRS-1	120-185°F

C. When SS1, SS1h, CSS1, CSS1h, or AE60 is furnished for tack material, it shall be diluted with an equal quantity of water conforming to Section 803, shall be thoroughly mixed prior to application, and shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before the asphalt mixture is placed. The application rate shall be 0.8 pound (0.1 gallon) per square yard of the diluted SS1, SS1h, CSS1, CSS1h, or AE60.

D. Where asphalt paving is placed against vertical surfaces such as curbs, gutters, manhole frames, valve boxes, etc., the vertical face shall be tack coated in order to seal the surface. Where these surfaces are inaccessible to pressure distributor, the tack coat may be brushed or broomed into place. The tack coat shall not be allowed to spill over onto any horizontal surface outside the area to be paved.

E. Unless otherwise indicated on the Drawings or in these Specifications, the compacted thickness of the asphalt paving shall be a minimum of 1 inch and the minimum ambient temperature for mixing and laying temperatures shall be as follows:

Open Graded Friction Course	60˚F
Asphalt Mixture (1-Inch Thick)	45˚F
Asphalt Mixture (thicker than 1-inch)	40˚F
Asphalt Mixture (Base and Binder)	35˚F
Leveling and Wedging	45˚F

F. Trucks for hauling asphaltic mixtures shall have tight, clean, and smooth metal beds that have been sprayed with a minimum amount of soap emulsion, paraffin oil, or other approved material which is not detrimental to the mixture to prevent the mixture from adhering to the beds. All trucks shall be equipped with covers of sufficient size to completely cover the loaded material, and all covers shall be securely fastened in place before the truck leaves the plant. Truck beds shall be insulated, when necessary, to maintain the specified temperature to the point of delivery. Any truck causing excessive segregation of material by its spring suspension or other contributing factors, shall be discharged from the work, until such conditions are corrected.

135-2021-01 (03/2022)

G. The CONTRACTOR shall have an accurate thermometer on the job at all times for verifying all temperature requirements and for taking temperature measurements whenever requested by the ENGINEER or OWNER. The CONTRACTOR shall closely control temperature and compaction requirements in order to achieve quality asphalt paving and related work.

H. Asphalt paving which fails as the result of not meeting the requirements of these Specifications shall be removed and replaced as directed by the ENGINEER at the CONTRACTOR'S expense.

I. Where manhole frames, valve boxes, drainage grates, etc., are located within the area to receive asphalt paving replacement, those facilities shall be adjusted to final pavement grade prior to the placement of the asphalt surface. Where the facilities to be adjusted are the property of the OWNER, the CONTRACTOR shall adjust the facilities with the cost included in the CONTRACTOR'S bid for asphalt replacement. Where the facilities to be adjusted are the property of other utility companies, i.e., gas, water, electric, telephone, the CONTRACTOR shall notify each utility company of the schedule for repaving of the particular area to allow those companies sufficient time to adjust their facilities prior to beginning the repaving process.

J. Where pavement striping is destroyed or damaged, it shall be replaced per the requirements stated herein. The cost of all striping, unless stated otherwise in these specifications, shall be included in the price bid for pavement replacement.

K. Damaged or destroyed traffic control loops shall be replaced per the requirements of the traffic control operator with the cost incorporated into the CONTRACTOR'S bid for pavement replacement.

3.02 FULL WIDTH PAVING OF EXISTING STREETS, ROADS AND PARKING AREAS

A. Where the entire width of the existing asphalt paved street damaged by construction is to be resurfaced, the existing pavement shall be cleaned and tack coated, and asphalt paving shall be hot applied as previously described in Article 3.02 herein.

B. The preparation of the base shall include removal of unstable material from the disturbed areas, removal of excess crushed rock from the trench to same level as the existing asphalt pavement and addition of compacted crushed rock (DGA) to the trench or where needed. No cutting of edges of existing paving will be required.

C. The ENGINEER will determine if and where leveling courses are required before application of surface courses. The leveling course shall be hot applied and rolled similarly to the surface course.

D. The surface course shall be 2 inches thick applied to the entire width of the street, unless otherwise directed by the ENGINEER. The surface course shall be feathered out to a thickness of 1 inch at the front of existing gutters. The point where feathering shall begin and the amount of feathering shall be controlled by the ENGINEER. Where there are no gutters, feathering of edges will not be done unless

135-2021-01 (03/2022)

otherwise directed by the ENGINEER in order to conform to existing features, such as driveways.

E. Payment for the surface course shall be by the linear feet of full width pavement replaced.

F. No extra payment will be allowed for tack coat, removal of unstable material, compacted dense graded aggregate (DGA) used to replace unstable material, removal of excess crushed rock from the trench to the grade of existing pavement, and cleaning of the surface.

3.03 TRENCH WIDTH REPAVING-CITY AND COUNTY STREETS, ROADS AND PARKING AREAS

A. The cut edges of the existing paving surface shall be trimmed a depth of at least 2 inches to straight lines for uniform appearance and clean surface at joints. The area between the cut edges of the paving shall be removed to a depth of 2 inches (minimum) or to the bottom of the existing paving. All unstable material in the trench shall be removed and replaced with compacted dense graded aggregate and dense graded aggregate added as needed to bring the base surface to the bottom of existing paving or 2 inches below the existing surface, whichever is the lower. Dense graded aggregate required for stabilizing the subgrade will be paid for as an extra, but no extra payment will be allowed for removal of unstable back-fill.

B. The paving subgrade shall be compacted under the wheel of a roller, until there is no observed settlement of the subgrade.

C. The sides of existing pavement shall be covered with a tack coat and asphalt paving shall be hot applied as previously described. Final surface shall be finished to 1/4-inch above existing paving surface at edges and crowned to 1/2-inch above existing surface at the center.

D. Payment for asphalt repaving shall be per linear foot of pipeline covered to any width the CONTRACTOR shall find necessary to remove plus width of cut back to secure clean straight edges, and shall include excavation to subgrade, preparation of subgrade, cleaning edges of existing paving, tack coat, and all operations and materials planned and specified for this type of repaving. The CONTRACTOR shall maintain such repaving up to grade of existing street surface until final completion and acceptance of work under his Contract. During the guarantee period of one year, the CONTRACTOR will be responsible for defective materials or workmanship, and natural settlement.

E. In case additional asphalt paving is to be added due to settlement, the surface which has experienced settlement shall be cut out, additional dense graded aggregate added if necessary, tack coat applied to the existing sides of existing pavement, and the paving in the settled area(s) replaced. Additional payment will not be allowed for the repair work required.

135-2021-01 (03/2022)

3.04 TRENCH WIDTH REPAVING-STATE MAINTAINED STREETS AND HIGHWAYS

A. Streets, roads and highways maintained by the Kentucky Transportation Cabinet Department of Highways shall be repaved in accordance with details shown on the attached Department of Highways Drawing No. TD 99-13, latest revision.

B. Concrete base slab shall be cleaned and tack coated, and asphalt paving shall be hot applied as previously described.

C. Payment for replacement of asphalt paving on state maintained streets and roads, where concrete base slab and asphalt surface are required, shall be per foot of pipeline covered, and shall include excavation, crushed rock or flowable fill backfill, base courses, concrete base slab, tack coat, and asphalt surfacing. Widths, depths, and other details and methods of application shall be as shown on attached drawing and as required by the Kentucky Transportation Cabinet Department of Highways.

D. The CONTRACTOR shall maintain the surface of all state highways and state maintained streets to grade during the entire guarantee period of the Contract.

3.05 CROSSWALK MARKINGS

A. Crosswalk marking shall meet the requirements Section 3B.18 of the Manual of Uniform Traffic Control Devices (MUTCD).

END OF SECTION

Attachment: Kentucky Department of Highways Drawing No. TC 99-13.

***

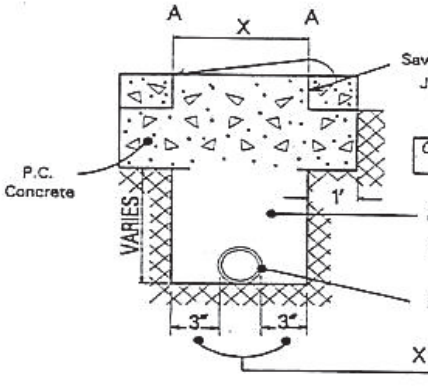
135-2021-01 (03/2022)

KENTUCKY TRANSPORTATION CABINET
Department of Highways
Permits Branch

TC 99-13
Rev 2/95

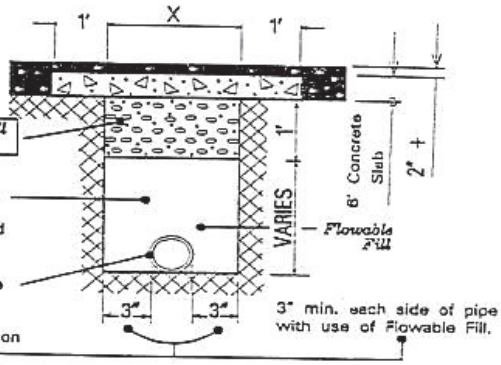
SURFACE RESTORATION METHODS

Concrete Pavement



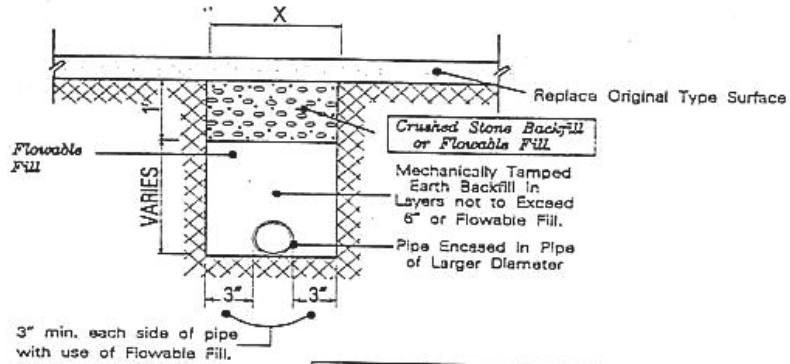
Replace Concrete Pavement with new pavement same thickness of existing pavement.

Bituminous Surfacing 2"+



Repace Bituminous Pavement with same type and depth as existing pavement.

Bituminous Surface Less Than 2" & Traffic Bound Macadam



NOTE:

1. Distance From points "A" (Concrete Pavement) to nearest joint or break in pavement must be six (6) feet or more. If less than six (6) feet, remove pavement to joint or break and replace entire slab.
2. Concrete slab under Bituminous Surface to extend twelve (12) inches on each side of trench.
3. An approved joint sealer to be applied between new and existing pavement.

KENTUCKY TRANSPORTATION CABINET

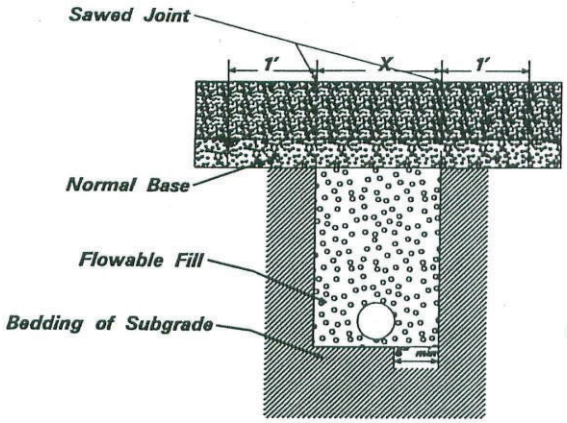
Department of Highways

Methods of Surface Restoration Due to Open trench Pipe Installation

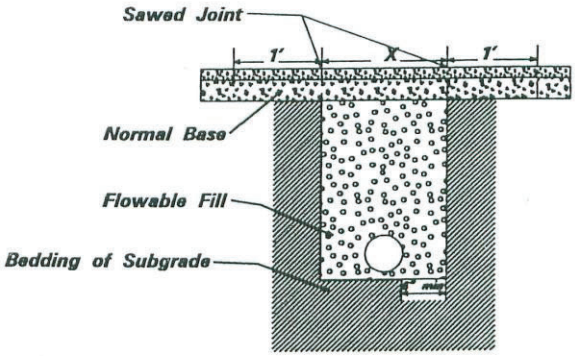
135-2021-01 (03/2022)

TC 99-13
8/08

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS RESTORATION
District Two Permits

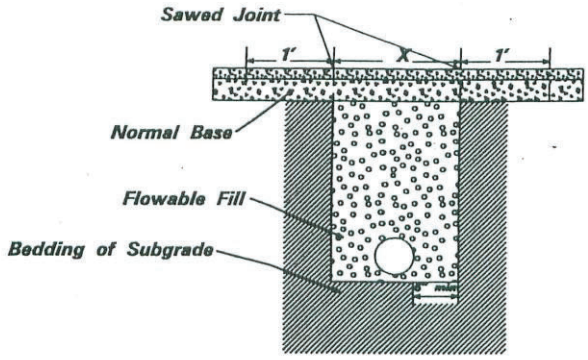


CONCRETE PAVING



BITUMINOUS PAVING

General Notes:
1. Fill extends to bottom of pavement structure.
2. Replace pavement with existing type and thickness.
3. Fill material must be agitated durring transportation and waiting.
4. If the sawed joints are less than 6' from an existing joint or break in pavement, remove slab to break or joint.



BITUMINOUS PAVING LESS THAN 2"

FLOWABLE FILL SPECIFICATIONS:

Flowable fill ingredients must meet the requirements of the Kentucky Department of Highways as set forth in the manual of standard specifications

Proportioned as follows per cubic yard batch:

Cement	30 Pounds
Fly Ash, Class F	300 Pounds
Sand (SSD)	3,000 Pounds
Water (max)	550 Pounds

Note:
1. The proposed mixture shall be proportioned to obtain a minimum flow of 8 inches when tested with a 3 inch by 6 inch open ended cylinder modified flow test and meets acceptable strength requirements.
2. The mixture shall bleed freely within 10 minutes.
3. The mixture shall suport a 150 pound person within 3 hours.
4. Flowable fill shall be in place for 2 hours prior to addition and compaction of cover material.

10/31/08

135-2021-01 (03/2022)

SECTION 02610

SEWAGE FORCE MAIN PIPE

PART 1 GENERAL

1.01 SUMMARY

A. For Cover Pipe and Boring and/or Jacking see Section 02326.

B. All pipe, fittings, and jointing materials shall be of one manufacturer unless different types are shown on the Drawings or otherwise accepted by the ENGINEER.

1.02 SUBMITTALS

A. General

1. Prior to the shipment of any sewage force main piping to the project site, the CONTRACTOR shall submit to the ENGINEER a bill of materials, shop drawings, and descriptive literature for all piping. Shop drawings shall be required for all construction materials.

B. Sewage Force Main Projects

1. Submit descriptive literature for all piping.

2. Submit testing and certifications for all piping.

PART 2 PRODUCTS

2.01 MATERIALS–SEWAGE FORCE MAIN PIPE

A. Ductile Iron Pipe–Mechanical and Rubber Slip Joint Type

1. Pipe

a. General

(1) Ductile iron pipe shall be furnished for all piping 3 inches and over in size designated "D.I." on Drawings and shall be designed in accordance with ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51 specifications and supplements thereto.

b. Design Conditions

(1) Pressure: Minimum 200 to 350 psi operating pressure, plus 100 psi water hammer allowance.

(2) Trench Loading: Laying Condition Type 3, depth of cover as shown on Drawings.

135-2021-01 (03/2022)

c. Metal Design Strength PSI (Minimum)

Tensile Strength	60,000
Yield Strength	42,000
Percent Elongation	10

d. Minimum Nominal Thickness

(1) Minimum design thicknesses for 200 through 350 psi operating pressures, depths of cover, trench loading and other conditions shall be per ANSI/AWWA C150/ A21.50 specifications.

e. Lengths

(1) Pipe may be furnished in 18- or 20-foot nominal laying lengths.

f. Marking

(1) The net weight, class or nominal thickness, and casting period shall be shown on each pipe. The manufacturer's mark, the year in which the pipe was produced, and the letters "DI" or "DUCTILE" shall be cast or stamped on the pipe.

g. Weighing

(1) Each pipe shall be weighed before application of lining or coating other than standard coating and the weight shown on the outside or inside of the bell or spigot end.

h. Spigot End of Pipe

(1) The spigot end of the pipe shall be free of blemishes and defects which, in the opinion of the ENGINEER, might be responsible for a poor fit with the rubber ring gasket and result in leakage.

2. Fittings

a. General

(1) Ductile iron mechanical joint, restrained joint and fittings shall conform to ANSI/AWWA C110/A21.10 Standard for Gray Iron and Ductile Iron Fittings – 3-inch through 48-inch. Mechanical joints and push on joints shall also conform in all respects to ANSI/AWWA C111/A21.11.

(2) Ductile iron compact fittings, meeting the requirements of ANSI/AWWA C153/A21.53, will also be accepted.

135-2021-01 (03/2022)

(3) Fittings shall be 350 psi pressure rating for sizes through 24-inch and shall be 250 psi rating for sizes above 24 inches unless a higher operating pressure is shown on the Drawings, and in such cases the fitting pressure rating shall be equal to or above the operating pressure. The pressure rating for all compact fittings shall be 350 psi.

(4) Fittings shall be ductile iron meeting the above requirements and shall be furnished complete with all joint accessories.

b. Lining and Coating

(1) All fittings shall be lined and coated the same as adjacent pipe.

3. Joints

a. General

(1) Pipe joints shall be mechanical joint, rubber ring slip joint or restrained joint as shown on the Drawings.

(2) All items used for jointing pipe shall be furnished with the pipe. The joints shall be made with tools and lubricant in strict conformity with the manufacturer's instructions. Copies of the instructions shall be delivered to the ENGINEER at start of construction in sufficient numbers that will permit the ENGINEER to retain 3 copies.

b. Mechanical Joints

(1) Mechanical joints are to be furnished according to ANSI/AWWA C111/A21.11. All pipe joints must be furnished complete with all accessories. Mechanical joint bolts and nuts shall be of alloy cast iron or alloy steel (Corten type such as U.S. Alloy) or equal. Rubber gaskets shall be made of plain first grade rubber, free of imperfections and porosity. Hardness shall be 75 X 5 durometer.

c. Rubber Ring Slip Joint (Push On)

(1) Rubber ring slip joint shall be equal to ANSI/AWWA C111/A21.11. The joints shall be of the following materials and assembled in the sequence outlined below:

(a) Rubber ring gasket compressed in groove in bell of pipe.

(b) Beveled spigot end of pipe for initial centering into rubber gasket in bell.

135-2021-01 (03/2022)

d. Restrained Joints

(1) For Pipe

(a) Restrained joint for push-on type bell with rubber O-ring shall meet the applicable requirements of ANSI/AWWA C 111/A21.11. The bell/spigot configuration for the restrained joint shall be such that restraint shall be provided for the joint based on a sustained pressure equal to the pressure class of the pipe.

(b) The restrained joint shall allow the same deflection as standard push-on joint pipe.

(c) No field welding is allowed for field cut pipe.

(2) For Fittings

(a) Where restrained joint fittings are called for, the bell configuration for the fittings shall be the same as for the pipe.

(b) Where fittings with restrained joint bell configuration are not available, restrained materials for use with mechanical joint bell configurations shall be used as follows:

(i) Connect mechanical joint bell assemblies with stainless steel all-thread rods.

(ii) Install restraints glands on each side of the fitting. The restraining glands shall be “Meg-a-Lug,” as manufactured by EBAA Iron Sales, Inc., of Eastland Texas; “Grip Ring,” as manufactured by Romac Industries, Inc., of Seattle, Washington; or equal.

4. Lining and Coating

a. Water Service

(1) All ductile iron pipe for water service shall have manufacturer's standard outside bituminous or asphaltic base coating and a cement lining and bituminous seal coat on the inside. Cement mortar lining and bituminous seal coat inside shall conform to ANSI/AWWA C104/A21.4.

b. Sewer Force Main Service

135-2021-01 (03/2022)

(1) All ductile iron pipe for sewer force main service shall be bituminous coated outside and shall be cement lined with seal coat on the inside per the above specifications.

c. Bitumastic Finish Coat

(1) Only a coal tar outside coating, or other compatible coating, shall be applied to pipe which is to receive a bitumastic finish coat.

B. Ductile Iron Pipe-Flanged, Grooved and Special Coupling

1. Pipe

a. Flanged Pipe

(1) Flanged pipe shall be made in accordance with ANSI/AWWA C115/A21.15 Specifications, and shall be thickness Class 53.

(2) Where plain ends of flanged and plain end pipe fit into mechanical joint bells, centrifugally cast pipe shall be used.

2. Fittings

a. Flanged Pipe

(1) Flanged joint fittings shall conform to ANSI/AWWA C110/A21.10 Standard for Gray Iron and Ductile Iron Fittings–3-inch through 48-inch.

(2) Fittings shall be 250 psi pressure rating for all sizes unless a higher operating pressure is shown on the Drawings and in such cases the fitting pressure rating shall be equal to or above the operating pressure.

(3) Fittings shall be ductile iron meeting the above requirements and shall be furnished complete with all joint accessories.

3. Joints

a. General

(1) Pipe joints shall be as shown on the Drawings.

(2) All items used for jointing pipe shall be furnished with the pipe. The joints shall be made with tools and lubricant in strict conformity with the manufacturer's instructions. Copies of the instructions shall be delivered to the ENGINEER at start of construction in sufficient numbers that will permit the ENGINEER to retain 3 copies.

135-2021-01 (03/2022)

b. Flanged Pipe

(1) All ductile iron flanged pipe shall have flanges faced and drilled, 125 pound in accordance with ANSI/AWWA C110/A21.10 unless otherwise specified.

(2) Flanges may be cast integrally with the pipe or they may be screwed on specially designed long hub flanges, refaced across both face of flange and end of pipe.

(3) Flanged joints are to be furnished according to ANSI/AWWA C115/A21.15 and shall be ductile iron only. Flanged joints shall have 1/8-inch rubber full face gaskets made especially for water pipe use. Bolts for ductile iron flanged pipe must be of standard sizes for pipe to be fitted, and must be black steel, machine bolts with heavy hexagon heads and nuts meeting ANSI B18.2.1 and ANSI B18.2.2, respectively. In unheated vaults, submerged and/or damp locations, bolts and nuts for ductile iron flanged pipe shall be stainless steel. Prior to stainless steel nuts being placed on stainless steel bolts, the bolt threads shall be coated with anti-seize.

(4) The American Toruseal Flange Gasket Manufactured by American Cast Iron Pipe Company is an acceptable alternate to the above described gasket.

c. Special Coupling

(1) At locations in flanged pipe where adaptors are not shown on the Drawings, the CONTRACTOR may, at his own cost and for flexibility of installation, use a coupling adapter after acceptance by the ENGINEER. In no event shall unrestrained mechanical joints or dresser type couplings be substituted for flanged joints.

4. Lining and Coating

a. Flanged Pipe

(1) Flanged pipe for wastewater service shall be cement lined and bituminous coated the same as written herein for ductile iron pipe, mechanical and rubber slip joint type.

C. Polyvinyl Chloride (PVC) Pipe (ASTM)

1. Pipe

a. This Specification covers rigid polyvinyl chloride pipe and fittings, hereinafter called PVC pipe and PVC fittings, for sizes 3/4-inch through 12-inch.

135-2021-01 (03/2022)

b. PVC pipe shall be extruded from Class 12454-B polyvinyl chloride material with a hydrostatic design stress of 2000 psi for water at 73.4 degrees Fahrenheit, designated as PVC 1120, meeting ASTM Specifications D 1784 for material. Three-fourths inch through 1-1/2 inch water service piping shall be PVC Schedule 40 as specified in ASTM D 1785. Two inch through 12-inch pipe for water and sewage force main service shall be SDR 21 for 200 psi allowable working pressure at 73.4 degrees Fahrenheit and a safety factor of 2.0, as specified in ASTM D 2241.

c. The pipe shall be homogeneous throughout and free from cracks, holes, foreign inclusions or other defects. The pipe shall be as uniform as commercially practical in color.

d. The workmanship, pipe dimensions and tolerances, outside diameters, wall thickness, eccentricity, sustained pressures, burst pressures, flattening, extrusion quality, marking and all other requirements of ASTM D 2241 shall be conformed with in all respects.

e. Pipe shall be furnished in 20-foot lengths. The pipe shall be plain end with bell on one end. Male ends of pipe must be beveled on the outside.

f. Pipe shall have a ring painted around the male end in such a manner as to allow field checking of setting depth of pipe in the socket. This requirement is made to assist construction superintendents and inspectors in visual inspection of pipe installation.

g. Pipe must be delivered to job site by means which will adequately support it, and not subject it to undue stresses. In particular, the load shall be so supported that the bottom rows of pipe are not damaged by crushing. Pipe shall be unloaded carefully and strung or stored as close to the final point of placement as is practical.

h. Pipe must not be exposed to the direct rays of the sun for an extended period of time. If pipe is not installed within 15 days of delivery to the job site, pipe must be covered with black plastic or stored in a shaded location.

2. Fittings

a. Ductile Iron

(1) Ductile iron mechanical joint or push-in type fittings with appropriate adapters may be used with exterior PVC pipe. All such fittings shall be approved by the pipe manufacturer, and complete data sent to the ENGINEER, including the manufacturer's approval, for review.

135-2021-01 (03/2022)

3. Joints

a. Exterior Buried Pipe - Slip Joint Type

(1) Exterior buried pipe shall be jointed with slip-type joints with rubber gaskets.

(2) Pipe with bell end shall have all parts of the bell, including the gasket groove, made from the same extruded piece, integral with the pipe, and shall be thickened to meet standard dimension ratios of wall thickness to outside diameter. The gasket groove shall be constructed such that gasket rollout will not occur. Rubber gasketing shall conform to ASTM D 3139.

b. Couplings

(1) Couplings shall be of the same material as the pipe and may be of the molded, or extruded type. They shall have a beveled entrance to prevent the wiping off of the lubricant from the male end of the pipe.

(2) PVC couplings shall have a minimum rating of 200 psi for continuous operation at 73.4 degrees Fahrenheit.

(3) The couplings shall have a positive pipe stop that will automatically and accurately position the pipe ends within the couplings. The pipe stop shall also permit the thermal expansion or contraction of the pipe ends.

D. Polyethylene Pipe for Force Mains

1. Pipe

a. General

(1) Polyethylene pipe and fittings shall comply with the requirements of ASTM D 1248, D 1505, D 1693, D 1928, D 2657, D 3035, D 2837 and D 2321.

b. Resins

(1) Only virgin polyethylene resins classified as Type III, Category 5, Grade P34 per ASTM D 3035 with densities of 0.955 p/cc maximum and melt index of 0.15 g/10 minutes maximum shall be used in the process of making the pipe. The resin shall contain antioxidants and be stabilized with carbon black.

c. Design

135-2021-01 (03/2022)

(1) The pipe shall have a long-term strength rating of 1,600 psi or more and be resistant to environmental stress cracking per procedure C of ASTM D 1928 for not less than 200 hours. The maximum allowable deflection is 5 percent with the pipe installed in accordance with these Specifications, using backfill material at 130 pounds per cubic foot, H-20 live load plus 50 percent impact but no internal pressure. The live load and impact may be disregarded in the calculations for trench conditions with 8 feet or more cover. Operating pressures are shown on the Drawings. Hydrostatic loading shall be considered when the pipe is to be installed below a permanent water table or body of water.

d. Wall Thickness Calculations

(1) The pipe manufacturer shall furnish calculations to support the pipe wall thickness for these various conditions for the ENGINEER'S review/acceptance before the materials are sent to the job site.

e. Quality

(1) No cracks, holes, foreign material, blisters or other deleterious faults are permitted in the polyethylene pipe. It shall be homogeneous throughout including the heat fused joint. Polyethylene pipe will not be installed containing gouges or cuts that penetrate more than 10 percent of the wall thickness.

f. Water Stops

(1) The pipe manufacturer shall furnish a waterstop assembly for use with the pipe where the pipe passes through a structure wall so as to provide a watertight seal. The assembly shall be attached to the pipe with noncorroding materials.

g. Marking

(1) Each length of polyethylene pipe shall contain the manufacturer's brand name, pipe size and other data to enable an accurate tracing of the raw material source. Polyethylene pipe will not be installed containing gouges or cuts that penetrate more than 10 percent of the wall thickness.

2. Joints

a. Fusion

135-2021-01 (03/2022)

(1) Polyethylene pipe shall be joined by the heat fusion welding process. Welding equipment may be either gas fired or electric as the CONTRACTOR may select. The welding equipment must be capable of attaining the temperature recommended by the manufacturer for the particular polyethylene extrusion used on the project.

(2) The fusion equipment shall have hydraulic controls and gauges for monitoring fusion pressures. Also, an engine powered facing unit to trim the irregularities of the pipe ends shall be provided. The heated and thermostatically controlled plate shall contain a temperature gauge for monitoring the heat temperature throughout the fusion process.

b. Flange Adapters

(1) Threaded or solvent weld joints and connections are not permitted. Flange adapters as manufactured by the pipe supplier shall be used, butt-fused to the pipe and connected to other pipe material using a rubber gasket for sealing.

2.02 SOURCE QUALITY CONTROL

A. Ductile Iron Pipe (Mechanical Joint and Rubber Slip Joint Type)

1. Hydrostatic and physical properties acceptance tests shall be in accordance with ANSI/AWWA Specification C151/A21.51 for ductile iron pipe centrifugally cast in metal molds or sand lined molds for water or other liquids.

2. The ENGINEER shall be provided with sufficient copies of each of the tests for each Contract to permit the ENGINEER to retain 3 copies.

3. All items used for jointing pipe shall be tested before shipment.

B. Polyethylene Pipe for Force Mains

1. Results of tests on the raw materials and the polyethylene pipe in accordance with ASTM standards and the Plastic Pipe Institute shall be furnished along with catalogs and other descriptive literature before the materials are sent to the job site.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION–SEWAGE FORCE MAINS

A. General

1. Trenching shall include all clearing and grubbing, including all weeds, briars, trees and stumps encountered in the trenching, regardless of size. The CONTRACTOR shall dispose of any such material by burning, burial

or hauling away or as noted on the Drawings, at no extra cost to the OWNER. Ornamental shrubs, hedges and small trees (3 inches in diameter or less) shall be removed, protected and replanted, at no extra cost to the OWNER.

2. Trenching also includes such items as railroad, street, road, sidewalk, pipe and small creek crossings; cutting, moving or repairing damage to fences, poles or gates and other surface structures, regardless of whether shown on the Drawings. The CONTRACTOR shall protect existing facilities against danger or damage while pipeline is being constructed and backfilled or from damage due to settlement of the backfill.

3. All excavation is unclassified.

4. In case of “unclassified excavation,” as designated in the Drawings and/or Specifications, the price bid shall include earth, solid rock, roots, street or road surfacing and base concrete and boulders.

5. All excavation shall be open trenches, except where the Drawings call for boring or jacking under structures, railroads, sidewalks, roads or highways.

B. Trees and Shrubs

1. Where pipelines run through wooded terrain, cutting of trees within limits of maximum permissible trench widths, as set forth in this article, will be permitted. However, cutting of additional trees on sides of trench to accommodate operating of trenching machine will not be permitted. The CONTRACTOR shall obtain specific permission of the OWNER before cutting any tree larger than 4 inches in diameter.

C. Highways, Streets and Railroads

1. Construction equipment injurious to paving encountered shall not be used. Curbs, sidewalks, and other structures shall be protected by the CONTRACTOR from damage by his construction equipment.

2. Where trenching is cut through paving which does not crumble on edges, trench edge shall be cut to at least 2 inches deep to straight and neat edges, before excavation is started, and care taken to preserve the edge to facilitate neat repaving.

3. The CONTRACTOR shall so coordinate his work as to produce a minimum of interference with normal traffic on highways and streets. He may, with the approval of the governing agency, close a street to traffic for such length of time considered necessary, provided persons occupying property abutting the street have an alternate route of access to the property which is suitable for their needs during the time of closure. It shall be the responsibility of the CONTRACTOR to give 24 hours advance notice to fire and police departments and to occupants of a street which will be closed, in a manner approved by the governing body.

135-2021-01 (03/2022)

4. The CONTRACTOR shall maintain road crossings in a passable condition for traffic until the final acceptance of the work, which shall be considered incidental to construction activities.

5. Railroad and Highway Department requirements in regard to trenching, tunneling, boring and jacking shall take precedence over the foregoing general specifications and the tunneling and boring or jacking specifications, where they are involved. Where work is within railroad right-of-way, Railroad Protective Insurance shall be carried by the CONTRACTOR in the amounts required by the Railroad Company.

6. The insurance policy shall name the railroad as the insured and the original policy shall be delivered to the railroad after submitting same to the OWNER for review. The cost of flagmen required by the railroad and highway departments and railroad inspectors shall be paid by the CONTRACTOR.

7. Uneven surfaces or humps in the ground encountered and high driveways and road crossings shall be dug through to such depth that pipe may be laid to a reasonably even grade and have minimum cover at the low places. Such places requiring extra depths shall be included in the bid and no extra payment will be made for such extra depths required, which are evident from an examination of the ground before bidding, as required for 1 foot cover over valve nuts, or are indicated on the Drawings.

D. Existing Utilities

1. The CONTRACTOR shall determine, as far as possible in advance, the location of all existing sewer, culvert, drain, water, electric, telephone conduits, and gas pipes, and other subsurface structures and avoid disturbing same in opening his trenches. In case of sewer, water and gas services and other facilities easily damaged by machine trenching, same shall be uncovered without damage ahead of trenching machine and left intact or removed without permanent damage ahead of trenching and restored immediately after trenching machine has passed, without extra cost to the OWNER. The CONTRACTOR shall protect such existing facilities, including power and telephone poles and guy wires, against danger or damage while pipeline is being constructed and backfilled, or from damage due to settlement of his backfill. It shall be the responsibility of the CONTRACTOR to inform the customers of utilities of disruption of any utility service as soon as it is known that it has been or will be cut off.

2. The CONTRACTOR shall, at all times during trenching operations, carry a stock of pipe and fittings likely to be needed for replacement of pipelines to facilitate immediate repair.

135-2021-01 (03/2022)

E. Pipelines in Same Trench

1. Pipelines, force mains, and sewers laid in same trench shall, in all cases, be constructed in accordance with the detail on the construction plan sheet, regardless of divergence in their elevations, unless otherwise specified. They shall never be laid in unsupporting backfill or one above the other. The CONTRACTOR shall trench and backfill each pipeline, force main, and sewer so laid, the same as if laid in widely separated trenches.

F. Location of Proposed Pipelines

1. The location of pipelines and their appurtenances as shown are those intended for the final construction. However, conditions may present themselves before construction on any line is started that would indicate desirable changes in location. Also, development of property traversed may require location changes. In such cases, the OWNER reserves the right to make reasonable changes in line and structure locations without extra cost, except as may be determined by the application of the unit prices bid to the quantities actually involved. The OWNER is under no obligation to locate pipelines so that they may be excavated by machine.

G. Trench Requirements

1. All trenches must be dug neatly to lines and grades.

2. The opening of more than 500 feet of trench ahead of pipe laying and more than 500 feet of open ditch left behind pipe laying, before backfilling, will not be permitted, except upon written consent of the OWNER. No trench shall be left open or work stopped on same for a considerable length of time. In case of objectionable delay trench shall be refilled according to backfill specifications.

3. Where subgrade of trench has insufficient stability to support the pipeline and hold it to its original grade, the ENGINEER may order stabilization by various means. Exclusive of dewatering normally required for construction and instability caused by neglect of the CONTRACTOR, it shall be paid for at unit prices set up in the Contract, such as extra excavation, crushed rock for pipe bedding, concrete cradle or piling.

4. Excavation for pipe laying must be made of sufficient width to allow for proper jointing and alignment of the pipe, but not greater than the maximums permitted in the following table:

135-2021-01 (03/2022)

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

Nominal Pipe Size (Ins.)	Trench Width (Ins.)
4	28
6	30
8	32
10	34
12	36
14	38
16	40
18	42

5. Trenches in earth or rock shall be dug as shown on the Drawings and be sufficiently deep to insure a 36-inch minimum cover or 42-inch minimum cover within KYTC rights-of-way over force mains, as noted on the Drawings. Depths of trenching shall also be adequate for at least 1-foot minimum cover over valve nuts. In order to eliminate the necessity for digging bell holes into the trench subgrade by hand and to ensure an earth cushion under the pipe for uniform bearing, trench depth shall be the cover requirement plus outside diameter of barrel of pipe plus the required bedding cushion. The cushion construction requirement shall also apply to tunnels.

6. Trench line stations and locations of accessories will be set ahead of the trenching. These will be set at least each 100 feet of pipeline. Trenches must be dug true to alignment of stakes. Alignment of trenches or pipes in trench must not be changed to pass around obstacles such as poles, fences and other evident obstructions without the permission of the ENGINEER. Lines will be laid out to avoid obstacles as far as possible, contingent with maintenance of alignment necessary to finding pipeline in the future and avoiding obstruction to future utilities.

H. Damage to Existing Structures

1. Hand trenching is required, at no extra payment, where undue damage would be caused to existing structures and facilities by machine trenching.

2. In case of damage to any existing structures, repair and restoration shall be made at once and backfill shall not be replaced until this is done. In all cases, restoration and repair shall be such that the damaged structure will be in as good condition and serve its purpose as completely as before, and such restoration and repair shall be done without extra charge, except as set forth under the applicable provisions of the General and Special Conditions. Where there is the possibility of damage to existing utility lines by trenching machine, the CONTRACTOR shall make hand search excavation ahead of machine trenching, to uncover same, at no extra cost to the OWNER.

135-2021-01 (03/2022)

I. Excavation Unclassified

1. Excavation for pipelines shall be unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S unit price bid for furnishing, trenching, laying and backfilling the pipe.

2. Excavation for structures such as manholes, pump stations, and vaults is likewise unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S lump sum or unit price bid, as the case may be.

J. Dewatering of Trenches

1. Dewatering of trenches shall be considered a part of trenching, at no extra cost to the OWNER. Dewatering of trenches shall include groundwater and storm or sanitary sewage. Suitable pumping and other dewatering equipment is to be provided by the CONTRACTOR, to insure the installation of the pipeline structure in a dewatered trench and under the proper conditions. Dewatering shall include all practical means available for prevention of surface runoff into trenches and scouring against newly laid pipe.

2. Piles of excavated materials shall be trenched or temporarily piped to prevent, as far as practical, blockage of drainage ditches and gutters, and water carriage of excavated materials over street and highway surfaces.

3.02 LAYING SEWAGE FORCE MAINS

A. General

1. Inspection of Materials

a. All pipe, fittings and accessories shall be subject to an inspection by the OWNER at the job site. Any damaged materials shall be repaired or replaced to the satisfaction of the OWNER. Should repairs to the piping materials be necessary, then same shall be made in the presence of the ENGINEER using proven methods prescribed by the pipe manufacturer.

b. The OWNER'S inspection of materials shall in no way relieve the CONTRACTOR of his responsibility.

2. Laying Requirements

a. Sewage force main pipe shall be laid to lines, cover or grades shown on the Drawings.

b. Pipes must be swabbed out before lowering into trench. In the case of pipelines 3-inch through 20-inch, a swab must also be dragged through the pipe after it is in place. Larger size pipe shall be visually inspected for cleanliness and proper jointing.

135-2021-01 (03/2022)

c. The points insisted upon in the laying of pipe will be: Proper alignment, evenness of width and depth of joints, perfection in jointing, and care of the pipe in handling.

d. Precautions must be taken to prevent flotation of the pipe should water enter the trench prior to putting the pipeline into operation.

e. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or alignment, or where the backfill materials are of such a fluid nature that such movements of the 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. If crushed rock fill beneath the pipe is necessary for stability, it will be paid for at the unit price bid per ton of such material in place except in cases where instability is caused by neglect of the CONTRACTOR.

f. Whenever pipe laying is stopped, the end of the pipe shall be securely plugged with the manufacturer's standard plug held in place by jute packing, caulked into place.

g. Elbows, plugs, dead end valves, and tees shall be firmly blocked, as shown on the Drawings, to prevent internal pressure from springing the pipe from the intended alignment, with permanent materials solidly placed without covering pipe joints. Restrained type pipe joints may be substituted for thrust blocks with the ENGINEER'S permission. Pipe shall be free of all structures, other than manholes, vaults or planned entries into other structures.

h. No pipe shall be laid resting on solid rock, blocking or other unyielding objects. Jointing before placing in the trench and subsequent lowering of more than one section jointed together may be allowed, subject to the ENGINEER'S permission.

i. For PVC and polyethylene pipe, there shall be installed with the pipe #12 AWG insulated wire for the entire length of the pipeline. The wire shall be taped to the top of the pipe when installed and weighted at locations along the wire sufficient to prevent dislodgement during the backfilling process. The wire shall be accessible at valve boxes or at locater stations along the route of the pipeline, as shown on the Drawings.

j. Fiberglass line markers shall be installed at property lines or at bends in the pipeline.

k. Fiberglass line markers shall be installed at valve locations or at locations as shown on the Drawings. Fiberglass markers shall be Carsonite Utility Marker, Style No. 375, or approved equal. Markers shall be equipped with the OWNER’S standard logo.

3. Installing Force Main in Cover Pipe

135-2021-01 (03/2022)

a. Installation of force main in cover pipe is covered in Section 02326 of these specifications.

4. Bedding of Pipe

a. Pipe shall be laid with the bottom quadrant of the barrel and bells of pipe bedded in at least 4-inch depth of stone when on earth subgrade and in at least 6-inch depth of stone, below the bottom of the barrel of pipe when on solid rock subgrade. Stone for bedding of 6-inch through 16-inch pipe shall be No. 8 to ½-inch Kentucky Department of Highways Size 78 crushed rock as specified in Section 02235 of this manual, spaded into place.

b. In case of pipe sizes 18-inch through 72-inch in both earth and rock trenches, the subgrade shall be shaped to provide for a No. 8 to ¾-inch crushed stone pad, Kentucky Department of Highways Size 68, for a depth under the pipe barrel at least ¼ the outside diameter of the pipe, with a minimum of 6-inch depth and maximum of 9-inch depth. The bedding material shall be thoroughly spaded into place, in order to give a uniform bearing for at least the bottom quadrant of the pipe.

c. No filling of the trench with earth to bring pipe to grade will be permitted. If trenches are dug too deep, they must be brought to grade and supported by crushed rock for pipe bedding (No. 8 to ½-inch or No. 8 to ¾-inch) as specified in Section 02235 of this manual. No pipe shall be laid in the trench until the subgrade is inspected and found correct.

5. Inside Traffic Areas

a. Where sewer pipe is located in existing or proposed street, highway, railroad, sidewalk and driveway crossings or within any roadway paving, or about manholes, valve and meter boxes located in such paving, the following backfill material and procedure are required:

(1) Fill the trench to the surface with one of the following materials of limited compressibility, uniformly distributed without mechanical compaction.

(a) Dense graded aggregate (Kentucky Department of Highways Class A, Grading D).

(b) Kentucky Department of Highways No. 78 crushed stone.

6. Installation of Pipe

a. Ductile iron pipe shall first be thoroughly cleaned at joints, then joined according to instructions and with tools recommended by the pipe manufacturer. Sufficient copies of the manufacturer's

135-2021-01 (03/2022)

installation instructions shall be furnished the ENGINEER to permit the ENGINEER to retain 3 copies. One copy shall be available at all times at the site of the work.

b. All pipes must be forced and held together or "homed" at the joints before bolting. Pipe must be aligned as each joint is placed, so as to present as nearly true, straight lines and grades as practical, and all curves and changes in grades must be laid in such manner that 1/2 of the maximum allowable deflection shown in the pipe manufacturer's catalog is not exceeded.

c. Concrete blocking of fittings shall be as specified hereinafter in this Specification Section 02610.

d. Cutting of pipe may be done by special pipe cutters as the CONTRACTOR may elect, but the CONTRACTOR will be held responsible for breakage or damage caused by careless cutting or handling. Cut edges of the pipe shall be made smooth and a bevel formed on the exterior of the pipe barrel when using rubber gasket type pipe.

B. Laying Copper Pipe and Fittings

1. Bedding and Backfilling

a. Bedding and backfilling shall be in accordance with HWEA Standards as outlined in Sections 3.02 and 3.03.

2. Installing Copper Pipe and Fittings

a. Exterior copper pipe shall be laid of type K pipe, with brass compression fittings. Joints shall be neatly reamed and flared and joints drawn up firmly. Pipe shall have at least 36-inch cover. Joints shall be tested and all leakage stopped before backfilling the pipe trench.

b. Interior copper pipe shall be installed of Type L pipe, with sweat joint fittings. Pipe shall be tested and all leaks stopped before the system will be accepted. The pipe shall be free of dents and bends. The sweat joints shall present a neat appearance. All pipe shall be parallel to walls and floors with unions on all runs and branches. The pipe shall be secured to the walls and ceilings by clamps and hangers manufactured for the purpose. Strap hangers are not acceptable. Unions and valves shall be placed on each outlet to facilitate dismantling and shutting off.

c. All copper pipe shall be installed by experienced workmen.

C. Installation of Flanged or Threaded Pipe and Fittings (Interior)

1. Interface with Other Products

135-2021-01 (03/2022)

a. When a pipe transitions from ductile iron to pipe of another material, a transition fitting shall be used. The transition material shall be a dielectric material or insulator. For pressure applications above 20 psi the transition fitting shall be a Straub pipe joint, a Dresser type coupling, or equal. For low pressure or gravity applications, the transition fitting shall be a Straub pipe joint, a Dresser type coupling, a Fernco fitting, or equal. All transition couplings shall be approved by the ENGINEER prior to installation.

D. Laying Plastic Pipe

1. Bedding and Backfill - General

a. Bedding and backfill shall be in accordance with HWEA Standards. See sections 3.02 and 3.03.

b. Sufficient space, limited to a maximum of 2 feet length, shall be left out of the bedding to facilitate proper jointing of the pipe.

c. No pipe shall be laid resting on solid rock, blocking, or other unyielding objects. Jointing before placing in the trench and subsequent lowering of more than one section may be allowed subject to the ENGINEER'S permission.

2. Installation of Polyvinyl Chloride (PVC) Pressure Pipe

a. Prior to laying, all PVC pipe shall be stored in a shaded place for protection from the direct rays of the sun. Pipe shall be distributed from storage as the work progresses as permitted by the ENGINEER.

b. The pipe, fittings, and valves shall be placed in the trench with care. Under no circumstances shall pipe or other materials be dropped or dumped into the trench. The pipe shall not be dragged in a manner which would cause scratching of the pipe surface. An excessive amount of scratching on the surface of the pipe will be considered cause for rejection.

c. Sufficient copies of the pipe manufacturer's instructions for installing the pipe and accessories shall be furnished the ENGINEER by the CONTRACTOR to permit the ENGINEER to retain 3 copies. A copy is to be available at the job site at all times.

d. Concrete blocking of fittings, as hereinafter specified, shall be required for PVC pipe with slip joints and rubber gaskets.

e. All dirt, dust and moisture shall be removed from the bell and spigot ends of pipes to be jointed. Insert gasket in bell. Apply the lubricant to spigot and gasket being careful to keep both ends free of dirt. The joint shall be homed to stop mark on spigot end of pipe. All jointing shall be done in accordance with pipe manufacturer's recommendations.

135-2021-01 (03/2022)

f. All cutting of the pipe shall be done in a neat and workmanlike manner with the least amount of waste of pipe involved and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool can be used to cut the pipe. Cut must be square and ragged edges removed with a cutting tool and/or file. A bevel or taper on the exterior of each spigot is required.

3. Installation of Polyethylene Pressure Pipe

a. Polyethylene pipe for force mains shall be joined using tools and equipment specifically manufactured for use with polyethylene pipe. Heat fusion temperature, heating time and cooling time shall be per the pipe manufacturer's requirements. Pouring of water on completed joints to speed cooling will not be allowed.

b. The pipe shall be snaked into the trench, employing the natural snaking tendency of the pipe. All short radius bends shall be made with fittings rather than bending the pipe. The pipe will be rejected if it contains kinks and gouges or gouges/cuts penetrating to a depth of 10 percent of the wall thickness.

c. Sufficient copies of the pipe manufacturer's instructions for installing the pipe and accessories shall be furnished the ENGINEER by the CONTRACTOR to permit the ENGINEER to retain 3 copies. A copy is to be available at the job site at all time.

d. Because of the high coefficient of expansion of polyethylene, the pipe shall not be attached to rigid structures at the ends until at least 48 hours have elapsed after backfilling and the pipe temperature has had an opportunity to stabilize.

4. Installing Polyethylene Pipe for Force Mains

a. The pipe shall be bedded in 6 inches minimum of loose soil and the hand placed backfill lightly consolidated to a depth of 12 inches above the top of the pipe. "Loose soil" or "select material" is defined as native soil excavated from the trench, free of rocks, foreign materials and frozen earth. The machine placed backfill may contain rock no larger than 4 inches in any dimension and to an extent no greater than 1/2 the volume of backfill materials used. The top 12 inches of backfill shall contain no rocks over 1-1/2 inches in diameter nor pockets of crushed rock.

b. The pipe shall be snaked into the trench, employing the natural snaking tendency of the pipe. All short radius bends shall be made with fittings rather than with the pipe alone. The pipe shall be bent to a radius of not less than 12 inches.

c. The pipe will be rejected if it contains kinks and gouges.

E. Blocking of Pipe at Bends and Ends

135-2021-01 (03/2022)

1. General

   a. All ductile and cast iron fittings shall be double polywrapped prior to the placement of concrete. Care shall be taken to avoid damage to polywrap.

   b. Concrete thrust blocking must be allowed to cure, or protected as approved by the HWEA, before backfilling.

2. Horizontal Bends

   a. Concrete thrust blocking required at bends in the horizontal plane shall be accomplished per the HWEA Standard Details for Construction of New Water Mains.

   b. The CONTRACTOR shall install concrete thrust blocking at each bend in the pipeline of five (5) degrees or greater to withstand maximum test pressure. The CONTRACTOR shall provide all material and labor to construct the concrete thrust blocking.

   c. Concrete thrust blocking shall have 3000 PSI compressive strength at 28 days

3. Vertical Bends

   a. The use of vertical bends in lieu of extra depth trenching shall be subject to permission by the ENGINEER and HWEA.

   b. Where the CONTRACTOR elects to use vertical bends, or where vertical bends are called for on the Construction Plans, the ENGINEER shall submit the blocking design, including calculations, to the HWEA for review and acceptance. Anchorages shall be designed to resist thrusts caused by the internal test pressure in the pipe. Protection against corrosion shall be inherent in the design.

F. Blocking of Pipe at Bends and Ends

1. Horizontal Bends

   a. Concrete backing and/or blocking required at bends in the horizontal plane shall be accomplished per detail on the Drawings. The square footage of blocking area shall be obtained from Tables "A" and "B" through the following procedure:

      Step No. 1 - From Table "A," select type soil and bearing area factor for particular fitting to be blocked.

      Step No. 2 - From Table "B," select multiplier to be used for the size pipe being blocked and its test pressure.

135-2021-01 (03/2022)

Step No. 3 - Calculate actual bearing area required by multiplying bearing area factor from Table "A" by multiplier from Table "B" (e.g. - 16-inch tee with 250 psi test pressure in sandy clay - 9.42 x 1.78 = 16.7 S.F. of bearing area required). Bearing area shall in no case be less than the minimum shown in Table "B."

TABLE "A"

Type Soil	Soil Bearing Pressure (PSF)	Bearing Area Factor for Degree of Bend (Square Feet) 90˚	Plug/Tee	45˚	22 1/2˚	11 1/4˚
Sandy Clay	3,000	13.33	9.42	7.21	3.68	1.85
Hard Clay	6,000	6.66	4.71	3.61	1.84	0.92
Shale	12,000	3.33	2.36	1.80	0.92	0.46
Solid Rock	16,000	2.50	1.77	1.35	0.69	0.35

TABLE "B"

Pipe Dia. (In.)	Min. Bearing Area (S.F.)	Multiplier for Pipe Test Pressure (TP) (TP) 350 psi	(TP) 300 psi	(TP) 250 psi	(TP) 200 psi	(TP) 150 psi	(TP) 100 psi	(TP) 50 psi
4	1.0	0.16	0.13	0.11	0.09	0.07	0.04	0.02
6	1.0	0.35	0.30	0.25	0.20	0.15	0.10	0.05
8	1.0	0.62	0.53	0.44	0.36	0.27	0.18	0.09
10	1.0	0.97	0.83	0.69	0.56	0.42	0.28	0.14
12	1.3	1.40	1.20	1.00	0.80	0.60	0.40	0.20
14	1.5	1.91	1.63	1.36	1.09	0.82	0.54	0.27
16	1.8	2.49	2.13	1.78	1.42	1.07	0.71	0.36
18	2.3	3.15	2.70	2.25	1.80	1.35	0.90	0.45
20	2.5	3.89	3.33	2.78	2.22	1.67	1.11	0.56
24	3.6	5.60	4.80	4.00	3.20	2.40	1.60	0.80
30	5.2	8.75	7.50	6.25	5.00	3.75	2.50	1.25
36	7.0	12.60	10.80	9.00	7.20	5.40	3.60	1.80
42	9.1	17.15	14.70	12.25	9.80	7.35	4.90	2.45
48	11.4	22.40	19.20	16.00	12.80	9.60	6.40	3.20
54	13.5	28.35	24.30	20.25	16.20	12.15	8.10	4.05
60	16.0	35.00	30.00	25.00	20.00	15.00	10.00	5.00

b. Consideration will be given to the use of restrained type mechanical joint pipe and fittings in lieu of concrete blocking. Use

135-2021-01 (03/2022)

of the restrained joint pipe and fittings is subject to review and acceptance by the ENGINEER of the locking-method and adequacy of design for pressures involved.

2. Vertical Bends

a. The use of vertical bends in lieu of extra depth trenching shall be subject to permission by the ENGINEER and OWNER.

b. Where the CONTRACTOR elects to use vertical bends, or where vertical bends are called for on the Drawings, the CONTRACTOR shall submit the blocking design, including calculations, to the ENGINEER for review and acceptance. Anchorages shall be designed to resist thrusts caused by the internal test pressure in the pipe. Protection against corrosion shall be inherent in the design.

G. Supplemental Backfilling Information

1. General

a. Excavated materials from trenches, tunnels, and structure excavation in excess of quantity required for trench backfill or site regrade, shall be disposed of by the CONTRACTOR. It shall be the responsibility of the CONTRACTOR to obtain location or permits for its disposal. The price bid for trench excavation and backfill, or site excavation and regrade, shall include the cost of disposition of excess excavated materials, as set forth herein, with no additional compensation being allowed for hauling.

b. For sewage force main contracts where sod is destroyed in areas maintained equivalent to residence yards, it shall be replaced on slightly ridged backfill on trench, and where destroyed in areas adjacent to the trench, it shall be replaced by the CONTRACTOR with fresh sod, all of which will be paid for at a unit price bid per foot of pipeline. The timing of resodding shall be controlled by the ENGINEER. Ground shall be prepared and fertilized as herewith specified for seeded areas. In small patches, supplying of 3 inches of topsoil and raking may be substituted for disking.

c. Where pastures, thin grass or cover crops are destroyed by trenching, laying, backfilling, or tunneling operations, surface shall be prepared by disking, fertilizing, and seeding, as specified in Section 02930. Seeding and fertilizing shall be included in the price for trenching and backfilling. The timing of this operation shall be controlled by the ENGINEER. Requirements of the Department of Highways for reseeding shall take precedence over these Specifications where they are involved.

d. No extra charge shall be made for backfilling of any kind, except as specified. Backfilling shall be included as a part of the price for

trenching. No extra charge shall be made for supplying outside materials for backfill except where fills above existing ground are necessary and payment is designated on Drawings or in Specifications. If backfilling of the trench or surface restoration is not properly completed, a proportionate part of the unit price for trenching shall be retained from payment estimates.

e. Before completion of the Contract, all backfills shall be reshaped, holes filled, and surplus materials hauled away and all permanent walks, street, driveways, and highway paving and sod replacement (if such surface replacement items are included in the Contract) and reseeding performed.

f. Backfill material must be uniformly ridged over trench, and excess hauled away. Ridged backfill shall be confined to the width of the trench and not allowed to overlap onto firm original earth, and its height shall not be in excess of needs for replacement of settlement of backfill.

g. All rock, including crushed rock or gravel from construction, must be removed from yards and fields. Streets and walks shall be broomed to remove all earth and loose rock immediately following backfilling.

2. Special Requirements

a. In case of street, highway, railroad, sidewalk and driveway crossings or within any roadway paving, or about manholes, valve and meter boxes located in such paving, the following backfill material and procedure is required.

b. The pipe shall be bedded in 6 inches minimum depth (for pipe sizes through 16 inches) of crushed rock meeting the requirements of the Kentucky Department of Highways standard size No. 9. For pipe sizes greater than 16 inches in diameter, the pipe bedding shall be a minimum depth of 6 inches and be of the material and gradation specified previously.

c. Similar material shall be used for haunching up to the spring line of the pipe, and it shall be worked under the haunch of the pipe to provide adequate side support. The crushed rock shall then be hand placed to a point 12 inches above the top of the pipe.

d. After the above bedding and selected backfill have been placed, fill trench to within 6 inches of the surface with Kentucky Department of Highways No. 57 crushed stone, uniformly distributed, or other gradation acceptable to the ENGINEER. In order to accommodate compacted temporary surfacing it may be necessary to bulkhead or otherwise confine the stone fill at the open end of the trench.

135-2021-01 (03/2022)

e. Temporary surfacing of street, highway, railroad, sidewalk and driveway crossings, or within any roadway paving, or about manholes, valve and meter boxes located in such paving, shall consist of 6 inches compacted dense graded aggregate as specified under Section 02235 for temporary walkway or road surfacing, placed and compacted in the trench. Compaction shall be accomplished by methods which shall be sufficient to confine stone to the trench under normal traffic. Backfills shall be maintained easily passable to traffic at original paving level until acceptance of project or replacement of paving or sidewalks.

f. Railroad Company and Department of Highways requirements in regard to backfilling will take precedence over the above general specifications where they are involved.

H. Cut-Ins, Tie-Ins, and Cutting and Plugging

1. The OWNER shall not be responsible for extra costs of cut-ins, tie-ins, cutting and plugging, due to water not being entirely cut off by the existing water main valves.

2. A cut-in is defined as the removal of one section of existing pipeline (2 cuts of pipe) and insertion of one or more new pipeline connections therein.

3. A tie-in is defined as the removal of an existing plug or cap and the connecting of the new pipeline into the existing pipeline or fitting or valve at the joint opened by such removal.

4. A cutting and plugging is defined as the cutting and installation of a plug in an existing line.

3.03 TRENCH BACKFILL – SEWER PIPE

1. General

a. Excavated materials from trenches and tunnels, 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 and/or permits for its disposal.

b. Railroad company and Department of Highways requirements concerning backfilling will take precedence over the above general Specifications where they are involved.

2. Haunching

a. Upon completion of bedding and laying the sewer pipe, the CONTRACTOR shall place crushed rock, Kentucky Department of Highways Size 68 or 78 dependent on size of pipe, or the same material used for pie bedding on both sides simultaneously to the

top of the pipe. This material shall be hand placed using shovels to work the haunching material completely under the bottom quadrant and around the sides of the pipe to assure the maintenance of alignment of the pipe. No compaction of this material is required other than that obtained by the workers walking on the material during placement.

b. The haunching material is required for all sewer pipe installed in open trenches.

3. Initial Backfill

a. Upon completion of the haunching material to the top of the pipe, initial backfill shall be placed as hereby specified. The material shall serve as protection for the top of pipe reducing the possibility of damage to the pipe during the placement of backfill for the remainder of the trench depth.

b. When sewer pipe is located outside traffic areas, the initial backfill material shall be crushed rock (Highway Department 68 or 78, depending on size of pipe) placed above the pipe to the level hereinafter stated.

c. When the sewer pipe is located within traffic areas, the initial backfill shall be crushed rock of the same gradation of the pipe bedding material. Other alternate materials may be used only with the specific written permission of the ENGINEER when the work is located inside traffic areas.

d. In the case of ductile iron pipe, the initial backfill shall be hand placed to a point 6-inches above the barrel of the pipe. In case of plastic pipe, the initial backfill shall be hand placed and evenly spread to a point 11-inches above the pipe barrel for up to 4-feet cover, to a point 18-inches above the barrel for 4-feet to 10-feet cover, and 24-inches for more than 10-feet cover.

e. The initial backfill material is required over sewer pipe in all open trenches.

4. Final Backfill

a. Outside Traffic Areas

(1) After the above specified initial backfill is hand placed, rock mat be used in machine placed backfill pieces no larger than 6-inches in any dimension and to an extent not greater than one-half the volume of the backfill materials required to backfill the trench. If additional earth is required, it must be obtained and placed by the CONTRACTOR. Filling with rock and earth shall proceed simultaneously, in order that all voids or pockets, created by rock backfill, may be filled

135-2021-01 (03/2022)

with earth. Machine backfilling may be employed with tamping, except as hereinafter restricted, provided caution is used in quantity per dump and in uniformity of level of backfilling. Backfill material must be uniformly ridged over the trench, and excess hauled away, with no excavated rock over ½-inche diameter or pockets of crushed rock or gravel in top 11-inches of backfill, the top 11-inches reserved for topsoil or material more suited to sustain surface growth. Ridged backfill shall be confined to the width of the trench and not allowed to overlap onto firm original earth, and its height shall not be greater than that required to provide for settlement of backfill.

b. Inside Traffic Areas

(1) Where sewer pipe is located in existing or proposed street, highway, railroad, sidewalk and driveway crossing or within any roadway paving, or about manholes, valve and meter boxes located in such paving, the following backfill material and procedure are required:

(a) Fill the trench to the surface with one of the following materials of limited compressibility, uniformly distributed without mechanical compaction.

(i) Dense graded aggregate (Kentucky Department of Highways Class A, Grading D).

(ii) Kentucky Department of Highways No. 78 crushed stone

3.04 FIELD QUALITY CONTROL

A. Testing Pressure Pipe for Leakage

1. The CONTRACTOR will be required to test all pipelines and appurtenances with water after backfilling. The maximum test pressure, measured at the lowest elevation of the pipeline being tested, shall be the 200 psi or the pressure class of the pipe (To be determined by HWEA).

2. Backfilling before testing will be allowed, in the case of slip type of bolted joint pipe and at points where dangers to the public or other hazards demand that such be done immediately after pipe is laid.

3. When the line of section being tested is pumped up to the required pressure, it shall be valved off from the pump and a pressure gauge placed in the line. The pressure drop in the line, if any, shall be noted. If no pressure drop is noted in six hours, the ENGINEER and HWEA, at their discretion, may accept the line or section as tested, or may require the test run the full 24 hours.

135-2021-01 (03/2022)

4. At the end of the 24-hour test period, the pressure shall be recorded. If there is a drop in pressure, the CONTRACTOR will be required to pump the section being tested up to initial test pressure and maintain that pressure for 24 hours, measuring the amount of water required to accomplish this. The line will not be accepted until the leakage shall prove to be less than 10 gallons per inch diameter per mile of pipe per 24 hours.

5. Should there be leakage over the allowable amount, the CONTRACTOR will be required to locate and repair the leaks and retest the section.

6. If the leakage of a section of pipeline being tested is below the allowable amount, but a leak is obvious, in the opinion of the ENGINEER or HWEA, due to water at the surface of the ground, or by listening, the leak can be heard underground with the geophone, or any other means of determining a leak, the CONTRACTOR will be required to repair those leaks.

7. The CONTRACTOR shall furnish meter or suction tank, pipe test plugs, and bypass piping, and make all connections for conducting the above tests. The pumping equipment used shall be centrifugal pump, or other pumping equipment that will not place shock pressures on the pipeline. Power plunger or positive displacement pumps will not be permitted for use on closed pipe system for any purpose.

8. Inspection of pipe laying shall in no way relieve the CONTRACTOR of the responsibility for passing tests or correcting poor workmanship.

3.05 BASIS OF PAYMENT

A. Excavation and Backfilling

1. Solid Rock Excavation

a. Unclassified Excavation

(1) Excavation shall be unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S unit price bid for each item of construction requiring excavation or included in the lump sum bid for such type contracts.

B. Trench and Pipe Stabilization

1. Crushed Stone for Trench Stabilization

a. Crushed stone ordered by the ENGINEER for trench stabilization shall be as specified in Section 02235 of these Specifications and paid by the ton so placed.

135-2021-01 (03/2022)

C. Sewage Force Mains

1. Unit Price Contracts

a. Sewage Force Mains

(1) Payment for furnishing, trenching, bedding, laying, and backfilling water lines or force mains shall be included in the unit price bid per linear foot of pipe laid, including length of fittings and valves, unless same are included in lump sum portions or assemblies noted on the Drawings. However, payments will not be made for branch lengths of fittings within 2.5 feet of edge of main trench. The extra cost of trenching in difficult locations, such as stream, railroad, and highway crossings, if not covered in other contract unit prices, shall be included in unit price for furnishing, trenching, bedding, laying, and backfilling the pipe.

(2) All blowoff or vent branches will be measured as pipe from center of connecting tee to end of pipe.

(3) In the case of unit price contracts, unless otherwise stated in the Special Conditions, ductile iron fittings, laid outside lump sum assemblies, will be incidental to the cost of the force main being installed.

D. Excess Materials

1. The unit prices for trench excavation and backfill shall include the cost of disposition of excess excavated materials.

E. Valves

1. The unit price bid for the installation of valves shall include valve boxes, the cost of the concrete collar required around the valve boxes and extension stems if required.

F. Testing and Purging

1. The unit price bid for installing pressure lines shall include cleaning, purging, and testing the line.

G. Blocking of Bends and End of Pipe

1. The payment for blocking of bends and ends of pipes shall be included in the price bid for furnishing and laying the pipe.

135-2021-01 (03/2022)

H. Tracing Wire or Tape

1. The cost of tracing wire or tape installed with nonmetallic pipe shall be included in the price bid for furnishing and installing the pipe.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02700

SEWER PIPE

PART 1 GENERAL

1.01 SUMMARY

A. All pipe and accessories supplied for use on this project shall be as specified herein.

B. All pipe supplied for this Project shall be of the pipe material called for on the Drawings.

C. CONTRACTOR performing work on this project shall be one of the 4 approved contractors listed below:

1. Scott and Ritter, Inc.
P.O. Box 749
Bowling Green, Kentucky 42102-0749
270-781-9988
lukeritter@scottandritter.com

2. Cleary Construction, Inc.
2006 Edmonton Road
Tompkinsville, Kentucky 42167
270-487-1784
terriwitty@clearyconst.com

3. Murtco, Inc.
815 Abell Drive
Paducah, Kentucky 42003
270-444-0679
kmurt@murtco.com

4. Twin States Utilities and Excavation, Inc.
9440 Old Glasgow Road
Mt. Hermon, Kentucky 42157
270-427-5300
cadams@twinstatesinc.com

1.02 RELATED WORK

A. For cover pipe and boring and/or jacking see Section 02326.

1.03 REFERENCES

A. Where referenced specifications (ASTM, AWWA, etc.), are mentioned, these standards are deemed to be the minimum standard of quality of materials or methods to apply to this project.

135-2021-01 (03/2022)

1.04 SUBMITTALS

A. Copies of the manufacturer's directions for handling and installing the particular pipe supplied and accepted by the ENGINEER shall be furnished to the ENGINEER at the first delivery of pipe to the project in numbers that will permit the ENGINEER to retain three copies.

B. The manufacturer's instructions shall be strictly followed unless a conflict exists between the manufacturer's instructions and those contained herein. In such cases, the ENGINEER shall determine which methods are to be followed and no pipe shall be installed until the CONTRACTOR has received written instruction from the ENGINEER as to which procedure to follow.

1.05 QUALITY ASSURANCE

A. Where pipe enters manholes, the pipe manufacturer shall certify that their pipe is compatible with the watertight, flexible seal to be used at manhole openings as specified in Section 03480 of these Specifications, and that their combined use will produce a flexible watertight installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. All pipe, fittings and jointing materials shall be of one manufacturer unless different types are shown on the Drawings or otherwise accepted by the ENGINEER.

2.02 MATERIALS-SEWER AND DRAIN PIPE

A. Sewer Transition Joints

1. Where sewer pipes of different materials are to be joined, i.e., VC pipe to DI pipe, VC pipe to PVC pipe, or some other combination, an adapter made for this purpose shall be used. The adapter shall be Fernco Adapter by Fernco Joint Sealer Company, Ferndale, Michigan, or OWNER-approved equal.

B. PVC (Polyvinyl-Chloride) Sewer Pipe

1. Pipe

a. PVC pipe supplied for use on this project shall be as indicated on the project plans.

(1) There shall be no transition of the pipe material at any point other than at the manhole. Each pipe segment from manhole to manhole shall be per the construction plan sheets.

b. The pipe shall be made of PVC plastic having a cell classification of 12454 as defined in ASTM D 1784. Compounds having different

cell classifications due to one or more properties being superior to those of the specified compound are acceptable. Clean rework material, generated from the pipe manufacturer's pipe or fittings production may be used by the same manufacturer provided the reworked products meets the requirements stated herein.

c. The pipe shall be homogeneous throughout, free of cracks, holes, foreign inclusions or other injurious defects. The pipe shall be uniform in color, wall thickness, density and other physical properties. The maximum laying length for all PVC pipe supplied shall be 14.0± feet. Wall thickness shall be SDR-35 per ASTM D 3034 or ASTM F 679. Marking and identification of pipe shall be per ASTM D 3034 or ASTM F 679 as applicable.

d. The maximum laying length for all PVC pipe supplied shall be 14.0± feet.

e. PVC pipe for use on interior piping shall meet the general specification for exterior piping with the socket dimensions conforming to Table 4 of ASTM D 3034.

2. Fittings

a. PVC fittings supplied for use on this project shall meet all the physical and quality requirements as hereinbefore specified for PVC pipe.

b. Ninety degree bends are not permitted in gravity sewer lines.

c. PVC fittings for 4-inch through 15-inch diameter pipe shall meet the dimensional requirements of the tables as shown in ASTM D 3034 except that saddle type wyes or tee branches shall not be allowed for use on new sewer mains. Where 90° bends are used, they shall be the long radius type. PVC fittings for 15-inch through 27-inch diameter pipe shall conform to the requirements of ASTM F 679.

3. Joints - Exterior Piping

a. Joints for PVC pipe and fittings for sewer mains and exterior plant gravity sewers shall be of the "Push-On Type" composed of an elastomeric ring gasket compressed in the annular space between a bell end or socket and spigot end of the pipe.

b. All surfaces of the bell, socket or spigot end of the pipe against which the ring gasket may bear shall be smooth, free of cracks or other imperfections that could adversely affect the sealing capacity of the joint.

c. Lubricant for use in assembling joints shall be supplied with the pipe or be of the specific manufacturer as recommended by the pipe manufacturer for use with the specific pipe supplied. The

135-2021-01 (03/2022)

lubricant shall not cause deterioration of either the elastomeric ring gasket or pipe material.

d. Where PVC pipe and fittings are connected to piping of other materials, the manufacturer's standard adapters or transition pieces shall be used. Should manufacturer not produce an adapter for a specific pipe of other material, the adapters or transition fittings as specified in this section of these Specifications shall be used.

C. Ductile Iron Sewer Pipe

1. Pipe

a. This specification covers 4 to 64-inch ductile iron gravity sewer pipe designated "DI" on the Drawings. Pipe furnished under this Specification shall comply with all provisions of ANSI/ASTM A 746. Maximum design thickness shall be based on depth of cover, trench loadings and other conditions per ANSI/AWWA C150/ A21.50.

b. Metal Design Strength psi (Minimum)

Tensile Strength	60,000
Yield Strength	42,000
Percent Elongation	10

c. The net weight, class or nominal thickness, and casting period shall be shown on each pipe. The manufacturer's mark, the year in which the pipe was produced, and the letters "DI" or "DUCTILE" shall be cast or stamped on the pipe.

2. Fittings

a. Fittings for ductile iron sewer pipe shall be mechanical joint or rubber ring slip joint fittings.

b. Ductile iron mechanical and rubber ring slip fittings shall conform to ANSI/AWWA C110/A21.10 for gray iron and ductile iron fittings. Mechanical joints and rubber slip ring joints shall also conform in all respects to ANSI/AWWA C111/A21.11 and ANSI/AWWA C 153.

c. All fittings shall be manufactured for the size and pressure class of the pipeline in which they are to be used. All fittings shall be furnished complete with all joint accessories.

3. Joints

a. General

(1) Pipe joints shall be mechanical joint, rubber ring slip joint or restrained joint as shown on the Drawings.

135-2021-01 (03/2022)

(2) All items used for jointing pipe shall be furnished with the pipe. The joints shall be made with tools and lubricant in strict conformity with the manufacturer's instructions. Copies of the instructions shall be delivered to the ENGINEER at start of construction in sufficient numbers that will permit the ENGINEER to retain 3 copies.

b. Mechanical Joints

(1) Mechanical joints are to be furnished according to ANSI/ AWWA C111/A21.11-95. All pipe joints must be furnished complete with all accessories. Mechanical joint bolts and nuts shall be of alloy cast iron or alloy steel (Corten type such as U.S. Alloy) or equal. Rubber gaskets shall be made of plain first grade rubber, free of imperfections and porosity. Hardness shall be 70 to 75 durometer.

c. Rubber Ring Slip Joint (Push On)

(1) Rubber ring slip joint shall be equal to ANSI/AWWA C111/ A21.11-95. The joints shall be of the following materials and assembled in the sequence outlined below:

(a) Rubber ring gasket compressed in groove in bell of pipe.

(b) Beveled spigot end of pipe for initial centering into rubber gasket in bell.

d. Restrained Joints

(1) For Pipe

(a) Restrained joint for push-on type bell with rubber O-ring shall meet the applicable requirements of ANSI/AWWA C111/A21.11. The bell/spigot configuration for the restrained joint shall be such that restraint shall be provided for the joint based on a sustained pressure equal to the pressure class of the pipe without separation.

(b) The restrained joint shall allow the same deflection as standard push-on joint pipe.

(c) Where field welding is required for restrained field cut pipe, the welder shall be properly instructed in the methods and materials for use on ductile iron pipe by the manufacturer, on site.

(2) For Fittings

135-2021-01 (03/2022)

(a) Where restrained joint fittings are called for, the bell configuration for the fitting shall be the same as for the pipe.

(b) Where fittings with restrained joint bell configurations are not available, restraint materials for use with mechanical joint bell configurations shall be as follows:

(i) All materials shall be stainless steel, including nuts and washers.

(ii) Install restraint glands on each side of the fitting. The restraining glands shall be “Meg-A-Lug,” as manufactured by EBAA Iron sales, Inc. of Eastland, Texas; “Grip Ring,” as manufactured by Romac Industries, Inc. of Seattle, Washington; or equal.

4. Coating and Linings

a. All ductile iron pipe and fittings for gravity sewer service shall be bituminous coated outside in accordance with ANSI/AWWA C151/ A21.51 for pipe and ANSI/AWWA C110/A21.10 for fittings.

b. All ductile iron pipe and fittings for gravity sewer service shall be cement-mortar lined with seal coat in accordance with ANSI/AWWA C104/A21.4.

D. Cast Iron Soil Pipe (Sewer)

1. Pipe and Fittings

a. Wherever soil pipe is called for on the Drawings, it shall be extra heavy soil pipe and fittings plainly marked "XH." Materials, chemical requirements, physical requirements, dimensions, coating, tests, test methods, certification, inspection and marking shall be as specified in ASTM A 74.

2. Joints - Sewer Laterals

a. Joint seals for cast iron soil pipe and fittings shall be preformed rubber (neoprene) gaskets meeting the requirements of ASTM C 564. Gaskets shall be manufactured from a vulcanized virgin rubber compound containing no scrap or reclaimed material. Gaskets shall be supplied by the manufacturer of the pipe or of a manufacturer recommended by the manufacturer of the pipe.

3. Joints - Interior Installation

a. Joint seals shall be preformed rubber (neoprene) gaskets as stated previously for sewer laterals.

135-2021-01 (03/2022)

2.03 SOURCE QUALITY CONTROL

A. PVC Polyvinyl-Chloride Sewer Pipe

1. Pipe shall be tested and inspected at the factory and inspected at the job site. Testing shall be accomplished in conformance with the following ASTM specifications utilizing the test methods specified therein:

Dimensions	ASTM D 3034 or ASTM F 679 and D 2122
Extrusion Quality	ASTM D 2152
Pipe Stiffness (5%)	ASTM D 2412
Impact Resistance	ASTM D 2444

2. In addition, a typical joint assembly, gasket type joint, shall be tested by a qualified independent laboratory per test requirements of ASTM D 3212. The manufacturer shall submit through the CONTRACTOR sufficient copies of certification and test results for each lot of material represented by shipment to the job site that will permit the ENGINEER to retain 3 copies.

B. Ductile Iron Pipe (Mechanical Joint and Rubber Slip Joint Type)

1. Hydrostatic and physical acceptance tests shall be in accordance with ANSI/AWWA Specification C151/A21.51-81 for ductile iron pipe centrifugally cast in metal molds or sand lined molds for water or other liquids.

2. The ENGINEER shall be provided with sufficient copies of each of the tests for each Contract to permit the ENGINEER to retain 3 copies.

3. All items used for jointing pipe shall be tested before shipment.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION - SEWER PIPE

A. General

1. All excavation shall be open trenches, except where the Drawings call for tunneling, boring or jacking under structures, railroads, sidewalks, roads or highways.

B. Trees and Shrubs

1. Trenching shall include all clearing and grubbing, including all weeds, briars, trees and stumps encountered in the trenching, regardless of size. The CONTRACTOR shall dispose of any such material by burning, burial or hauling away or as noted on the Drawings, at no extra cost to the OWNER. Ornamental shrubs, hedges and small trees (3 inches in diameter or less) shall be removed, protected and replanted, at no extra cost to the OWNER.

135-2021-01 (03/2022)

2. Where pipelines run through wooded terrain, cutting of trees within limits of maximum permissible trench widths, as set forth in this article, will be permitted. However, cutting of additional trees on sides of trench to accommodate operating of trenching machine will not be permitted. The CONTRACTOR shall obtain specific permission of the OWNER before cutting any tree larger than 4 inches in diameter.

C. Highways, Streets and Railroads

1. Trenching also includes such items as railroad, street, road, sidewalk, pipe, small creek crossings, cutting, moving or repairing damage to fences, poles or gates and other surface structures, regardless of whether shown on the Drawings.

2. The CONTRACTOR shall so coordinate his work as to produce a minimum of interference with normal traffic on highways and streets. He may, with the approval of the governing agency, close a street to traffic for such length of time considered necessary, provided persons occupying property abutting the street have an alternate route of access to the property which is suitable for their needs during the time of closure. It shall be the responsibility of the CONTRACTOR to give 24 hours advance notice to fire and police departments and to occupants of a street which will be closed, in a manner approved by the governing body.

3. Where located within city streets and/or roads, the opening of more than 200 feet of trench ahead of pipe laying and more than 100 feet of open ditch left behind pipe laying, before backfilling, will not be permitted, except upon written consent of the OWNER. Where located outside roadway or parking areas, longer distances for opening and closure may be allowed provided the longer distance does not affect the safety of the general public. No trench shall be left open or work stopped on same for a considerable length of time. In case of objectionable delay trench shall be refilled according to backfill specifications.

4. Construction equipment will not be approved for use where treads are injurious to paving encountered. Curbs, sidewalks, and other structures shall be protected by the CONTRACTOR from damage by his construction equipment.

5. In case of damage to any existing structures, repair and restoration shall be made at once and backfill shall not be replaced until this is done. In all cases, restoration and repair shall be such that the damaged structure will be in as good condition and serve its purpose as completely as before, and such restoration and repair shall be done without extra charge, except as set forth under the applicable provisions of the General Conditions.

6. Where trenching is cut through paving which does not crumble on the edges, trench edge shall be cut to at least 2 inches deep to straight and neat edges, before excavation is started, and care taken to preserve the edge to facilitate neat repaving.

135-2021-01 (03/2022)

7. The CONTRACTOR shall maintain road crossings in a passable condition for traffic until the final acceptance of the work, being paid only by unit price for crushed rock used, within limitations as hereinafter specified.

8. Railroad company and Department of Highways requirements in regard to trenching, tunneling, boring and jacking shall take precedence over the foregoing general specifications and the following tunneling and boring or jacking specifications, where they are involved. Where work is within railroad right-of-way, Railroad Protective Insurance shall be carried by the CONTRACTOR in the amounts required by the Railroad Company.

9. The insurance policy shall name the railroad as the insured and the original policy shall be delivered to the railroad after submitting same to the OWNER for review. The cost of flagmen required by the railroad and/or highway departments shall be paid by the CONTRACTOR.

D. Existing Utilities

1. The CONTRACTOR shall determine, as far as possible in advance, the location of all existing sewer, culvert, drain, water, electric, telephone conduits, fiber optics, gas pipes, and other subsurface structures and avoid disturbing same in opening his trenches. In case of sewer, water and gas services and other facilities easily damaged by machine trenching, same shall be uncovered without damage ahead of trenching machine and left intact or removed without permanent damage ahead of trenching and restored immediately after machine has passed, without extra cost to the OWNER. The CONTRACTOR shall protect such existing facilities, including power and telephone poles and guy wires, against danger or damage while pipeline is being constructed and backfilled, or from damage due to settlement of his backfill. It shall be the responsibility of the CONTRACTOR to inform the customers of utilities of disruption of any utility service as soon as it is known that it has been or will be cut off.

2. Where there is the possibility of damage to existing utility lines by trenching machine, the CONTRACTOR shall make hand search excavation ahead of machine trenching, to uncover same, at no extra cost to the OWNER. Hand trenching is required, at no extra payment, where undue damage would be caused to existing structures and utilities by machine trenching.

3. The work of uncovering and backfilling required for locating existing sewers, water lines and other existing facilities for connection of improvements or avoidance in location of proposed pipeline, shall be considered incidental to furnishing and installation of the proposed pipeline.

E. Pipelines in Same Trench

1. Pipelines, force mains, and sewers laid in same trench shall, in all cases, be bedded on original earth, crushed stone, or other specified bedding

materials, regardless of divergence in their elevations, unless otherwise specified. They shall never be laid in unsupporting backfill or one above the other. The CONTRACTOR shall receive applicable unit prices for each pipeline, force main, and sewer so laid, the same as if laid in widely separated trenches.

F. Location of Proposed Pipelines

1. The location of pipelines and their appurtenances, as shown on the Drawings, are those intended for the final construction. However, conditions may present themselves before construction on any line is started that would indicate desirable changes in location. Also, development of property traversed may require location changes. In such cases, the OWNER reserves the right to make reasonable changes in line and structure locations without extra cost, except as may be determined by the application of the unit prices bid to the quantities actually involved. The OWNER is under no obligation to locate pipelines so they can be excavated by machine.

G. Construction Stake-out

1. The ENGINEER will provide geometric base data for the CONTRACTOR'S use in locating sewers and facilities in the design location. The locations for vertical control (benchmarks) are shown on the Drawings with elevation and description duly noted. Each manhole, pumping station wetwell, or other notable sewage system component shall have the coordinates shown at the individual location or listed with the General Notes of the Drawings. It shall be the CONTRACTOR'S responsibility to locate the new facilities in their intended position using survey grade GPS survey equipment. It should also be the CONTRACTOR'S responsibility to provide offset hubs at each manhole or such reference points as may be required to maintain the location of each new installation.

2. Where the CONTRACTOR elects to use grades (batter) boards for sewer construction, offset line and grade stakes shall be set and cut sheets prepared before trenching work is started. All stake-out work and cut sheet preparation shall be accomplished by the CONTRACTOR, the ENGINEER being responsible for review and checking the finished cut sheets. The CONTRACTOR shall provide all material, equipment, and labor for all stake-out work. Cut sheets, where required, shall be prepared on forms supplied by the ENGINEER (HKB Form RPR-4).

3. The cut sheets shall contain the following minimum information:

a. Manhole stations per the KYTC Highway Plans.

b. Grade between manholes to hundredths of a percentage point.

c. Centerline and offset stations per the KYTC Highway Plans.

d. Amount and direction of offset per the KYTC Highway Plans.

135-2021-01 (03/2022)

e. Centerline elevation in hundredths of a foot.

f. Centerline cut in hundredths of a foot.

g. Offset elevation in hundredths of a foot.

h. Offset cut in hundredths of a foot.

i. Average trench depth in hundredths of a foot.

j. Utilities information and depths and/or any other pertinent information.

k. Horizontal and vertical control information shall be found on Plan Sheet 1.

4. Where the CONTRACTOR elects to use grade (batter) boards for sewer construction, offset hubs shall be set perpendicular to each 25 foot centerline station. Where laser beam equipment is to be used, the offset line shall be as required for the specific type of laser equipment used. In either case, the CONTRACTOR shall be required to maintain at least the offsets at manholes until the sewer main has been constructed. The CONTRACTOR shall also, in either case, be required to obtain the original ground elevation along centerline, at each 25 foot station, for the purpose of calculation of the average trench depth.

5. Grades shown on the Drawings or as revised in the field are invert of pipe and NOT trench subgrade. The centerline cuts on the cut sheets shall have this calculation made, original ground surface to invert of sewer pipe, which is the depth which shall be used for calculation of the average depth of trench and backfill.

H. Trench Requirements

1. All trenches must be dug neatly to lines and grades as shown on the Drawings, as established in the field and/or as established on the cut sheets. Trenches shall be of sufficient width to properly assemble or bolt joints.

2. Trenching shall be completed between one grade control point and the next in advance of the laying of pipe, where pipes, culverts, or other structures may be encountered whose grade cannot reasonably be determined ahead of trenching. Should the CONTRACTOR lay pipe closer to the opening of trench ahead, he shall bear cost of any removal and relaying which may be required to avoid location conflict.

3. The extra cost of trenching in difficult locations, such as stream, railroad or highway crossing, if not covered by other Contract unit prices, shall be included in the unit price for furnishing, laying, trenching and backfilling.

4. Where grade (batter) boards are used to establish finish grade, they shall be set by the CONTRACTOR, with at least 3 boards set at all times where

installation is in progress. These will be set each 25 feet or less and will be set perpendicular to and spanning the centerline of the trench, such that the grade string is in the vertical plane of the pipe flow line. Grade boards shall be supported by stakes driven firmly on each side of the trench, unless otherwise acceptable to the ENGINEER. Where laser beam equipment is used, the setup shall be per the laser manufacturer's instructions and/or the permission of the ENGINEER.

5. Grades shown on the Drawings and/or profiles, cut sheets and offset stakes are the elevations of the invert of the pipe in all cases and excavation in open trench or tunnel must be made of sufficient depth to take care of required bedding of pipe and bells below these lines.

6. No additional compensation will be allowed for the extra depth trenching so required below invert.

7. Where bottoms of trench for 6-inch through 16-inch size pipe are in or on solid rock or where concrete cradle or arch is to be used, trenches or tunnels shall be dug to a depth of at least 6 inches below bottom of barrel of pipe. Where in earth, they shall be dug to at least 6 inches below bottoms of pipe barrels and bells.

8. In pipe sizes 18-inch through 72-inch, the trench shall be dug to a depth of 1/4 of the outside diameter of the pipe below the bottom of the pipe barrel in earth or solid rock subgrade, with a maximum of 9 inches, and a minimum of 6 inches. This requirement shall also apply where concrete arch or cradle is used to protect the pipe.

9. When trench or tunnel is dug below required grade, the pipe must be brought to grade by filling with crushed rock for pipe bedding as specified in this Section 02700 of these Specifications, at the CONTRACTOR'S expense. Fill for pipe support shall not be made with material excavated from trench.

I. Excavation Unclassified

1. Excavation for pipelines shall be unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S unit price bid for furnishing, trenching, laying and backfilling the pipe.

2. Excavation for structures such as manholes, pump stations, and vaults is likewise unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S lump sum or unit price bid, as the case may be.

3. Solid rock is defined as materials of one-third cubic yard or more in one location (in a native state or concrete) that rings under the hammer which cannot be removed economically without the use of explosives. Paving removal is excluded; also, shale rock.

135-2021-01 (03/2022)

4. In the event the ENGINEER finds it necessary to specifically order mechanical removal of solid rock, it will be measured by the cubic yard for such materials actually removed limited in depth to required depths of bedding below outside of pipe barrel and in width to the following dimensions:

TABLE 3.01

For 6" Pipe 2'-6"	For 15" Pipe 2'-10"	For 27" Pipe 4'-0"
For 8" Pipe 2'-9"	For 16" Pipe 2'-11"	For 30" Pipe 4'-4"
For 10" Pipe 2'-9"	For 18" Pipe 3'-2"	For 33" Pipe 4'-7"
For 12" Pipe 2'-9"	For 20" Pipe 3'-5"	For 36" Pipe 5'-6"
For 14" Pipe 2'-9"	For 21" Pipe 3'-6"	For 42" Pipe 6'-0"
	For 24" Pipe 3'-8"	For 48" Pipe 6'-6"
		For 54" Pipe 7'-0"

5. Mechanical removal of solid rock is defined as solid rock in its native state which is ordered to be fractured and broken up for removal by hand tools and/or hand held power or pneumatic tools to provide protection of utilities, structures, etc. which might otherwise be subject to damage by conventional drilling and shooting or heavy excavating equipment.

6. Payment for mechanical removal will not be authorized for solid rock excavation which is accomplished by drilling and shooting or by crawler or wheel mounted excavators, trenching machine, and similar equipment.

I. Dewatering of Trenches

1. Dewatering of trenches shall be considered a part of trenching, at no extra cost to the OWNER. Dewatering of trenches shall include ground-water and storm or sanitary sewage. Suitable pumping and other dewatering equipment is to be provided by the CONTRACTOR, to insure the installation of the pipeline structure in a dewatered trench and under the proper conditions. Dewatering shall include all practical means available for prevention of surface runoff into trenches and scouring against newly laid pipe.

2. Piles of excavated materials shall be trenched or temporarily piped to prevent, as far as practical, blockage of drainage ditches and gutters, and water carriage of excavated materials over street and highway surfaces.

3. Where subgrade of trench has insufficient stability to support the pipeline and hold it to its original grade, the ENGINEER may order stabilization by

135-2021-01 (03/2022)

various means. Exclusive of dewatering normally required for construction and instability caused by neglect of the CONTRACTOR, it shall be paid for at unit prices set up in the Contract, such as extra excavation, crushed rock for pipe bedding, concrete cradle or piling.

3.02 LAYING SEWER PIPE

A. General

1. Checking of Pipe

a. The selection of pipe strength class shall be based on earth weight of 130 pounds per cubic foot and a safety factory of 1.50.

b. All pipe and fittings must be tested for uniform diameter, straightness and defects by the CONTRACTOR before being lowered into trench, and rejected pipe marked in a way not to impair its value. Rejected pipe must be separated from accepted pipe and removed from the project. The ENGINEER will make periodic observations of pipe in storage and/or incorporated into the work. Pipe found defective, not meeting Specifications, or improperly installed shall be rejected and replaced.

2. Alignment and Grade

a. All pipe, after being inspected and accepted, shall be laid to correspond with lines and grades staked out by the CONTRACTOR. All sewer lines shall be laid to constant grades between invert elevations shown on the Drawings. Grades shown on the Drawings are invert of pipe and NOT trench subgrade. The pipe lengths shall be fitted together and matched, so that they will form a sewer with a smooth and uniform invert, visible as a full circle from manhole to manhole, except in special cases where curved sewer lines are planned. Deviation from grades shown on the plans of greater than 0.02 will not be accepted.

3. Unstable Subgrade

a. 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. If crushed rock fill is necessary, it will be paid for per ton of such material used, except in cases where instability is caused by neglect of the CONTRACTOR.

135-2021-01 (03/2022)

4. Control of Quantities Laid

a. Laying of pipe may be held up by the ENGINEER until trench has progressed far enough ahead to remove the possibility of having to change grade or alignment on account of other structures, pipelines or conduits.

b. Unless permitted or directed, not less than 100 feet of pipe shall be laid at one operation except for the following reasons:

(1) Street and railroad crossings.

(2) Wet caving trenches.

(3) Business houses or institutions damaged by prolonged disconnection from street.

(4) Less than 100 feet distance between manholes or pipe control sections.

5. Bedding of Pipe

a. Six-inch through 16-inch pipe shall be laid with bottom quadrant of barrel and bells of pipe bedded in at least 6-inch depth of crushed stone when on earth subgrade and in at least 6-inch depth of crushed stone, below the bottom of the barrel of pipe when on solid rock subgrade. Stone for bedding of 6 inch through 16-inch pipe shall be Kentucky Department of Highways Size 9 crushed rock as specified in Section 02235 of these Specifications, spaded into place. It shall be included in price for furnishing and laying pipe. Payment for the extra stone required for bedding pipe in solid rock for 6-inch through 16-inch pipe shall be included in the price bid for solid rock excavation in the case of classified excavation and in the price bid for trenching and backfilling in the case of unclassified excavation.

b. In case of pipe sizes 18-inch through 72-inch in both earth and solid rock trench, the subgrade shall be shaped to provide for a crushed stone pad, Kentucky Department of Highways Size 9, for a depth under the pipe barrel at least 1/4 the outside diameter of the pipe, with a minimum of 6-inch depth and a maximum of 9-inch depth. The bedding material shall be thoroughly spaded into place, in order to give a uniform bearing for at least the bottom quadrant of the pipe. Payment for such bedding shall be included in the price paid for trenching and backfilling or laying, even when in or on solid rock.

c. For PVC or polyethylene pipe, alternate bedding materials will not be allowed. In order to qualify for use with sewer pipes of these compositions, the bedding material must be of the type of material delineated as Class IA embedment materials per Table 1 of ASTM

D 2321, namely, coral, slag, cinders, crushed stone or crushed shells. The alternate bedding materials must also be of the same gradation of the crushed stone previously specified, namely, Kentucky Department of Highways Size 9. The crushed stone previously specified shall be used for all other piping materials.

d. No filling of trench with earth to bring pipe to grade will be permitted. If trenches are dug too deep, they must be brought to grade and supported by crushed rock for pipe bedding (No. 9) as specified in Section 02235 of these Specifications at the CONTRACTOR'S expense. No pipe shall be laid in the trench until the subgrade is inspected and found correct.

6. Laying of Pipe (Mains)

a. Laying crew foreman shall direct subgrade preparation and plumbing and leveling invert of pipe to grade and line, the pipe layer following his directions in placing the pipe. The pipe layer will be responsible for pipe bedding, cleaning joint, proper placement of joint annular ring or gasket, tight jointing and homing pipe, securing pipe against settlement or other movement, and inspecting and swabbing out any jointing material from inside of pipe.

b. No joints will be accepted that show leakage and, after backfilling and inspection, any joints are found that are allowing groundwater to enter the sewer must be excavated and repaired.

c. Plugs in branch fittings to future building sewers shall be protected from excavators by the method as shown on the Drawings for protecting the ends of laterals and shall be so constructed and joined in bell of pipe that they will be watertight, yet removable without breaking the bell or coupling when removed.

7. Laying of Branch Pipes and Laterals

a. Branch pipes shall be laid to serve the abutting property at points to be designated by the ENGINEER. Such pipes shall be connected to sewer main through tees or Y-branches of size of running sewer barrel and 6-inch side opening, with 6-inch 30 degree or 45 degree bends. Branch fittings in sewer and the connected bend, shall be supported from bottom of trench per standard details shown on Drawings.

b. At locations where the sewer is within street or road rights-of-way, house lateral pipes shall be laid to the property line or right-of-way line.

135-2021-01 (03/2022)

c. At locations where the sewer is within easement obtained by the OWNER, house lateral pipes shall be laid to the permanent easement line.

d. Branch tees or wyes for house laterals will be located during construction, regardless of where shown on the Drawings. House lateral location shall be at the convenience of the property owner or as directed by the OWNER and/or ENGINEER.

e. The end openings of house laterals shall be plugged with appropriate watertight plugs of permanent materials in the bell of the sewer lateral, removable without breakage of the pipe bell. Dead ends of sewers shall be plugged similarly.

f. Laterals shall not be laid on less than ¼-inch per foot slope.

g. In the case of deep sewers, branch pipes may be brought up to a depth of approximately 5 feet below ground level with suitable bends and sewer pipe. These pipes shall be laid on a slant (not to exceed 45°) outside sewer trench, so they will be supported on original earth and not dragged down and cracked by backfill settlement.

h. In case of deep sewers in rock or narrow places, branch pipes shall be of cast iron soil pipe installed vertically per standard details of Drawings, with branch fittings in sewer main encased in Class 3000 concrete. Payment for such concrete and forms above wye or tee branch shall be at the price bid per encasement.

i. All lateral sewers and branch pipes installed on this Contract shall have a detectable mylar tape placed in the backfill over and running with the lateral sewer. The tape shall be readily detectable employing the same type metal locators as used for the location of metal pipelines. The tape shall be bright green in color and have the words, "Caution, Sewer Line Below" printed on it. The tape shall be installed as shown on the standard details of the Drawings.

j. The tape shall be Type II, Detectable Mylar Marking Tape as manufactured by Line Guard, Inc. or equal. The cost of purchase and placement of the marking tape shall be included in the CONTRACTOR'S unit price bid for the lateral pipe and fittings.

8. Piping Connections at Structures

a. Lines

(1) Pipes shall be laid free from all structures other than manholes. Any pipe entering structures underground unsupported by original earth shall be supported by Class 2500 concrete, brick and mortar masonry, or Class 4000

135-2021-01 (03/2022)

concrete beams and columns as shown on detailed Drawings.

(2) Pipe shall be connected to manholes by fabricated manhole entry seals, specified in Section 03480 of these Specifications.

(3) Pipe stubbed out of manholes for future connections shall be plugged and tightly sealed with same jointing material used to plug laterals.

9. Installing Sewer Pipe in Cover Pipe

a. The installation of sewer pipe inside steel cover pipe is detailed in Section 02326 of these Specifications.

10. Protection of Pipe in Trench

a. No walking upon the completed pipelines will be permitted until trench has been backfilled to a depth of at least 6 inches over the top of the pipe. The interior of the pipe shall, as the work progresses, be cleaned of all 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 suitable plug fitted into the pipe bell, so as to exclude earth and other material, precautions being taken to prevent flotation of pipe by runoff into trench.

11. Observation of Pipeline

a. No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER has had an opportunity to observe the joints, alignment and grade, in the section laid, but such observation shall not relieve the CONTRACTOR of further liability in case of defects occurring during or after placement of backfill.

B. Laying Sewer Pipe

1. PVC Pipe

a. PVC sewer pipe laying shall comply with the requirements of ASTM D 2321 and the additional requirements of these Specifications and standard details of the Contract Drawings.

b. Article 3.02.A of this Section 02700 shall apply to the installation of PVC sewer pipe. The pipe shall be bedded true to line and grade with uniform and continuous support from a firm base. The bedding material shall conform to that specified in Article 3.02.A of this Section 02700.

c. All PVC sewer pipe shall be installed in a manner to limit deflection of the pipe to 5 percent. A deflection test shall be performed on all

flexible pipe. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5 percent. The test shall be performed without mechanical pulling devices and shall be conducted using a mandrel equal to at least 95 percent of the size of the average ID of the installed pipe.

d. When laser equipment is being used for laying PVC sewer pipe, the CONTRACTOR shall provide adequate ventilation through the pipe to prevent distortion of the beams.

2. Ductile Iron Sewer Pipe

a. Ductile iron sewers shall be laid in compliance with the requirements of these Specifications and standard details of Contract Drawings. Restrictions on depth of cover shall follow ANSI/AWWA C150/A21.50 requirements in Section 02610 for the various classes of ductile iron pipe. Joints shall be made with mechanical, restrained or rubber ring slip joint, according to the manufacturer's specifications and with tools recommended by them. A copy of the manufacturer's instructions shall be available at the site of work at all times when pipe is being laid. Joints shall be thoroughly cleaned and dry before pipes are laid in place.

b. Cutting of pipe may be done using methods as the CONTRACTOR may elect, but the CONTRACTOR will be held responsible for breakage or damage caused by careless cutting or handling.

c. No pipe shall be laid resting on rock, blocking or other unyielding objects. Exact lines and grades will be required on exposed pipelines placed on piers. Attachment of pipe to piers shall be as shown on the Standard Detail Drawings.

3. Cast Iron Soil Pipe

a. Sewer Line Contracts

(1) Cast iron soil pipe shall generally be limited to usage for vertical stacks on sewer laterals when sewer main is located in deep, narrow trench or when trench is excavated into solid rock. Other use of soil pipe shall be per special applications as shown on the Drawings or acceptable to the ENGINEER.

(2) Soil pipe shall be jointed with rubber gaskets or "boots" as specified with the pipe, this Section 02700 of these Specifications.

(3) Soil pipe shall be installed such that the pipe is not allowed to rest on the side of trench. When in traffic areas, crushed stone shall be backfilled completely around the pipe for the

135-2021-01 (03/2022)

complete vertical height of same. When outside traffic areas, pipe shall be backfilled with allowable material from trench excavation, hereinafter specified, with material mechanically tamped for complete vertical height.

(4) Where cutting of pipe is required, it shall be done by wheeled cutters or by hammer and chisel, as the CONTRACTOR may elect. After cutting, all sharp edges shall be filed or ground smooth to prevent damage to gasket during jointing.

(5) Soil pipe shall be attached to pipe of other materials as shown on standard details of Drawings.

b. Lump Sum Contracts

(1) Where soil pipe is used for interior or exterior plumbing for water plants, wastewater treatment plants or other building construction, installation shall meet the specific criteria as delineated in the State Plumbing Code.

3.03 TRENCH BACKFILL - SEWER

A. General

1. Excavated materials from trenches and tunnels, 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. Unit prices for furnishing and laying pipe, which includes trench excavation, tunneling, and backfill, shall include the cost of disposition of excess excavated materials, as set forth herein, with no additional compensation being allowed for hauling.

2. No extra charge shall be made for backfilling of any kind, except as herein specified. Backfilling shall be included as a part of the price for furnishing, laying, trenching, and backfilling. No extra charge shall be made for supplying outside materials for backfill except where fills above existing ground are necessary and payment is designated on the Drawings or in the Specifications. If backfilling of the trench or surface restoration is not properly completed, a proportionate part of the unit price for furnishing, laying, trenching, and backfilling shall be retained from payment estimates.

3. Railroad company and Department of Highways requirements in regard to backfilling will take precedence over the above general Specifications where they are involved.

4. Mechanical tamping, where required by the ENGINEER in locations other than those specifically designated herein, shall be paid for per unit price bid for mechanical tamping.

135-2021-01 (03/2022)

5. Before completion of the Contract, all backfills shall be reshaped, holes filled, surplus materials hauled away, all permanent walks, street, driveways, highway paving replaced, and all sodding, seeding, and planting work performed.

B. Haunching

1. Upon completion of bedding and laying the sewer or drain pipe, the CONTRACTOR shall place crushed rock, Kentucky Department of Highways Size 9 dependent on size of pipe, or the same material used for pipe bedding on both sides simultaneously to the top of the pipe. This material shall be hand placed using shovel or other satisfactory tool to work the haunching material completely under the bottom quadrant and around the sides of the pipe to assure the maintenance of alignment of the pipe. No compaction of this material is required other than that obtained by the workmen walking on the material during placement.

2. The haunching material is required for all sewer or drain pipe installed in open trenches except where concrete pipe arch is required, in which case the haunching material is required to the bottom of the arch. Where concrete cradle is required, the haunching material shall be placed from top of cradle to top of pipe.

3. The cost of furnishing and placement of the haunching material shall be included in the CONTRACTOR'S bid for furnishing and laying the pipe.

C. Initial Backfill

1. Upon completion of the haunching material to the top of the pipe, initial backfill shall be placed as hereby specified. This material shall serve as protection for the top of pipe reducing the possibility of damage to the pipe during the placement of backfill for the remainder of the trench depth.

2. When sewer or drain pipe is located outside traffic areas, the initial backfill material shall be crushed rock (Kentucky Department of Highways No. 9) placed above the pipe to the level hereinafter stated.

3. When the sewer or drain pipe is located within traffic areas, the initial backfill shall be crushed rock, or the material used for bedding and haunching the pipe, of the same gradation of the pipe bedding material. Other alternate materials may be used only with the specific written permission of the ENGINEER when the work is located inside traffic areas.

4. In the case of steel, cast iron, ductile iron pipe the initial backfill shall be hand placed to a point 12 inches above the barrel of the pipe. In case of plastic pipe, the initial backfill shall be hand placed and evenly spread to a point 12 inches above the pipe barrel for up to 4 feet cover, to a point 18 inches above the barrel for 4 feet to 10 feet cover, and 24 inches for over 10 feet cover.

135-2021-01 (03/2022)

5. The initial backfill material is required over sewer and drain pipe in all open trenches. The cost of the initial backfill material and placement of same shall be included in the CONTRACTOR'S bid for furnishing, laying, trenching and backfilling.

D. Final Backfill

1. Outside Traffic Areas

a. After the above specified initial backfill is hand placed, rock may be used in machine placed backfill in pieces no larger than 8 inches in any dimension and to an extent not greater than one-half the volume of the backfill materials required to backfill trench. Larger rock will not be allowed in trench backfill. If additional earth is required, it must be obtained and placed by the CONTRACTOR. Filling with rock and earth shall proceed simultaneously, in order that all voids or pockets, created by rock backfill, may be filled with earth. Machine backfilling may be employed with tamping, except as hereinafter restricted, provided caution is used in quantity per dump and in uniformity of level of backfilling. Backfill material must be uniformly ridged over trench, and excess hauled away, with no excavated rock over 1/2-inch diameter or pockets of crushed rock or gravel in top 12 inches of backfill, the top 12 inches reserved for topsoil or material more suited to sustain surface growth. Ridged backfill shall be confined to the width of the trench and not allowed to overlap onto firm original earth, and its height shall not be in excess of that required to provide for settlement of backfill.

2. Inside Traffic Areas

a. Where sewer and drain pipe is located in street, highway, railroad, sidewalk and driveway crossings or within any roadway paving, or about manholes, valve and meter boxes located in such paving, fill trench to within 6 inches of the surface with Kentucky Department of Highways No. 9 crushed stone, or other gradation acceptable to the ENGINEER. In order to accommodate compacted temporary surfacing it may be necessary to bulkhead or otherwise confine the stone fill at the open end of the trench.

E. Cleanup and Temporary Surfacing

1. General

a. Immediately following the placement of final backfill, all rock and debris, including crushed rock or gravel from construction operations, shall be removed from yards and fields. Streets, drives and walks shall be broomed to remove all earth and loose rock. The cleaning of streets, drives, and walks shall be of such extent to hold dust to a minimum. Loose earth and rock shall in no case be swept or washed into storm sewers or drains as a method of

removal, all such material being loaded and hauled away from the site.

b. If acceptable cleanup operations are not completed within an acceptable period of time after the completion of final backfilling, a proportionate part of the price bid for trenching and backfilling shall be retained from partial payment estimates until acceptable cleanup is completed.

2. Temporary Surface Cover - Unpaved Areas

a. Upon completion of acceptable cleanup work, the ground surface shall be prepared for temporary seed, permanent seed or sod per the requirements of KYTC standard specifications.

3. Temporary Surface Replacement - Paved Areas

a. Temporary surfacing of street, highway, railroad, sidewalk and driveway crossings, or within any roadway paving, or about manholes, valve and meter boxes located in such paving, shall consist of 6 inches compacted dense graded aggregate as specified under Section 02235 for temporary walkway or road surfacing, placed and compacted in the trench. Compaction shall be accomplished by methods which shall be sufficient to confine stone to the trench under normal traffic. Backfills shall be maintained easily passable to traffic at original paving level until acceptance of project or replacement of paving or sidewalks. The amount of crushed stone placed shall be paid for at the unit price per ton as shown in Section 02700 herein, titled "BASIS OF PAYMENT." No payment will be made for crushed rock surfacing required as a result of unnecessarily wide trenches, omission of sheeting and shoring, or damage by the CONTRACTOR'S equipment, or for maintenance of surface level.

b. After the initial placement of the 6-inch depth of temporary surfacing, the CONTRACTOR shall be required to maintain the temporary surfacing to street or road surface level at no additional cost to the OWNER. This requirement shall continue until the replacement of permanent surfacing.

3.04 FIELD QUALITY CONTROL - TESTING SEWERS FOR LEAKS, INFILTRATION, AND DEFLECTION

A. Sewers

1. General

a. All sewers constructed under this Contract shall be tested for leaks and infiltration using methods as hereinafter specified.

b. The cost of all testing of sewer lines and manholes shall be included in the unit price bid for pipe and manholes. The

135-2021-01 (03/2022)

CONTRACTOR shall furnish all materials, equipment and labor required for all types of tests, the ENGINEER being responsible only for directions, recording data and calculating air losses and/or infiltration rates.

2. Sequence

a. Testing

(1) As soon as it is practicable after installing and backfilling sewers, and before putting new sewers into service, low pressure air tests shall be made from manhole to manhole. All gravity sewers shall be low pressure air tested to 4.0 psig for 5 minutes. Acceptable loss shall not exceed 0.5 psig. The ENGINEER and/or the OWNER will monitor all tests and are to be notified 48-hours before any test is performed.

(2) Upon completion of installation and backfilling of all sewers constructed under this Contract, the low pressure air test is required for all sewers so constructed.

b. Additional Testing

(1) Upon completion of the required initial testing, and prior to placing the sewer into operation, if ground and/or surface water flow is observed in the completed sewer, the ENGINEER may order infiltration tests be accomplished to determine whether the flow is within acceptable and allowable limits. This additional testing may be required even though the results of the testing indicate the sewers are substantially watertight. The infiltration tests shall be conducted, on order of the ENGINEER, as hereinafter specified.

3. Equipment

a. Low Pressure Air Testing

(1) The air test equipment used shall meet the following minimum requirements:

(a) Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

(b) Pneumatic plugs shall resist internal test pressures without requiring internal bracing or blocking.

(c) All air used shall pass through a single control panel.

135-2021-01 (03/2022)

(d) Three individual hoses shall be used for the following connections:

(i) From control panel to pneumatic plugs for inflation.

(ii) From control panel to sealed line for introducing the low pressure air.

(iii) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

4. Procedures

a. Safety Precautions

(1) The air test may be dangerous if a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way as to prevent blowouts. Inasmuch as a force of 25 lbs is exerted on an 8-inch plug by expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be dangerous.

(2) As a safety precaution, pressurizing equipment shall include a regulator set at 10 psi to avoid overpressurizing and damaging an otherwise acceptable line. No one shall be allowed in the manholes during testing.

b. Low Pressure Air Test

(1) All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psig. The sealed pipe shall be pressurized to 4 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

(2) Clean pipe to be tested by propelling snug fitting inflated rubber ball through the pipe with water.

(3) Plug all pipe outlets with suitable test plugs. Brace each plug securely.

(4) If the pipe to be tested is submerged in groundwater, insert a pipe probe by boring or jetting into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when the air passes slowly through it. This is the backpressure due to groundwater submergence

over the end of the probe. All gauge pressures in the test shall be increased by this amount.

(5) Add air slowly to the portion of the pipe installation under test until the internal air pressure is raised to 4.0 psig.

(6) After an internal pressure of 4.0 psig is obtained, allow at least 5 minutes for air temperature to stabilize. No air shall be added during the testing period.

(7) Acceptable loss shall not exceed 0.5 psig.

c. Deflection Test

(1) A deflection test shall be performed on all flexible sewer pipe. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5 percent. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95 percent of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices. Pipe deflection shall be measured and recorded by the CONTRACTOR in the presence of the ENGINEER using appropriate methods approved by the pipe manufacturer and acceptable to the ENGINEER.

5. Repairs and Acceptance

a. If the sewer fails to meet the requirements of the leakage and/or infiltration tests, the CONTRACTOR shall, at his own expense, determine the source of leakage and/or infiltration and make the necessary repairs or replacements.

b. If any sewer fails to meet the requirements of the deflection test, the CONTRACTOR shall, at his own expense, replace all failed pipe as necessary to comply with the deflection requirements. All replacement pipe shall also be tested for deflection.

c. On completion of sewer lines, all sewers and manholes will be inspected for foreign matter, including sand brought in by infiltration, and any such matter shall be removed before final acceptance of the lines. Any visible leakage at manholes or into lines shall be corrected regardless of the results of the required tests.

135-2021-01 (03/2022)

3.05 BASIS OF PAYMENT

A. Excavation and Backfilling

1. Trenching and Backfilling

a. Unit Price Contracts

(1) On unit price Contracts, payment for trenching and backfilling shall be included in the price bid for furnishing, laying, trenching and backfilling sewer and/or drain pipe.

(2) Where sewer lines and/or drain pipes are installed in bores or tunnels, no payment will be made for separate trench and backfill unit price items for the length of pipe installed in the tunnel or bore.

(3) Where pipe is installed on piers no payment will be made for separate trench and backfill unit price items for the length of pipe exposed and supported by piers.

2. Solid Rock Excavation

a. Unclassified Excavation

(1) Excavation shall be unclassified and the cost of all excavation of whatever nature and state, including solid rock, shall be included in the CONTRACTOR'S unit price bid for each item of construction requiring excavation.

B. Boring or Jacking

1. Boring or Jacking

a. In unit price Contracts, usable holes either bored or jacked shall be paid for per linear foot of hole actually bored or jacked, according to the diameter of the hole required, measured along the centerline from the point of entrance on one side to the point of exit on the other side. When casing pipe is installed inside the bore, boring or jacking and casing pipe shall be paid per linear foot based on the length of the casing pipe installed, according to the diameter of the casing pipe required.

C. Trench and Pipe Stabilization

1. Crushed Stone for Trench Stabilization

a. Crushed stone ordered by the ENGINEER for trench stabilization shall be paid by the ton so placed.

135-2021-01 (03/2022)

D. Sewer Pipe and Accessories

1. Unit Price Contracts

a. Sewer Pipe

(1) Except where otherwise specified hereinafter, sewer and drain pipe laid shall include furnishing, laying, trenching and backfilling (all depths), and shall be paid for by the linear foot of sewer or drain line measured from center to center of manholes, transition in type of pipe, or junction fittings to ends of pipe. In case of transition of type of pipe at manhole, transition in pay will be at center of manhole.

(2) Where sewer lines are installed in bores, pipe shall be paid for by the linear foot of sewer and/or drain pipe furnished and installed, in permanent cover pipe.

(3) Sewer lines installed on piers shall be paid for by the linear foot of sewer and drain pipe furnished and installed on piers.

b. Sewer Laterals

(1) Payment for sewer laterals, including furnishing, laying, trenching, and backfilling (all depths), shall be per linear foot measured from the branch fitting to end of pipe and shall include the cost of furnishing, laying, and plugging the end of the lateral and the required detectable mylar tape.

(2) Laterals consisting of fittings only and in the case of connecting to existing sewers with not more than 6 feet of pipe, no furnishing, laying, trenching, and backfilling payment for sewer pipe will be included.

c. Sewer Branch Fittings

(1) Wye or tee branches for sewer laterals will be paid per each unit installed.

d. Concrete Encasement of Wye or Tee Branches

(1) At locations where a vertical stack is to be installed on the sewer lateral, the wye or tee branch shall be encased in concrete with payment for same made for each branch encased.

2. Lump Sum Contracts

a. All work shall be included in the CONTRACTOR'S lump sum bid.

E. Temporary Surface Replacement

135-2021-01 (03/2022)

1. The CONTRACTOR shall maintain road crossings in a passable condition for traffic until the final acceptance of work, which shall be considered incidental to construction activities.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 02830

FENCING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required to install fencing as shown on the Contract Drawings and as specified herein.

1.02 RELATED WORK

A. Concrete is specified in Division 3.

1.03 QUALIFICATIONS

A. The fencing shall be furnished and installed by a manufacturer and supplier who are reputable and qualified in the design, fabrication, and installation of fencing in accordance with best practices and methods.

1.04 SUBMITTALS

A. Shop drawings and other items needed to establish compliance with the Drawings and these Specifications shall be submitted to the ENGINEER.

PART 2 PRODUCTS

2.01 SECURITY FENCING

A. General

1. Fencing shall be woven wire, chain link type, and shall be 7 feet high overall. Fabric shall be 6 feet high with 1 foot of height of 3-strand barbed wire overhanging outside at a 45 degree angle.

B. Fittings

1. All fittings necessary to make a complete installation shall be malleable iron, pressed steel, aluminum or forgings. All ferrous materials shall be thoroughly galvanized by the hot dip method as specified in ASTM A 525-81.

135-2021-01 (03/2022)

TABLE 1
CHAIN LINK FRAMEWORK TABLE
(Schedule 40)

Size Pipe	Weights Lbs. Per Ft.	Depth	Concrete Diameter
1 5/8" O.D.	2.27 lbs.		
2" O.D.	2.72 lbs.		
2 1/2" O.D.	3.65 lbs.	30"	10 Inches
3" O.D.	5.79 lbs.	3 Ft.	12 Inches
4" O.D.	9.11 lbs.	3 Ft.	12 Inches
6 5/8" O.D.	8.97 lbs.	4 Ft.	14 Inches
8 5/8" O.D.	5.00 lbs.	4 Ft.	16 Inches

C. Corner, Terminal and Pull Posts

1. Corner, terminal and pull posts shall be hot galvanized inside and outside at a rate of 2.0 oz per square foot of actual surface area. The 3-inch outside diameter seamless steel pipe shall weigh 5.79 pounds per foot and extend 3 feet below ground level. The posts shall extend high enough to allow attachment of barbed wire by 3 tension bands equally spaced to give a uniform appearance. All posts shall be capped with a heavy malleable iron top, of bullet type construction, to exclude moisture.

2. SS-40 pipe, as manufactured by Allied Tube and Conduit Corp. or equal, may be substituted for Schedule 40 pipe. The SS-40 pipe sizes may be less than the Schedule 40 sizes but shall have greater strength.

D. Line Posts

1. Line posts shall be 2-1/2 inch diameter high carbon seamless steel pipe, hot galvanized inside and outside at a rate of 2.0 oz per square foot of actual surface area. The 2-1/2 inch pipe shall weigh 3.65 lbs per foot and extend 30 inches below ground level. Line posts shall be capped with a barbed wire extension arm as specified herein.

2. SS-40 pipe, as manufactured by Allied Tube and Conduit Corp. or equal, may be substituted for Schedule 40 pipe. The SS-40 pipe sizes may be less than the Schedule 40 sizes but shall have greater strength.

E. Gate Posts

1. The posts shall be in conformance with the "Gate Post Schedule" and shall be capped with a heavy malleable iron top, of bullet type construction to exclude moisture. Gate posts shall be coated inside and outside with hot galvanized at a rate of 2.0 oz per square foot of surface area. Posts will extend high enough to allow attachment of barbed wire by 3 tension bands equally spaced to give a uniform appearance.

135-2021-01 (03/2022)

2. Gate Post Schedule

Single Gates	Double Gates	Schedule 40
Up thru 5'	Up thru 10'	3" O.D.
Over 5' thru 8'	Over 10' thru 16'	4" O.D.
Over 8' thru 12'	Over 16' thru 24'	6 5/8" O.D.
Over 12' thru 18'	Over 24' thru 36'	8 5/8" O.D.

3. SS-40 pipe, as manufactured by Allied Tube and Conduit Corp. or equal, may be substituted for Schedule 40 pipe. The SS-40 pipe sizes may be less than the Schedule 40 sizes but shall have greater strength.

F. Rails

1. Top rails and brace rails shall be 1-5/8 inch outside diameter seamless steel tubing, weighing 2.27 pounds per foot, hot galvanized at a rate of 2.0 oz. per square foot of actual surface area. Rails shall be not less than 20 feet in length jointed with extra long pressed steel sleeves as specified herein.

2. SS-40 pipe, as manufactured by Allied Tube and Conduit Corp. or equal, may be substituted for Schedule 40 pipe. The SS-40 pipe sizes may be less than the Schedule 40 sizes but shall have greater strength.

G. Fabric

1. The fabric shall be aluminum coated steel to meet ASTM A 491-80 composed of individual wire pickets, helically wound and interwoven from No. 9 gauge steel wire to form a continuous chain link fabric having a 2-inch mesh. Both the top and bottom edges shall be twist construction. Basic steel wire shall conform to the following:

Carbon	.18 - .31
Manganese	.60 - .90
Phosphorous	.040 Max.
Sulphur	.050 Max.

2. The aluminum coating weight shall be a minimum of 0.40 ozs per square foot of wire surface. The breaking strength of the aluminum coated wire shall be a minimum of 1,290 ft-lbs

H. Gates

1. Swing frames shall be 2 inches outside diameter galvanized seamless steel pipe weighing 2.72 lbs per foot, corners fitted with rigid watertight heavy malleable iron castings or electrically welded joints. Internal bracing shall be of 1-5/8 inch outside diameter galvanized seamless steel pipe weighing 2.27 lbs per foot.

135-2021-01 (03/2022)

2. SS-40 pipe, as manufactured by Allied Tube and Conduit Corp. or equal, may be substituted for Schedule 40 pipe. The SS-40 pipe sizes may be less than the Schedule 40 sizes but shall have greater strength.

3. Fabric - See 2.01.G this Section.

4. Gate hinges shall be double clamping offset type allowing gates to swing back parallel with line of fence. They shall be of malleable iron and forged steel heavily galvanized.

5. Gate latches shall be of the eccentric double locking type which engage the strikes securely bolted to either gate frame or gate post at both the top and bottom. In the case of double gates, latches shall also engage a heavy malleable iron non-freezing gate stop anchored in concrete footing. Latches shall be equipped for locking with padlock.

6. Gate keepers shall be furnished with each gate frame to automatically engage gate frame when swung to open position.

7. Barbed wire shall be 3 strands each of two No. 12-1/2 gauge twisted copper bearing steel line wires, hot dipped aluminum per ASTM A 585-81 for Class II coating. The weight of the coating shall be 0.30 oz per square foot of surface area. The barbs shall be No. 14 gauge aluminum 4-point barbs, spaced not more than 4 inches apart.

8. Gate Posts - See 2.01.E this Section.

I. Chain Link Special Appurtenances (Per ASTM F 626-79)

1. Each line post shall be capped with a hot dipped galvanized barbed wire extension arm capable of passing top rail. The arm shall be of pressed steel riveted to a malleable iron base at a 45 degree angle for carrying three strands of barbed wire.

2. Brace and tension bands shall be beveled edge type fabricated from pressed steel or aluminum. Steel bands shall be hot dipped galvanized with a minimum of 1.2 oz of zinc coating per square foot of surface area. Brace bands shall be a minimum of 12 gauge in thickness and a minimum width of 3/4-inch or 19.05 mm. Tension bands shall be a minimum of 14 gauge with a minimum of 3/4-inch or 19.05 mm in width.

3. All post caps and rail ends shall be designed to fit snugly over post and prevent moisture from entering the inside of the tube. Post caps shall be fabricated from malleable iron, pressed steel or aluminum. Line post caps shall be designed to allow top rail to pass through. All ferrous materials shall be thoroughly galvanized by the hot dip method with a minimum of 1.2 oz of zinc coating per square foot of surface area.

4. Top rail sleeve shall be fabricated from pressed steel or round steel tubing. Sleeve shall be hot dip galvanized with a minimum of 1.2 oz. of zinc coating per square foot of surface area. The design of the sleeve

135-2021-01 (03/2022)

shall be such that no movement along the rail can take place upon installation.

5. Tension bars for attaching fabric to terminal post shall be a minimum of 3/16-inch thickness by 3/4-inch in width. The length shall be a minimum of 2 inches less than the full height of the chain link fabric.

6. Truss rods shall be a minimum of 5/16 inch in diameter fabricated from merchant quality steel rod and hot dip galvanized with a minimum of 1.2 oz of zinc coating per square foot of surface area. All rods shall be designed and equipped with a truss tightener.

7. Aluminum ties shall be used for attaching fabric to top rail, brace rails and line post. The aluminum ties shall be 9 gauge round wire of Alloy 1100-H 14 or equal.

8. Carriage bolts shall be hot dip galvanized or aluminum, 5/16-inch x 1-1/4 inch, with nut and shall be used in conjunction with brace and tension bands. Galvanized bolts and nuts shall be coated in accordance with ASTM A 153-80. Larger bolts as required at gates or latches shall be galvanized coated in accordance with ASTM A 153-80.

2.02 FARM WIRE FENCING

A. General

1. Fencing shall be farm type fabric with 2 strands of galvanized barbed wire stretched between 9 inch diameter treated pine corner and/or pull posts set in concrete. Intermediate or line posts shall be 5-1/2 inch diameter treated pine post or standard painted steel tee section post spaced on 8-foot centers. Every third post shall be a 5-1/2 inch diameter treated pine post. The corner posts shall be braced from the center of corner posts to the center of a 6-inch diameter treated pine brace post located 8 feet from the corner post. Bracing shall be provided with a 4-inch diameter treated pine post keyed and doweled in place. Cross bracing shall be accomplished with 3 strands of No. 9 gauge galvanized brace wire wrapped from top of brace post to bottom of corner post. The tensioning adjustment shall be made with an extra heavy galvanized turnbuckle attached to a 3/4-inch eye bolt through the 9-inch corner post. The brace wire shall be tightened to a taut position and locked in place by a method acceptable to the ENGINEER.

2. Layouts of fencing and gate are as shown on the Drawings. Copies of shop drawings and descriptive literature of fencing materials shall be submitted to the ENGINEER for review and acceptance prior to the use of materials.

135-2021-01 (03/2022)

B. Material

1. Fence fabric shall be farm type 1047-6-9, 10 wires horizontal, 47 inches high, 6-inch stays with No. 9 gauge wire throughout with Class 2 (0.60 oz/ft) galvanized coating per ASTM A 116-81.

2. Barbed wire shall be 2 strands each of two No. 12-1/2 gauge twisted copper bearing steel wires, hot galvanized after weaving, with No. 14 gauge aluminum 4 point barbs spaced not more than 4 inches apart. The zinc coated (galvanized) steel barbed wire shall be produced and tested in accordance with ASTM A 121-81 for Class 2 coating (0.50 oz per ft).

3. Wood line posts shall be 5-1/2 inches diameter x 7 feet-6 inches long pressure treated pine in accordance with the American Wood Preserver's Association Standard C5-81.

4. Steel line post shall be the standard painted steel tee section, 7 feet-6 inches long, with hooks to clasp wire.

5. Corner posts shall be 9 inch diameter x 9 feet long pressure treated pine in accordance with the American Wood Preserver's Association Standard C5-81.

6. Farm gate shall be made of tubular construction from 1-1/2 inch O.D. pregalvanized pipe, 50 inches in height with 7 bars horizontally with spacing being closer toward the bottom.

PART 3 EXECUTION

3.01 SITE PREPARATION

A. The location of fence lines, gates and terminal posts shall be as shown on the Drawings. Prior to construction the CONTRACTOR shall locate and flag all underground utilities in or about the fence construction. Adequate clearing and grading shall be done prior to fence construction.

3.02 SECURITY FENCE INSTALLATION

A. Posts

1. All posts shall be set 10 feet or less on centers equally spaced between pull posts in a hole filled with concrete as required per Table 1. All concrete shall be left 2 inches below grade to allow for cover with sod, blacktop or other cover material. Posts shall be accurately lined and plumbed. Intermediate pull posts with bracing shall be equally spaced when a straight run becomes greater than 300 feet in length. If solid rock is encountered, excavation shall be at no extra cost to the OWNER.

B. Terminal, Gate, Pull and Corner Post Bracing

1. A center rail is required with horizontal braces and truss rod to adjacent line post, securely fastened with adequate adjustment.

135-2021-01 (03/2022)

C. Top Rail

1. The top rail shall run through the openings in the line post tops on a continuous grade uniformly parallel with the ground surface. Connection to the corner, gate, terminal and pull posts shall be with brace bands and rail ends. Offsets at corners will not be permitted.

D. Fabric Stretching

1. Two stretcher bars shall be threaded through the fabric from top to bottom at a location in the center of the fence section to be stretched. The bars shall be adequately spaced such that when stretched the installer has room to thread a loose picket link down through the meshing links of the 2 ends to make a perfect jointing. The stretching shall be done with 2 blocks and when released the fabric shall be taut along any point of the fence line. The top selvage shall be dressed above the top rail and the fabric secured with tie wires spaced not more than 24 inches apart and uniformly tied. The fabric shall be fastened to the line posts with specified tie wires spaced not more than 14 inches on center uniformly tied.

E. Barb Wire Stretching

1. Block and tackles and come along shall be used to string barbed wire. Wire shall be placed in the openings provided in the barb arms, and locked in place by sliding the locking wire down inside the V-channel and over the barbed wire.

F. Repair of Galvanized Surfaces

1. Galvanized surfaces damaged by welding or other reasons shall be repaired according to Federal Specification MIL-P-21035 (Galvanizing Repair Spec.) as follows:

a. Remove foreign matter from both damaged and contiguous undamaged area by wire brushing and cleaning with metal conditioner recommended by cold galvanizing coating manufacturer.

b. Apply 2 coats of cold galvanizing coating to damaged area, ensuring an overlap of the surrounding undamaged galvanizing for continuity of galvanic protection. Cold galvanizing coating shall be Z.R.C. Chemical Products Co., "Z.R.C. Cold Galvanizing" or Galvicon Corp., "Cold Galvanizing," or equal.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 03301

CAST-IN PLACE CONCRETE (MINOR STRUCTURES)

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes cast-in-place concrete, formwork, reinforcing steel, and related accessories in conformance with the requirements of ACI 301-84 (Rev. 1988), Specifications for Structural Concrete for Buildings.

B. ACI 301-84 (Rev. 1988) is the latest consensus standard publication on concrete work and is part of Field Reference Manual ACI Publication SP-15 (1988) which includes pertinent ACI and ASTM standards considered helpful and necessary job-site reference. The Supplemental Requirements can easily be noted or clipped and taped in SP-15 (1988) for ready referral. The CONTRACTOR shall keep at least 1 copy of SP-15 (1988) on the job site at all times.

C. Part 2, Products, in this Section, includes the common concrete ingredients of cement, aggregate, and water plus admixture, grout, and other concrete related items such as reinforcing steel, waterstop, and joint materials.

D. The work also includes furnishing all labor, materials, equipment, and incidentals required to place anchor bolts, inserts, reglets, flashing, pipe sleeves, conduits, and other items to be embedded or passed through the concrete as specified under other sections or as shown on the construction plans.

PART 2 PRODUCTS

2.01 MATERIALS

A. General

1. Before construction, the ENGINEER shall submit in writing to the OWNER the name, address, and qualifications of the ready-mix supplier who will furnish concrete for the project. The testing laboratory shall also receive a copy of this Section 11.20, this division, of the project Specifications.

2. Also refer to ACI 301-84 (Rev. 1988).

B. Cement (ACI Section 2.1)

1. Portland cement for concrete and mortar shall conform to ASTM C 150-86, Type I.

2. The ENGINEER or OWNER may require the CONTRACTOR to deliver cement to a testing laboratory for tests according to ASTM Specification C 150-86 for Type I. Should cement fail the tests, the CONTRACTOR shall

pay for the tests and the ENGINEER or HWEA shall have the right to reject the brand.

3. Cement for tests shall be delivered in 4-ply paper bags with supplier and source identified in writing. Cement shall be stored in a dry location for not longer than 90 days after delivery from the mill.

C. Admixtures (ACI Section 2.2)

1. The air-entraining admixture for concrete shall conform to ASTM C 260-86, and shall be American Admixtures' AMEX, Master Builders' Micro-Air, W.R. Grace's Darex AEA, or equal.

2. The water-reducing admixture for concrete shall conform to ASTM C 494-86 for Type A (water-reducing admixtures) and shall be American Admixtures' Lubricon 300, Master Builders' Pozzolith 322N or 344N, as recommended by Master Builders for the brand of cement to be used, or equal. The water-reducing, set-retarding admixture for concrete shall conform to ASTM C 494-86 for Type D (water-reducing and retarding admixtures) and shall be American Admixtures' Lubricon R, Master Builders' Pozzolith 300R, or equal.

D. Water (ACI Section 2.3)

1. Water shall be clean and free from harmful amounts of oils, acid, alkali, organic matter, or other deleterious substances.

2. When subjected to the mortar strength test described in ASTM C87-83, the 28-day strength of mortar specimens made with the water under examination and normal Portland cement shall be at least 100 percent of the strength of similar specimens made with distilled water.

3. Potable tap water will normally fulfill the above requirements.

E. Fine Aggregate (ACI Section 2.4)

1. Fine aggregate shall consist of clean, well-graded particles of hard, durable sand and shall contain limited amounts of deleterious substances. It shall be washed Ohio, Scioto, or Cumberland River sand. Most Tennessee River sand, bank sands, and limestone fines are not acceptable.

2. Sand shall be graded according to Section 804 of the Kentucky Transportation Cabinet, Department of Highways Standard Specifications for Road and Bridge Construction, 2019 Edition.

135-2021-01 (03/2022)

	Percent
Passing 3/8” Sieve	100
Passing No. 4 Sieve	90-100
Passing No. 16 Sieve	45-80
Passing No. 50 Sieve	5-25
Passing No. 100 Sieve	0-8

3. Sand shall meet the requirements of these Specifications and the Specifications and tests listed below:

Deleterious Substances	Par. 5, ASTM Designation C 33-86
Soundness	Par. 6, ASTM Designation C 33-86
Organic Impurities	ASTM Designation C 40-88

F. Coarse Aggregate (ACI Section 2.4)

1. Coarse aggregate shall be washed river gravel or crushed limestone of hard durable particles and shall contain limited amounts of deleterious substances. Crushed limestone shall come from ledges of a quarry approved by the Kentucky Transportation Cabinet., Department of Highways for use in reinforced concrete, untreated bridge superstructures above the tops of the caps, excluding pedestals.

2. Coarse aggregate shall be either No. 57 or No. 67 graded according to Section 805 of the Kentucky Transportation Cabinet, Department of Highways Standard Specifications for Road and Bridge Construction, 1994 Edition. Refer to Section 3.6 of ACI 301-84 (Rev. 1988) for maximum size of coarse aggregate.

	Percent by Weight	
	No. 57	No. 67
Passing 1-1/2” Square Sieve	100	
Passing 1” Square Sieve	95-100	100
Passing 3/4” Square Sieve	90-100	
Passing 1/2” Square Sieve	25-60	
Passing 3/8” Square Sieve	20-55	
Passing No. 4 Square Sieve	0-10	0-10
Passing No. 8 Square Sieve	0-5	0-5

3. Coarse aggregate shall meet the requirements of these Specifications and the Specifications and tests listed below:

Deleterious Substances	Par. 9, ASTM Designation C 33-86
Soundness	Par. 9, ASTM Designation C 33-86
Abrasion	Par. 9, ASTM Designation C 33-86

135-2021-01 (03/2022)

G. Reinforcing Steel (ACI Section 5.2)

1. Unless otherwise required or permitted, concrete reinforcing bars shall conform to grade 60 deformed bars and shall meet requirements of Deformed and Plain Billet-Steel Bars for Concrete Reinforcement (ASTM A 615-87a), Rail-Steel Deformed and Plain Bars for Concrete Reinforcement (ASTM A 616-87) or Axle-Steel Deformed and Plain Bars for Concrete Reinforcement (ASTM A 617-87). All other reinforcement and details shall conform to ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318-83).

2. Before steel is shipped to job, the reinforcing steel supplier shall submit to the ENGINEER, 2 certified copies of mill tests on all steel to be used in the work. The tests shall prove that chemical and physical properties of the steel comply with the requirements of the governing specification.

3. The ENGINEER may require the CONTRACTOR to deliver samples of reinforcing steel to a testing laboratory, to determine compliance with governing specifications.

PART 3 EXECUTION

Not applicable.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 03480

PRECAST CONCRETE SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. All items supplied for use on this project shall be as specified herein.

1.02 RELATED WORK

A. Concrete specifications are included in Section 03301.

B. Castings are specified in Section 05540.

C. Connecting piping is specified in Section 02610 and Section 02700.

1.03 REFERENCES

A. Where referenced specifications (ASTM, ACI, PCI, etc.), are mentioned, these standards are deemed to be the minimum standard of quality of materials or methods to apply to this project.

1.04 SUBMITTALS

A. Shop drawings shall be submitted.

1.05 QUALITY ASSURANCE

A. The precast fabricator shall be qualified in accordance with PCI MNL-116 - Manual for Quality Control for plants and production of precast concrete products.

1.06 DELIVERY, STORAGE AND HANDLING

A. Handle precast members in position consistent with their shape and design. Lift and support members only at such designated points.

B. Provide temporary lateral support during storage as necessary to prevent bowing and warping. Temporary lateral devices shall be clean, non-staining and shall not inhibit uniform curing of exposed surfaces.

C. Protect edges of members from chipping or spalling.

D. Mark units with date of production and final position in structure.

E. Any member with cracks, damage, or abnormalities will be replaced at no additional cost.

135-2021-01 (03/2022)

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete materials including cement, water, sand and coarse aggregate shall conform to ACI 301-84 (Revised 1988).

B. Reinforcing steel and prestressing wire and strand shall conform to ACI 301-84 (Revised 1988).

C. Initial Drawings shall be sent through the general CONTRACTOR to the ENGINEER in 3 copies for checking and return to the general CONTRACTOR in 2 copies.

D. Final Drawings shall be sent to the ENGINEER through the general CONTRACTOR in 6 copies for conformance and return in 3 copies.

2.02 PRECAST MANHOLES AND ACCESSORIES

A. Precast Reinforced Concrete Manhole Walls and Slabs

1. Precast reinforced concrete manhole walls and cone tops shall be of tongue-and-groove type conforming to ASTM C 478-80. Cone tops shall be of concentric or eccentric configuration. Top slabs for manholes shall conform to details on HWEA Standard Details and to ASTM Designation C 478-80. All precast slabs shall be clearly marked "TRAFFIC" or "NONTRAFFIC" and "TOP" or "BOTTOM." Before use of precast reinforced concrete wall sections and top and bottom slabs, shop drawings covering details of construction including accessories shall be submitted to the ENGINEER for review.

2. Precast manholes with "knock-out panels**" for pipe entry are not acceptable**.

B. Manhole Adjustment Rings

1. Manhole frame adjustment rings shall be precast concrete rings for use between the top slab or top of cone and the manhole frame. Maximum allowable adjustment shall be 6 inches.

C. Mortar Materials

1. Portland Cement

a. Any standard brand, conforming to ASTM Specification C 150-81, Type 1, same as specified for concrete.

2. Sand

a. First quality, clean, natural Kentucky River or Ohio River sand. When dry, 100 percent shall pass a No. 8 sieve and not more than

135-2021-01 (03/2022)

35 percent shall pass a No. 50 sieve, and conforming to ASTM Standard Specification C 144-81.

D. Preformed Elastic Rope Joint Fillers

1. Gasket-type sealant to fill tongue-and-groove joints at top of precast manhole bases and between barrel sections shall be preformed, flexible, watertight, designed for specific joint requirements and meet Federal Specification SS-S-00210 and AASHTO M-198. Sealant shall be Con-Seal manufactured by Concrete Sealants, Inc., New Carlisle, Ohio or Ram-Nek manufactured by K.T. Snyder Co., Inc., Houston, Texas, or equal. Primers, if required by manufacturer, shall be supplied by the sealant manufacturer.

E. Pipe Entry Seal

1. Pipes entering manholes shall be attached by a rubberized entry seal. The seal shall encircle the pipe snugly for the prevention of groundwater leakage into or sewage leakage out of the manhole. The seal shall be of the boot type with stainless steel clamps. The manufacturer of the seal shall certify that the seal material is compatible with the pipe material used on the project.

2. Boot seal shall be flexible of premolded EPDM (ASTM C 923) with stainless steel expanding snap-ring inserted into cored hole of manhole barrel and exterior stainless steel ring to clamp boot around pipe, Kor-N-Seal as manufactured by Trelleborg Engineered Systems, Milford, New Hampshire, or equal. Two exterior take-up clamps are required at each manhole boot seal.

3. Where manhole is located in soils subject to petroleum or carbon materials, the pipe entry seal shall be of “nitrile” rubber material.

F. Steps

1. Manhole steps shall be cast into the manhole wall at intervals of not more than 11 inches where depths of manholes are greater than 3 feet unless otherwise shown on the Drawings.

G. Waterproofing Admixture

1. A waterproofing admixture such as Xypex Admix C-1000, Kryton KIM HS, or equal, shall be added to the concrete for manholes and wetwells during batching operations to provide waterproofing and improved chemical resistance. The Xypex Admix C-1000 or equal shall be added at 3.5 percent including dye to the required weight of Portland cement or as recommended by the admixture manufacturer. The amount of cement shall remain the same and shall not be reduced on account of the addition of the waterproofing admixture. The colorant shall be added at the waterproofing manufacturing plant.

135-2021-01 (03/2022)

PART 3 EXECUTION

3.01 PRECAST MANHOLE CONSTRUCTION

A. General

1. Manhole construction will not be permitted under conditions where there is danger of freezing or when materials are frozen. Manholes shall be protected from freezing weather for a period of at least 48 hours after construction.

B. Excavation

1. Excavation for manholes, control chambers and interceptor structures shall be made of sufficient width to adequately accommodate all work and proper centering. Depth of excavation shall extend sufficiently to accommodate the type of manhole provided. Where a poured concrete base is used, the excavation must be of sufficient depth to allow for a minimum of 3 inches between the bottom of the lower pipe opening and bottom of manhole barrel and an 8 inch thickness for the poured concrete base. Where a precast concrete base is used, whether as a separate unit or integral with the bottom barrel section, the excavation shall be such to allow for a 12 inch depth crushed stone sub-base when in earth or a 9 inch depth crushed stone sub-base when in rock, below the bottom of the precast concrete base.

2. The cost for excavation of these structures is to be included in the linear foot price bid for trenching, backfill and structure unit price. Where the manhole subgrade is located in unstable material, the ENGINEER may order various methods of stabilization such as extra depths of crushed stone, concrete or other means as will prove effective. The CONTRACTOR will be paid for the extra work involved to stabilize the subgrade based on unit prices set up in the Contract unless instability is caused by the CONTRACTOR'S negligence. The limits for extra payment shall be from the elevation the CONTRACTOR would have had to complete based on the type of manhole base provided.

C. Manhole Installation

1. Manhole Base

a. Poured floor slabs of manholes shall be of Class 3,500 concrete according to Section 03300, and shall be placed ahead of sewer laying to avoid displacement of sewer ends while placing concrete. The part of the concrete slab under the manhole walls shall have a smooth trowel finish. Top of slab shall be 3 inches (or as shown on manhole details) below the lowest sewer invert grade. In sandy soils, a 6 mil polyethylene film shall be used under manhole slabs to prevent loss of moisture in concrete during placement.

135-2021-01 (03/2022)

b. Precast concrete base slabs will **be allowed based upon the ENGINEER'S** acceptance of the particular base slab provided. The general requirements for poured slabs shall also apply to precast slabs. Precast base slabs shall be placed on a crushed stone subgrade which has been leveled and compacted to the proper elevation. Crushed stone shall be DGA or Kentucky Department of Highways size 57 and shall be 12 inches in depth when on earth and 9 inches in depth when on solid rock.

c. Precast concrete manhole bottoms with accurately formed channels will be allowed as alternate to standard design, provided smooth surfaces and accurate levels, widths and slopes are obtained. The forms shall be constructed according to the angles and invert elevations obtained from the "stakeout" operation, and variation of forms more than ±2°00' horizontally shall be cause for rejection. Changes in angles or elevations of manhole inverts, caused by relocation of a manhole after the original stakeout, shall be the responsibility of the CONTRACTOR if such relocation is necessitated by conflict with water, gas, drain or other utility lines or obstructions. Placement shall be as detailed for precast slabs above.

2. Manhole Barrel

a. Manhole structure walls shall be constructed of precast concrete as shown on standard detail Drawings and as specified in this Section 03480. Barrels shall be accurately centered on the base slab as staked in the field.

b. When poured or precast concrete base slabs are used, the first barrel section shall be seated in and sealed with cement mortar. Intermediate barrel sections may be seated in and sealed with cement mortar or rope joint filler both as specified in this Section. Where rope joint filler is used, it shall be placed on the outside lip of the tongue and groove barrel section. Where a primer or adhesive is to be used with the rope joint filler, it shall be that specified by the joint filler manufacturer. Precast concrete frame adjustment rings and cast iron frame shall set in a full bed of cement mortar.

c. Precast barrel sections shall have steps cast in place or slots for steps left in place with steps to be located over the manhole outlet sewer pipe. Pipe openings shall be positioned to this arrangement. Likewise, eccentric corbel sections and precast top slabs with offset entrance shall be positioned on center with the manhole steps over the outlet sewer pipe.

d. CONTRACTOR shall apply grout at all joints, to include joints between the manhole frame and the top of the manhole, in order to provide a smooth finished surface. Grout shall consist of 3 parts sand, 1 part Portland Cement, and sufficient water for hydration

135-2021-01 (03/2022)

and placing, all meeting Section 03400 requirements for concrete materials.

3. Manhole Inverts

a. Channels through manholes shall be formed with either prefabricated forms or hand finished of the same size as the sewer pipes connected.

b. After the first barrel section has been set, the floor shall be brought up within 1 inch of the top of the sewer channels with 3,500 psi concrete which shall be shaped to provide a slope of at least 3 inches from manhole sides to main sewer channels. One and one-half inches thickness of mortar proportioned by volume, 1 part Portland cement and 2 parts concrete sand in a damp, loose condition (80 pounds per cubic foot dry basis), shall be placed over the ballast. This shall be wood float finished to provide a smooth and well drained floor to the manhole channels.

c. The completed channels shall provide a smooth, steady transition between manhole inlet and outlet pipes. Any roughness or ragged edges within the completed channel shall be corrected prior to acceptance of the manhole.

d. CONTRACTOR shall apply grout around pipe inverts to provide a smooth finished interior surface in the manhole.

4. Manhole Drops

a. For joining sewer lines at different levels, drop manholes shall be provided. The drop inlets shall be as shown on the standard details of the Drawings.

5. Manhole Steps

a. Manhole steps shall be placed over the manhole outlet.

D. Backfill

1. Backfill shall be accomplished per the requirements for sewer backfill as specified in Section 02700.

3.02 FIELD QUALITY CONTROL – TESTING FOR LEAKS AND INFILTRATION

A. Manholes

1. General

a. All new manholes installed on sanitary sewers constructed within the HWEA Service Area shall be tested for leaks and infiltration using methods as hereinafter specified.

135-2021-01 (03/2022)

b. The CONTRACTOR shall furnish all materials, equipment and labor required for all types of tests and the ENGINEER being responsible for directions, recording data and calculating air losses and/or infiltration rates.

2. Sequence

a. Testing

(1) The manhole frame shall be properly mounted and secured to the manhole as shown on the plans and specified.

(2) All piping entering the manhole shall be sufficiently plugged to isolate them from the test.

(3) Vacuum shall be applied to the manhole in order to reach 10-inches of mercury then valved off. Testing equipment shall be turned off at this time. (Over-applying vacuum shall not be allowed as this may cause damage and create unsafe testing conditions.

(4) Once the tested manhole is valved off from the equipment, the time for the manhole to droop to 9-inches of mercury shall be recorded. During this time, the ENGINEER and/or HWEA representative shall drum their fingers periodically on the testing gauge to ensure the gauge needle is measuring properly.

3. Acceptance

a. Acceptance standards for leakage shall be from the elapsed time for a negative pressure change from 10-inches to 9-inches of mercury. The maximum allowable leakage rate shall be in accordance with the following:

135-2021-01 (03/2022)

Manhole Diameter	Manhole Depth	Minimum Elapse Time for a Pressure Change of 1-inch of Mercury
4’	0’-10’	60 seconds
4’	10’-15’	75 seconds
4’	15’-25’	90 seconds
5’	0’-10’	75 seconds
5’	10’-15’	90 seconds
5’	15’-25’	105 seconds
6’	0’-10’	90 seconds
6’	10’-15’	105 seconds
6’	15’-25’	120 seconds

b. If the manhole fails the test, necessary repairs shall be made and the vacuum test and repairs shall be repeated until the manhole passes the test.

c. If a manhole’s join mastic is completely pulled out during the vacuum test, the manhole shall be disassembled and the mastic replaced.

d. Mastic squeezed out and protruding inside the manhole shall be trimmed off and removed.

e. Testing Notes and Tips

(1) Non-shrink grouting of joints should take place after the manhole has passed vacuum testing.

135-2021-01 (03/2022)

(2) Pre-testing is recommended, so the contractor can find and fix leaks prior to the official test.

(3) Manholes may fail the first time vacuum is applied but then pass testing on a subsequent test with no repairs being made. This is due to the mastic getting seated better into all crevices.

(4) Manholes with visible cracks on the interior are highly unlikely to pass testing.

(5) Pre-cast suppliers carry brush-on liquid chemical compounds that can help seal the manholes and pass testing if a persistent leak cannot be found and repaired.

B. Basis of Payment

1. Standard Manholes

a. Payment for manholes shall be made by the unit price each bid for manholes 1.1 foot through 6.00 feet in height, measured from the lower invert of the manhole to the lowest side of top of the ring, with any height over 6.00 feet paid for at unit price bid per vertical foot measured and payment totaled to the nearest one-hundredth foot. Payment for manholes will include excavation, floor, barrel, top slap, all castings, sloped floor, pipe channels, weirs, orifices, and other accessories such as supports to connecting pipe, future connections and their channels (up to a maximum of 2 per manhole where not shown) and vacuum testing.

2. Drop Manholes

a. Drops, where required, shall be paid for at a unit price each. The unit price shall include concrete beam from drop to original ground and all other items of cost.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 05540

CASTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, and equipment required to install castings as shown on the Drawings and specified herein. Included in this section are manhole covers, steps, valve boxes, hatch covers, and commemorative plaques.

1.02 RELATED WORK NOT INCLUDED

A. Concrete work is included in Division 3.

1.03 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER copies of construction details of castings proposed for use.

PART 2 MATERIALS

2.01 GENERAL

A. All castings shall be gray iron, conforming to the requirements of the ASTM Standards, Designation A 48-83, Class 35-B for manhole casting and class 20 for valve boxes.

2.02 MANHOLE CASTINGS

A. Frames and Covers

1. Manhole castings shall consist of cast iron frames and 22-3/4 inch diameter covers. All manhole castings shall be designed for H-20 traffic loading. The frame shall be at least 7 inches high overall. Manhole covers must set neatly in the frame, with contact surfaces machined smooth for even bearing. The top of the cover shall be flush with the frame edge. The top of the cover shall have sufficient corrugations to prevent slipperiness and be marked in large letters "SANITARY SEWER" as applies. Covers shall have one or 2 pick holes only, about 1-1/2 inches wide and 1/2-inch deep with 3/8-inch square undercut at rear and 3/4-inch square undercut on sides. Covers on sanitary sewer manholes must not be perforated.

B. Steps

1. Polypropylene plastic encapsulated steel manhole steps shall be of patterns shown on the detail Drawings, and have corrugated treads. In case of need for nonprotruding steps, shop drawings of special inset cast iron steps shall be reviewed by and be acceptable to the ENGINEER prior to use.

135-2021-01 (03/2022)

2. It is intended that the polypropylene plastic encapsulated steel step be M.A. Industries PS-1, PS-1PF or equal.

2.03 VALVE BOXES

A. Slide Type for Iron Body Gate Valves

1. Valve boxes for sizes through 10-inch valves shall be the cast iron slide type, without screw, of sufficient length to allow for 36 inches of cover over the top of the pipe. The inner section shall have a minimum inside diameter of 5-1/4 inches with a hood type base that will cover the packing gland on valves through 12 inches in size (minimum of 8 inches inside diameter). The base of the top section shall be flanged at least 1-1/4 inches. The caps shall be circular with a corrugated surface and have pick holes in the periphery and be marked "Water," "Gas," "Sewer," or "Air" according to use. The valve boxes shall be Tyler Pipe/Utilities Division, 6855 Series, or equal.

2. For vertical valves larger than 10-inch size, provide Opelika Foundry Company No. 4907 or approved equal.

3. Valve boxes for valves in the horizontal position shall be cast iron Tyler Pipe/Series 6855 or equal, with a base that is sized to allow covering of the bevel gear case and centering of the operating nut in the valve box.

PART 3 EXECUTION

3.01 INSTALLATION OF CASTINGS

A. Installation In or On Structures

1. The installation of castings is generally covered under specifications for pipe work and manholes. Castings shall be leveled, plumbed and secured before pouring concrete or attaching to masonry with solid, watertight, cement mortar joints.

B. Installation on Buried Valves

1. Valve box construction shall consist of the approved manufactured box and accessories. Line pipe shall not be accepted for use as valve boxes.

2. Mechanically tamp backfill, or backfill with crushed rock (per requirements of location - see Section 02610 of these Specifications) to the bottom of the packing gland of the operating nut. Install valve box base centered over operating nut.

3. Install valve box shafts, of the required height, and top section to proposed top elevation. Mechanically tamp backfill around box or backfill with crushed rock.

4. Place reinforced concrete collar around top section when shown on the Drawings.

135-2021-01 (03/2022)

5. Furnishing and installation of the valve box and accessories, including the concrete valve box collar, shall be included in the price bid for furnishing and installation of the valve.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 11312

SUBMERSIBLE SEWAGE PUMPS AND ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Provide all labor, materials, equipment and services required to furnish and install the submersible sewage pumps as shown on the Drawings and specified herein.

1.02 RELATED WORK

A. Special requirements for materials and equipment are given in Section 01600.

B. Painting is shown on Drawings.

C. Motors and electrical work are specified in Division 16.

1.03 REFERENCES

A. Where referenced specifications (ASTM, ACI, PCI, etc.), are mentioned, these standards are deemed to be the minimum standard of quality of materials or methods to apply to this project.

1.04 SUBMITTALS

A. Shop drawings, control drawings, and operation and maintenance instructions shall be submitted in accordance with Section 00700. Refer to Section 01600 for additional requirements.

1.05 QUALITY ASSURANCE

A. The pump manufacturer shall be Flygt or OWNER-approved equal and have a minimum number of not less than 100 units of the type specified and required to be installed and in operation for no less than 20 years in North America.

PART 2 PRODUCTS

2.01 PUMPS AND MOTORS

A. The pumps shall be capable of handling raw, unscreened sewage. The design of the connection between the pumps and the discharge piping shall be such that the pumps will be automatically connected to the discharge piping when lowered into place. The pumps shall be easily removable for servicing or inspection, requiring no bolts, nuts or other fasteners to be removed for this purpose, or need for personnel to enter the wet well. The pumps shall be fitted with a stainless steel chain for each pump, of adequate strength and length to permit raising the pump for inspection and removal.

135-2021-01 (03/2022)

B. Casing and Impeller

1. The stator casing, oil casing and impeller shall be of grey iron construction, with all parts coming in contact with sewage being protected by a coat of rubber-asphalt paint. All external bolts and nuts shall be of stainless steel. The wear ring between impeller and pump housing shall be of stainless steel or bronze with vitrile rubber O-ring or neoprene O-ring at the inlet of the pump. The impeller shall be of nonclog design, capable of passing solids, fibrous material, and heavy sludge, and constructed with long throughway with no acute turns.

C. Shaft Seal

1. Each pump shall be provided with a tandem double mechanical seal running in an oil reservoir, composed of two separate lapped face seals, each consisting of one stationary and one rotating ring with each pair held in contact by a separate spring. The lower seal shall be tungsten-carbide on tungsten-carbide or silicon carbide on silicon carbide. The upper seal shall be either tungsten-carbide, silicon carbide or tool steel on carbon. The compression spring shall be protected against exposure to the pumped liquid. All elastomeric components of the seal shall be fabricated using Viton.

2. The pumped liquid shall be sealed from the oil reservoir by one face seal and the oil reservoir from the motor chamber by the other. The seals shall require neither maintenance nor adjustment, and shall be easily replaced.

3. Seal failure detection shall be provided and wired to an indicator light in the control panel.

D. Pump Mounting and Removal Facilities

1. A sliding guide bracket shall be an integral part of the pumping unit. The pump casing shall have a machined connection with yoke to connect with the cast iron discharge connection, which shall be bolted to the floor of the sump and so designed as to receive the pump connection without the need of any bolts or nuts.

2. Sealing of the pumping unit to the discharge connection shall be accomplished by a simple linear downward motion of the pump with the entire weight of the pumping unit guided to and wedging tightly against the discharge connection.

3. Guide rails shall be 2-inch outside diameter and be of stainless steel material. Guide rails and all accessories shall be nonsparking.

E. Motors

1. Pump motor shall be housed in an oil or air-filled watertight casing and shall have Class F insulated windings which shall be moisture resistant. All 3 phase motors shall be dual voltage. Pump motors shall have cooling

characteristics suitable to permit continuous operation in a totally, partially or nonsubmerged condition.

2. Motors shall not be overloaded under any condition of operation. Motor service factor shall not be used to prevent overloading. See Division 16-Electrical for detailed motor specifications.

3. Motors shall be furnished with extra hard usage flexible power cables, length as required. The cable entry into the motor housing shall be equipped with integral strain relief or an external strain relief device installed to prevent cable pullout.

4. Each submersible pump shall be equipped with a power cable of sufficient length to reach to the disconnect switch or control panel without splicing.

5. The pump/motor assembly shall be suitable for use in hazardous locations. The assembly shall be rated or certified for use in NEC Class 1, Group D, Division 1 hazardous locations.

6. The access frame doors shall be capable of 300 psf loadings.

F. Pump Warranty

1. The pump manufacturer shall warrant the pumps being supplied to the OWNER against defects in workmanship and materials for a period of 5 years under normal use, operation and service. In addition, the manufacturer shall replace certain parts which become defective through normal use and wear on a progressive schedule of cost for a period of 5 years. Parts included are the mechanical seal, impeller, pump housing, wear ring, and ball bearings. The warranty shall be in published form and apply to all similar units.

2.02 PUMP AND MOTOR CHARACTERISTICS

A. The service conditions, size and characteristics of the pumps and motors shall be as shown in Table 1.

135-2021-01 (03/2022)

1. Table 1—KY911 Pump Station

Item	Unit	Quantity
Number of Units Required	--	2
Minimum Static Head	Feet	23
Average Static Head	Feet	45
Maximum Static Head	Feet	178
System Head @ 825 gpm & Avg. Static Head	Feet	91
System Head @ 1100 gpm & Avg. Static Head	Feet	150
Capacity Requirement	gpm	825
Total Head @ Capacity Required and Maximum Static Head	Feet	90
Pump Efficiency @ Capacity Required	Percent	65
Minimum Shutoff Head	Feet	178
Minimum Discharge Size, Diameter	Inches	8
Diameter of Solids Passed	Inches	4
Maximum Motor Size	Hp	35
Maximum Allowable Pump and Motor Speed	rpm	1150
Motor Phase	--	3
Motor Voltage	V,	460

2. The KY911 Pump Station pumps shall be Flygt NP 3171 SH 63-275-00-1070, or equal.

2.03 ACCESS FRAME AND GUIDES

A. A complete access frame and guides for each pump shall be furnished complete with hinged and hasp-equipped cover(s), stainless steel upper guide holder and level sensor cable holder. Frame shall be securely mounted above the pumps. Each door shall have safety locking handle in open position. Doors shall be of checkered aluminum plate, aluminum frame and all stainless steel hardware.

135-2021-01 (03/2022)

B. Lower guide holders shall be an integral part of the discharge connection. Guide bars shall be of stainless steel material, a minimum of 2 inches in outside diameter or required by the pump manufacturer.

C. Dual safety grates shall be furnished at each wet well hatch opening as a fall prevention system and shall consist of 2 aluminum grates attached on opposite sides of the wet well hatch frame under the cover. Both grates shall smoothly pivot on hinges 90 degrees upward and lock in place by hold open rods. The grate shall be designed to withstand a minimum pedestrian load of 300 pounds per square foot. The aluminum grates shall have an OSHA safety yellow (or orange) finish. Hardware components shall be made of 316 stainless steel to withstand corrosive wastewater environments. The system shall be a Dual Safety Grate as manufactured by U.S.F. Fabrication, Inc., Hialeah, FL, or equal.

2.04 CONTROLS

A. The pumps shall be furnished with a control panel as specified in Division 16. The pumps shall operate by liquid level sensors (Flygt Model ENH-10 or equal), which shall be furnished with the pumps. Four sensors are required, 3 normally open for stop, start lead, and start backup, and one normally closed for the alarm level. See the control circuit on the drawings and sequence of operation in Division 16 of these specifications for complete control requirements. The controls for the pumps shall be provided by the pump manufacturer.

B. Each submersible pump shall be furnished with seal leak detection. Extra hard usage power cable shall also be furnished with each pump, and a power cable support/mounting bracket. All cables shall be of adequate length to remove pumps and set wet well pump control elevations as necessary.

C. The pump control panel shall be NEMA 4X enclosed, with necessary intrinsic safety barriers, sealing fittings, etc. to interface correctly with the Class 1, Division 1, Group D classified wetwell atmosphere.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. Store indoors.

B. Pumps and motors shall not be stored on vibrating bases or floors. Any motor so stored should be disassembled and inspected for bearing damage, prior to service. If bearing damage is evident, replace bearing.

C. Check the rust preventative coating on external machined surfaces (including shaft extension) for damage. If necessary, recoat the surfaces with Rust Veto No. 342 (Manufactured by E.F. Houghton Co.) or equivalent. The condition of the rust preventative coating shall be checked periodically and surfaces should be recoated as recommended by the coating manufacturer.

D. Oil lubricated bearings-drain oil from bearing housing and refill, to maximum level, with a circulating type oil. Oil should be changed every 12 months while motor is in storage.

135-2021-01 (03/2022)

E. Grease lubricated bearings-once a month, inject a small quantity of grease into the grease fill such that grease is purged from the drain. Inspect purged greases for water condensation or oxidation. If water condensation or oxidation is evident, the motor shall be disassembled and contaminated grease removed, and replaced with new grease.

F. Take precautions as necessary to prevent rodents, snakes or other small animals from nesting inside pump.

G. Prevent moisture or condensation from accumulating by energizing motor space heaters if provided, or applying reduced voltage to one phase of motor windings (trickle-voltage-heating). Request percent of rated voltage and transformer capacity to be used from manufacturer. The winding should be maintained 5° degrees Celsius minimum above ambient temperature (some locations require a higher temperature above ambient) to prevent condensation.

H. If pump and motor are covered by plastic or similar material, additional precautions such as heated or circulating air and silica gel may be necessary, to protect against moisture or condensation.

I. Rotate pump and motor shaft several revolutions by hand once every 2 weeks while in storage to insure a protective oil film on bearing surfaces.

J. Start-up preparation after storage:

1. Thoroughly clean and inspect motor.

2. Change oil or grease in bearing housing.

3. Secure all plugs, fittings, etc., to prevent leakage.

4. Check insulation resistance.

3.02 INSTALLATION

A. Submersible pumps shall be shipped to the job completely assembled with the power cable attached. The unit must be properly stored and special care given to the protection of the power cable to protect it from mechanical damage and protect the cut end of the cable from the intrusion of moisture. The cable will act like a wick if the cut is allowed to lay in a pool of water. Should this condition be allowed to occur, the unit shall be shipped back to the manufacturer for complete drying out and testing. A test report from the manufacturer shall be required before any payment for unit is made.

B. It is important that the discharge connection is attached to the bottom slab level and at the exact location required relative to the access cover. Suggested procedure:

1. Install access cover.

2. Attach upper guide bracket(s).

135-2021-01 (03/2022)

3. Put discharge connection(s) on bottom slab.

4. Cut to length and install guide bars between upper guide bracket(s) and discharge connection(s).

5. Put check with level (shim, if necessary) and anchor discharge connection(s) exactly where position will result in guide bars being parallel and vertical.

C. Use proper gaskets, tighten bolts gradually and evenly. In deep stations install discharge pipe brackets to relieve discharge connections from overload and intermediate guide bar brackets to prevent guide bars from bending when pumps are pulled.

D. Lower pump units into place along guide bars. Check visually metal-to-metal contact between volute flange and discharge connection. If necessary, recheck and re-align discharge connection(s) and guide bars with pumps in place.

E. After proper alignment of all components, including metal-to-metal connection of pump flange is established, grout access cover, discharge connection(s) and pipe thrulets. Build up and shape slopes at pump bottom in accordance with Drawings.

F. As a part of the final inspection each pump shall be pulled to verify trueness of alignment of guide rails, in the presence of the OWNER and the ENGINEER.

G. All motors and controls shall be connected and the motor operated while disconnected from the pump to determine proper rotation and to observe for vibration or motor defects. Disconnecting of the pump and motor on certain factory assembled units may be waived by the ENGINEER.

3.03 TESTING OF PUMPS

A. All pumps shall be tested to verify performance data submitted. When possible, pumps shall be tested by pumping down a basin or by filling a basin. All pumps shall be tested for capacity at a minimum of 3 points on the pump curve. The motor full load amperage and voltage shall be checked and must fall within the rated values of the motor tested. Failure to perform can result in having the unit removed and replaced.

B. All tests shall be performed by the CONTRACTOR in the presence of the ENGINEER. All equipment needed for the pump tests, rulers, stopwatch, gauges, volt meter and ammeter shall be provided by the CONTRACTOR.

C. All motors shall be megged with the winding resistance recorded. Motor voltage and amperage shall also be measured and recorded.

D. All test data shall be reported to the ENGINEER in writing.

135-2021-01 (03/2022)

3.04 SPARE PARTS

A. Spare parts shall be furnished for all pumping equipment. All spare parts shall be boxed and tagged with positive identification, including part number, description and the particular pump to which it applies.

B. The required spare parts shall include the following items as a minimum for each different size or model pumping unit:

One complete set of mechanical seals
One set of impeller adjustment washers
One set of O-rings
Wear ring
Impeller screw

3.05 PAYMENT

A. Payment for the complete system shall be included in the lump sum bid for the project and shall include the furnishing of materials, equipment and parts and installation of all components to provide a completely functional and operational system.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 16020

PUMPING STATION ELECTRICAL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, material, tools, approvals, utility connection fees, excavation, backfill, and other services and equipment necessary to install the electrical system as shown on the Contract Drawings and as specified herein.

B. Each Contractor bidding on the work included in these Specifications shall view the building site and carefully examine the contract Drawings and Specifications, so that he/she may fully understand what is to be done, and to document existing conditions.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Contractors bidding work under this Contract shall read and understand Division Zero and Division 1 - General Requirements. If any discrepancies are discovered between this Division and the General Requirements, the above-mentioned documents shall overrule this section.

B. Section 16900 – Control Panel

C. Section 17010 – Instrumentation/SCADA

1.03 SUBMITTALS

A. Provide shop drawings including descriptive literature and/or installation, operation and maintenance instructions. Shop drawings shall be submitted for all equipment proposed to be furnished under this Division.

B. Electrical submittals shall be submitted after the pumping/process equipment has been approved. Otherwise the Contractor is responsible for any changes and costs incurred as a result of changes necessary to the electrical equipment.

C. Shop Drawings shall be clearly marked and or highlighted as to which product, type, option, etc. is being submitted.

D. Where wiring diagrams are not shown on the Contract Drawings, they are to be provided by the supplier of the equipment served.

E. O&M manuals are required and shall consist of approved shop drawings, manufacturer O&M instructions, and test reports.

1.04 SYMBOLS AND ABBREVIATIONS

A. The symbols and abbreviations generally follow standard electrical practice, however, exceptions to this shall be as shown on the Contract Drawings.

135-2021-01 (03/2022)

1.05 COORDINATION WITH OTHER TRADES

A. The Contractor shall coordinate the electrical work with that of other trades to ensure proper final location of all electrical equipment and/or connections.

1.06 CODES

A. Comply with the latest revision of the following codes:

1.	Kentucky Building Code	KBC
2.	National Electrical Code	NEC
3.	National Electrical Safety Code	NESC
4.	Underwriters Laboratories, Inc.	UL
5.	National Fire Protection Association	NFPA
6.	National Electrical Manufacturers Association	NEMA
7.	Occupational Safety and Health Administration	OSHA
8.	Insulated Cable Engineers Association	ICEA
9.	Instrument Society of America	ISA
10.	American National Standards Institute, Inc.	ANSI
11.	Anti-Friction Bearing Manufacturers Association, Inc.	AFBMA
12.	Federal Communications Commission	FCC

B. Comply with any other applicable federal, state, or local laws and ordinances.

C. Where the Engineer’s design requires a higher standard than the applicable code, the Engineer’s design shall be followed.

1.07 INSPECTIONS AND PERMITS

A. Inspection of the electrical system on all construction projects is required. If the local government has appointed a state licensed inspector, the Contractor shall be required to use that person to perform the inspections. If a locally mandated inspector does not exist, the Contractor shall select and hire a state licensed inspector, who has jurisdiction before any work is concealed.

B. At the time of completion of the project, there shall be furnished to the Owner and Engineer a certificate of compliance, from the agency having jurisdiction pursuant to all electrical work performed.

C. All permits necessary for the complete electrical system shall be obtained by the Contractor from the authorities governing such work.

1.08 STORAGE

A. All work, equipment, and materials shall be protected against dirt, water, or other injury during the period of construction. Complete replacement with new equipment is required for any damaged materials.

B. Sensitive electrical equipment such as motor starters, controls, transmitters, etc., delivered to the jobsite, shall be protected against injury or corrosion due to atmospheric conditions or physical damage by other means. Protection is interpreted to mean that equipment shall be stored under roof, in a structure

properly heated in cold weather and ventilated in hot weather. Provision shall be made to control the humidity in the storage area at 50 percent relative. The stored equipment shall be inspected periodically, and if it is found that the protection is inadequate, further protective measures shall be employed.

1.09 MATERIALS

A. All materials used shall be new and at least meeting the minimum standards as established by the NEC and/or National Electrical Manufacturers Association. All materials shall be UL listed for the application where a listing exists. All equipment shall meet applicable FCC requirements and restrictions.

B. The material and equipment described herein has been specified according to a particular trade name or make to set quality standards. However, each Contractor has the right to substitute other material and equipment in lieu of that specified, other than those specifically mentioned at matching or for standardization, providing such material and equipment meets all of the requirements of those specified and is accepted, in writing by the Engineer.

C. The reuse of salvaged electrical equipment and/or wiring will not be permitted unless specified herein or indicated on the Contract Drawings.

D. All salvaged or abandoned electrical materials shall become the property of the Contractor and shall be removed from the job site upon completion of the project, unless otherwise noted on the Contract Drawings or specified herein.

1.10 ERRORS, CORRECTIONS, AND/OR OMISSIONS

A. Should a piece of utilization equipment be supplied of a different size or horsepower than shown on the Contract Drawings, the Contractor shall be responsible for installing the proper size wiring, conduit, starters, circuit breakers, etc., for proper operation of that unit and the complete electrical system at no extra cost to the Owner.

B. It is the intent of these Specifications to provide for an electrical system installation complete in every respect, to operate in the manner and under conditions as shown in these Specifications and on the Contract Drawings. The Contractor shall notify the Engineer, in writing, of any omission or error at least 10 days prior to opening of bids. In the event of the Contractors failure to give such notice, he/she may be required to correct work and/or furnish items omitted without additional cost.

C. Necessary changes or revisions in electrical work to meet any code or power company requirement shall be made by the Contractor without additional charge.

1.11 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee all work including equipment, materials, and workmanship. This guarantee shall be against all defects of any of the above and shall run for a period of 1 year from the date of acceptance of the work,

concurrent with the one-year guarantee period designated for the general construction contract under which electrical work is performed.

B. Repair and maintenance for the guarantee period is the responsibility of the Contractor and shall include all repairs and maintenance other than that which is considered as routine. (That is oiling, greasing, etc.) The Engineer shall be the judge of what shall be considered as routine maintenance.

1.12 TESTING

A. After the wiring system is complete, and at such time as the Engineer may direct, the Contractor shall conduct an operating test for acceptance. The equipment shall be demonstrated to operate in accordance with the requirements of these Specifications and the Contract Drawings. The test shall be performed in the presence of the Engineer or his authorized representative. The Contractor shall furnish all instruments and personnel required for the tests, as well as the necessary electrical power.

B. Before energizing the system, the Contractor shall check all connections and set all relays and instruments for proper operation. He shall obtain all necessary clearances, approvals, and instructions from the serving utility company prior to placing power on the equipment.

C. Cost of utilities for testing done prior to beneficial occupancy by the Owner shall be borne by the Contractor.

1.13 CLEANUP

A. Cleanup shall be performed as soon as possible after the electrical installation is complete. All control panels, switches, etc., shall be free from tags, stickers, etc. All painted enclosures shall be free from scratches or splattered paint. The interior of all enclosures shall be clean from dust, wire strippings, etc. Surplus material, rubbish, and equipment shall be removed from the jobsite upon completion of the work.

B. During construction, cover all Owner equipment subject to damage.

1.14 EXCAVATION AND BACKFILL

A. Excavation for conduits shall be of sufficient width to allow for proper jointing and alignment of the type conduit used. Conduit shall be bedded on original ground unless indicated otherwise on the Drawings. Where conduit is in solid rock, a 6-inch earth cushion must be provided. Conduit shall be laid in straight lines between pull boxes and/or structures unless otherwise notes on the Contract Drawings. The cost of solid rock excavation shall be included in the lump sum bid.

B. Backfill shall be hand placed, loose granular earth for a height of 6 inches above the top of the largest conduit. This material shall be free of rocks over ½ inches in diameter. Above this, rocks up to 3” diameter may be included but must be mixed with sufficient earth to fill all voids.

135-2021-01 (03/2022)

1.15 POWER COMPANY COORDINATION

A. The Contractor is responsible for coordinating all activities onsite by the power company.

B. The Contractor is required to meet all requirements and special provisions of the power company. The Contractor shall coordinate with the utility prior to bidding the project. No extras will be allowed for provisions required by the power company.

1.16 TEMPORARY ELECTRICAL POWER

A. The Contractor shall be responsible for providing temporary electrical power as required during the course of construction and shall remove the temporary service equipment when no longer required.

1.17 OVERCURRENT PROTECTION

A. Circuit breakers or fused switches shall be the size and type as written herein and shown on the Contract Drawings. Any additional overcurrent protection required to maintain an equipment listing by an authority having jurisdiction shall be installed by the Contractor at no extra cost to the Owner.

1.18 TRAINING

A. Not required for the electrical system on this project.

1.19 RECORD DRAWINGS

A. The Contractor shall maintain 1 set of the Contract Drawings on the job in good condition for examination at all times. The Contractor's qualified representative shall enter upon these Drawings, from day to day, the actual “as-built” record of construction and/or alteration progress. Entries and notes shall be made in a neat and legible manner and these Drawings delivered to the Engineer after completion of the construction, for use in preparation of Record Drawings. Underground lines must be dimensioned to permanent structures.

1.20 MAINTAINING CONTINUOUS ELECTRICAL SYSTEM AND SERVICE

A. Not applicable on this project.

1.21 GROUNDING AND BONDING

A. All metallic conduit, cabinets, equipment, and service shall be grounded in accordance with NEC requirements. All supporting framework in contact with electrical conduit, cable, and/or enclosures, shall be properly grounded.

1.22 SERVICE ENTRANCE

A. Conductors and terminations for service entrances shall be furnished and installed by the Contractor. Voltage, phase, and number of wires shall be as

135-2021-01 (03/2022)

shown on the Drawings. Clearances for overhead entrance wires shall be per power company, NEC, and NESC requirements.

1.23 CONTRACTOR LICENSING

A. The Contractor performing the electrical work on this project shall be a licensed electrical contractor in the State of Kentucky.

1.24 ELECTRICAL COMPONENT MOUNTING HEIGHTS

A. Mounting heights shall be as shown on the Contract Drawings. Operators and control devices shall not be mounted higher than 6'6" above finished floor or grade.

1.25 EQUIPMENT IDENTIFICATION

A. All starters, feeder units, disconnects, instruments, etc., shall be marked to indicate the motors, circuit, they control or monitor. Marking is to be done with engraved laminated nameplates. Nameplates shall be fastened to equipment with stainless steel screws, one each side. In no way shall be installation of the mounting screws void the NEMA enclosure rating of the equipment in which they are installed. If there are more than one number, the equipment shall be number consecutively and labeled as such. Nameplate background color shall be white, with black engraved letters.

B. Disconnect switches, control panels, transfer switches, panelboards etc. shall be labeled with orange OSHA-compliant vinyl self-adhesive signs that list the maximum voltage contained inside the cabinet or panel.

1.26 EQUIPMENT CONFIGURATION/PROGRAMMING

A. Any equipment furnished by the Contractor is required to be configured or programmed by the Contractor or his subcontractor/vendor. Any necessary studies or engineering necessary to configure or program this equipment shall be provided by the Contractor as needed to place the equipment into successful operation. Engineer or Owner will not be responsible for equipment configuration or programming.

B. If a manufacturer or manufacturer’s representative is required to startup/commission the equipment in these Specifications, then it is required that the Contractor provide the services of the manufacturer to configure/program the equipment. This includes the provision of any necessary studies or engineering necessary for the configuration/programming.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Raceways

1. Rigid Aluminum Conduit - “Allied,” “Wheatland,” “Indalex,” or equal.

135-2021-01 (03/2022)

2. PVC Conduit – “Allied,” “Carlon,” “Cantex,” or equal.

3. Liquidtight Flexible Metal Conduit – “Allied,” “Anaconda,” or equal.

B. Wires and Cables

1. Building Wire (Types THWN and THW) - “Collyer,” “Rome,” “American,” “Carol,” or equal.

2. Instrumentation Cables - “Eaton-Dekoron,” “Manhatton,” “American,” “Belden,” “Okonite,” or equal.

C. Boxes - “Appleton,” “Crouse-Hinds,” “Hoffman,” “Rittal,” “Pentair”, or equal.

D. Wire Connections and Connecting Devices

1. Termination and Splice Connectors - “3M Scotchlok,” “Anderson,” “T&B,” “Burndy,” or equal.

2. Connectors, Lugs, etc. - “T&B,” “Anderson,” “Burndy,” or equal.

E. Grounding Equipment - “Cadweld,” “ITT Blackburn,” “Copperweld Bimetallics Group,” “Cathodic Engineering Equipment Co.,” or equal.

F. Motor Control Equipment - “Square D,” “Allen Bradley,” “Eaton Cutler-Hammer,” “G.E.,” or equal.

2.02 MATERIALS

A. Conduit and Fittings

1. Aluminum Conduit

a. Aluminum conduit shall be extruded from alloy 6063 and shall be the rigid type, non-toxic, corrosion resistant, and non-staining. It shall be manufactured per UL standards as well as listed/labeled by same.

b. Fittings, boxes, and accessories used in conjunction with aluminum conduit shall be die cast, copper free type. They shall be resistant to both chemical and galvanic corrosion. All covers shall have neoprene gaskets. Aluminum fittings containing more than 0.4 percent copper are prohibited.

c. Aluminum conduit proposed for concrete slab or underground applications shall be UL listed for the purpose and factory pre-coated. Corrosion-resistant taping is allowed for stubouts out of the ground.

2. Polyvinychloride (PVC) Conduit - PVC conduit and fittings shall be Schedule 80 heavy wall and UL listed. Expansion joints shall be used as recommended by the manufacturer in published literature. PVC systems

135-2021-01 (03/2022)

shall be 90 degrees Celsius minimum UL rated, have a tensile strength of 7,000 psi @ 73.4 degrees Fahrenheit, flexural strength of 11,000 psi and compressive strength of 8,000 psi.

3. Liquidtight Flexible Conduit - Flexible conduit shall be the metallic liquidtight type UA constructed from flexibly or spirally wound electro-galvanized steel with light gray PVC coating. Connections shall be by means of copper-free aluminum fittings.

4. Locknuts shall be bonding type with sharp edges for digging into the metal wall of an enclosure. Myer-style aluminum hubs shall be used rather than locknuts for all NEMA 4X and exterior penetrations.

5. Bushings shall be metallic insulating type, consisting of an insulating insert molded of locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.

6. Corrosion-Protection Tape: The corrosion protection tape shall be Scotchrap 51 or equal with 20mil thickness PVC tape and high-tack adhesive. Degreasing and priming of the conduit are required prior to applying the corrosion-protection tape.

B. Conductors (600 Volts and Below)

1. All conductors shall be insulated so that they are rated at 600 volts.

2. Insulated conductors shall be minimum #12 AWG for power or #14 AWG for control and shall be stranded.

3. All conductors brought to the job site shall be new and unused and where no special factory cut lengths are involved, shall be delivered to the job site in standard coils. Contractor shall provide verification to the Engineer of wire condition before wire is installed.

4. All conductors shall be soft drawn, 98 percent conductivity copper conforming to the latest ASTM Specifications and the requirements of the National Electrical Code.

5. Conductors shall be insulated with type THWN insulation and all conduits shown on the Drawings are sized accordingly.

C. Instrumentation Cable - Instrumentation cable shall have individually shielded and twisted pairs or triads. Conductors shall be tinned copper, and the cable shall include a separate drain conductor. Voltage rating shall be 600 Volt. Conductor colors shall be black and white. Shielding shall be a combination braid/foil with 100% coverage. Insulation shall be PVC or XLPE. Conductors shall be #18AWG minimum, but no smaller than the size indicated on the Drawings. Insulation shall be polyethylene, rated for underground wet location use, and resistance at 68 degrees Fahrenheit between conductors and between conductors and ground should be at least 500 megohms per 1,000 feet.

135-2021-01 (03/2022)

D. Submersible pump power cables shall be of the extra hard usage type suitable for submerged duty and able to withstand common corrosive agents found in water and wastewater. They shall be provided with high grade non-magnetic stainless steel strain relief cable grips installed at the pump end and high grade non-magnetic stainless steel support cable grips anchored to the wet well structure where they enter the wetwell. The support grips shall be the heavy-duty type stainless 302, 304, or 316 as manufactured by Hubbell/Bryant or equal.

E. Boxes and Enclosures

1. Junction boxes for outdoors surface mounting shall be stainless NEMA 4X, with at least 5 ½ full threads for each conduit opening, and shall be suitable for surface mounting as required with drilled external, cast mounting extensions. Box covers shall be hinged or cap screw retained as required, of the same material as the box and provided with stainless steel hardware.

F. Wire Connections and Connecting Devices

1. Terminals and spice connectors from #22 to #4 AWG shall be compression type with barrels to provide maximum conductor contact and tensile strength. Performance, construction, and materials shall be in conformance with UL standards for wire connectors and rated for 600 Volts and 105 degrees Celsius.

2. Lugs and splice connectors from #6 AWG to 1000 kcmil shall be compression types with barrels to provide maximum conductor contact and tensile strength. They shall be manufactured from high conductivity copper and entirely tin plated. They shall be crimped with standard industry tooling. The lugs and connectors must have a current carrying capacity equal to the conductors for which they are rated and must also meet all UL requirements. All lugs above #4/0 shall be 2 hole lugs with NEMA spacing. The lugs shall be rated for operation through 35 KV. The lugs shall be of closed end construction to exclude moisture migration into the cable conductor.

G. Wiring Devices

1. General – All receptacles shall be heavy duty specification grade duplex receptacle, NEMA 5-20R, 20A, 125V, 3-wire. Provide weatherproof cover where indicated on the Drawings.

2. Duplex outlet - “Hubbell” catalog series 5362, or equal.

3. Ground fault interrupting receptacles shall be required where shown on the Contract Drawings, and shall be indicated by the abbreviation “GFI” beside the circuit symbol on the Contract Drawings. They shall be rated 20 amps (125 volts) and shall be of the duplex, feed through type, capable of protecting all downstream receptacles on the same circuit. They shall be UL listed and shall comply with UL 943 and interrupt the

135-2021-01 (03/2022)

current between 4-6 milliamps of ground fault leakage. Appropriate plates shall be furnished and installed. The 20 ampere rating shall apply not only to device internals but to the faceplate as well. Receptacle shall be Hubbell GFI 5352, or equal.

4. Weatherproof covers shall be Hubbell WP series, Thomas and Betts 2CKG, or equal. They shall be weatherproof-in-use with cast aluminum construction. Mounting screws shall be stainless. Protection shall be NEMA 3R.

5. General – Switches shall be industrial grades, 120/227VAC, 20A

   a. Single pole (exterior) - “Hubbell” cat. no. 1222-gray, or equal.

   b. Weatherproof switch covers shall be Hubbell 7420 series, or equal, with stainless mounting screws, cast aluminum construction and wet location rating.

H. Motors

1. Ratings and Electrical Characteristics:

   a. Time: All motors shall be rated for continuous duty.

   b. Temperature: Maximum ambient temperature of 40 degrees C. and an altitude of 3,300 feet or less, according to service factor and insulation class employed.

   c. Voltage: All single-phase motors shall be rated 115/208/230 volts and all polyphase motor 230/460 volts. All motors shall be capable of normal operation at balanced voltages in the range of + 10 percent from rated winding voltage.

   d. Frequency: All AC motors shall be rated for 60 hz. operation. All motors shall be capable of normal operation at frequencies 5 percent above or below the normal rating of 60 hz.

   e. Locked Rotor Current: Locked rotor current shall be in accordance with NEMA standards.

   f. Efficiency: NEMA premium efficiency is required.

   g. Speed: Slip shall not exceed 4 percent at full load.

   h. Service Factor: The service factor shall be 1.15 unless requirements of the driven load necessitate a higher service factor.

   i. Insulation Class: Insulation shall be NEMA Class F or Class H. All motors shall be inverter-duty and suitable for operation on variable frequency drives.

135-2021-01 (03/2022)

j. Design Level: Motors shall be NEMA design B, except as otherwise noted.

k. Enclosure: Motors for process equipment 2 HP and smaller shall be totally enclosed. All motors for process equipment larger than 2 HP shall be TEFC (totally enclosed fan cooled), suitable for use indoors or outdoors, except as otherwise noted. Totally enclosed non-ventilated (or air-over) motors may be used for ventilators and other auxiliary equipment that by virtue of the load are provided with more than adequate ventilation. ODP (open dripproof) motors may be used for ventilators where the motor is outside the air stream yet still protected from the weather. Submersible motors shall be air or oil filled and of watertight construction. Motors used in classified atmospheres shall be properly rated for that hazard.

l. Winding Overtemperature Sensors: All motors 15 horsepower and over shall be provided with motor winding thermostats. The devices shall be hermetically sealed, snap-acting thermal switches, actuated by a thermally responsive bi-metallic disk. A minimum of 1 per phase is required, with switches wired into the control circuit of the starter to provide de-energization should overheating threaten. All submersible motors shall be equipped with motor winding thermostats.

m. All submersible motors shall be equipped to detect seal failure.

2. Tests, Nameplates and Shop Drawings:

a. Test: Tests shall be required on integral horsepower motors only. A factory certified test report of “electrically duplicate motors previously tested” shall be supplied on all motors under 200 horsepower. The test shall be certified by the factory and shall contain a statement to the effect that complete tests affirm the guaranteed characteristics published in the manufacturer’s catalogs or descriptive literature. Tests shall be in accordance with IEEE test procedures.

b. Nameplates: Each motor shall have a permanently affixed nameplate of brass, stainless steel, or other metal of durability and corrosion resistance. The data contained on the nameplate shall be in accordance with NEMA standards. Provide a spare nameplate with each motor and mount the nameplate in the starter cabinet. A Brady label with equivalent nameplate information will be accepted in lieu of an actual spare nameplate.

3. Efficiency Requirements

a. The following motor full load efficiency requirements shall be met as a minimum for totally enclosed 3 phase integral horsepower motors (per NEMA test Methods):

135-2021-01 (03/2022)

Horsepower	Nominal 3600 RPM (Minimum %)	Nominal 1800 RPM (Minimum %)	Nominal 1200 RPM (Minimum %)
1	75.5	82.5	80.0
1.5	82.5	84.0	85.5
2	84	84.0	86.5
3	85.5	87.5	87.5
5	87.5	87.5	87.5
7.5	88.5	89.5	89.5
10	89.5	89.5	89.5
15	90.2	91.0	90.2
20	90.2	91.0	90.2
25	91.0	92.4	91.7
30	91.0	92.4	91.7
40	91.7	93.0	93.0
50	92.4	93.0	93.0
60	93.0	93.6	93.6
75	93.0	94.1	93.6
100	93.6	94.5	94.1
125	94.5	94.5	94.1
150	94.5	95.0	95.0
200	95.0	95.0	95.0

b. Motors shall be energy efficient and shall be documented in the shop drawings submittal in sufficient detail to allow the Engineer complete review of what is offered. Motors shall meet NEMA premium efficiency standards.

I. Surge Protection Devices

1. Control Panel SPD/TVSS:

J. The TVSS shall be suitable for application in category C3 environments as described in ANSI/IEEE C62.41. The TVSS shall be of parallel design and provide protection, line to ground, neutral to ground, and line to neutral for wye or delta distribution systems. The TVSS shall be compatible with the indicated electrical system, voltage, current and distribution configuration.

135-2021-01 (03/2022)

K. TVSS shall comply with ANSI/IEEE C62.1, C62.41, and C62.45. The TVSS shall be capable of surviving 1,000 sequential category C3 surges without failure following IEEE test procedures established in C62.45.

L. The TVSS shall have LED indicators that provide indication of suppression failure. It shall also have a surge counter. It shall also have a relay contact that provides remote indication of surge protection failure.

M. The TVSS maximum continuous operating voltage (MCOV) shall be capable of sustaining 110 percent of the nominal RMS voltage continuously without degradation.

N. TVSS shall have surge current capacity of 80,000 amps minimum per mode with a response time no greater than 5 nanoseconds, for any of the individual protection modes, under laboratory conditions with optimum lead lengths.

O. The TVSS UL 1449 surge suppression rating for any suppression mode shall not exceed:

Electrical System Voltage	Phases	UL 1449 Surge Suppression Ratings
120/240	1	330V
120/240	3	330V
120/208	3	330V
208	3	700V
277/480	3	700V
480	3	1500V

P. Safety Switches

1. All safety switches shall be heavy-duty load break type with a quick-make, quick-break, switch mechanism. The switches shall be fused or unfused as indicated on the Drawings. The handle position shall give visual indication of open and closed switch position. Padlocking capability shall be provided for locking the switch in the "OFF" (open) position. Switches are required to be UL98 listed and shall comply with NEMA KS-1 latest version.

2. The switch jaws shall be multi-spring type for positive grip of the switch blades and shall be provided with arc suppressors. The fuse clips shall be spring reinforced, positive pressure type of electrolytic copper. Fuse clips shall be rejection type.

3. The switch shall be provided with cover-blade interlock so that the cover cannot be opened when the switch blades are closed, nor can the switch blades be closed with the cover open. Interlock bypassing devices shall be included for use by authorized personnel. Note: where indicated,

135-2021-01 (03/2022)

safety switches shall have integral electrical interlocks. Contacts shall be open when the switch is in the off position.

4. Enclosures shall be NEMA 1 where used inside the building and NEMA 4X stainless steel where used outside unless otherwise shown on the Drawings.

5. Each safety switch shall be provided with ground lugs as required to accept grounding conductors as shown on the Drawings. The grounding lugs shall be factory installed and shall have direct metal-to-metal contact with the switch enclosure.

6. Double throw fused safety switches shall be furnished where indicated. They shall be lockable in any position and shall be service-entrance rated. They shall be heavy-duty NEMA 4X stainless steel unless noted otherwise.

Q. Motor Control – See Section 16900 for requirements.

R. Lighting

1. All fixtures shall be delivered complete with suspension and mounting accessories, ballasts, diffusers, reflectors, etc., all wired and assembled. All accessory wiring shall be furnished and installed as shown on the Contract Drawings.

2. All supports required for luminaires shall be furnished and installed by the Contractor.

S. Supporting Devices – All strut, channel, conduit clamps/straps, and other supporting devices shall be either stainless steel or aluminum. All hardware such as nuts, bolts, anchors, washers, etc. shall be stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION/APPLICATION/ERECTION

A. Conduit

1. PVC conduit shall be utilized below grade, and aluminum conduit shall be used above grade. The transition from PVC to aluminum shall occur below grade prior to the elbow. The aluminum conduit shall be taped with corrosion-prevention tape from the transition point to 6” above finished grade.

2. The Contractor shall be responsible for setting of all sleeves for his work. Passage of conduit through masonry and concrete walls shall be provided with steel pipe sleeves. Sleeves shall be flush with each face of the wall. Seal space between sleeve and conduit with oakum and waterproof mastic.

3. All conduit 1-1/4 inches and larger shall be sleeved.

135-2021-01 (03/2022)

4. Concrete encasements of underground conduit are not required on this project.

5. During construction, all new conduits shall be kept dry and free of moisture and debris. Before the wire is pulled in, all conduits shall be swabbed to clear all moisture and debris which may have unavoidably accumulated.

6. Rigid conduits, where they entered panelboards, cabinets, pull boxes or outlet boxes shall be secured in place by galvanized, double locknuts (one inside and one outside) and bushings. Conduit bushings shall have insulating material which has been permanently fastened to the fittings. Bushings for conduit 1-1/2 inches trade size and larger shall be complete with grounding lug and shall be bonded to the box by means of bare copper wire. Myers hubs shall be utilized rather than locknuts for all exterior and NEMA 4X penetrations.

7. All field bends shall be made with standard tools and bending equipment manufactured especially for this purpose. Bends in metallic conduit shall be made while cold and in no case shall the conduits be heated. Conduits shall not be bent through more than 90 degrees.

8. Size of conduits shall not be less than that required by the National Electrical Code. The Contractor shall install larger size conduits than detailed where there is more than 100 feet of unbroken run or where the total of the angles through which the conduit has been bent during a single run exceeds 270 degrees.

9. In general, flexible conduit is prohibited. Where absolutely necessary, it shall be liquidtight, with maximum lengths of 3 feet.

10. All conduit joints shall be made up tight and no running threads shall be permitted on threaded connections. No kinked, clogged or deformed conduits shall be permitted on the job.

11. During construction, all installed conduits shall be temporarily capped or corked.

12. All moisture proofing or other material for thread protection shall be removed from conduit threads prior to installation. No material of insulating quality shall be used on the conduit threads or other places which will reduce the overall conductivity of the conduit system.

13. Raceways shall be securely and rigidly fastened in place with conduit clamps or approved conduit hangers. Bolts, screws, etc. used in securing the work shall be stainless steel and of ample size for the service. Assembly bolts, nuts, washers, etc., shall be stainless steel. Raceways shall NOT be welded to steel structures.

14. Horizontal and vertical conduit runs shall be supported by one hole straps with clamp backs, special brackets, or other approved devices with

135-2021-01 (03/2022)

suitable bolts, expansion shields where required. All mounting hardware shall be stainless steel.

15. The use of perforated iron straps or wire for supporting conduits will not be permitted.

16. Where conduit is run in a concrete slab, the conduit shall be installed as close to the middle of the concrete slabs as practicable without disturbing the reinforcement. The outside diameter shall not exceed one-third of the slab thickness and conduits shall be placed not closer than three diameters on centers, except at cabinet locations where the slab thickness shall be increased upon consultation with and approval by the Engineer.

17. Depth of bury for all conduit shall be as indicated but not less than 30 inches below finished grade.

18. All conduit shall have an insulated ground wire pulled to all equipment.

19. All conduits penetrating enclosures shall have duct seal applied to seal the conduit and prevent moisture from entering the enclosure.

B. Wire and Cable (600 Volts and Below):

1. All wiring shall be installed in conduit. Wire shall not be installed until all work of any nature that may cause injury to the wire is completed.

2. Mechanical means shall not be used in pulling in wires No. 8 or smaller.

3. Approved wire pulling lubricant shall be used as required to prevent insulation damage and over stressing of the wire while pulling through conduit. In no case shall conductors be greased or coated with any substance injurious to the conductor insulation or sheath.

4. All wiring in control equipment, cabinets, etc., shall be neatly wrapped, taped, or laced into groups to provide a neat and orderly appearance in the equipment.

5. Where the wire is shown larger than that required for the load, it is done so for voltage drop or other purposes and must be installed as shown. Where the wire is stranded, the removal of strands in order to install the wire into a lug provided on any equipment will not be permitted. A larger lug shall be installed which will accept the wire size indicated.

6. For the wiring of circuits consisting of AWG No. 10 or smaller wire, self-insulated pressure connectors (wirenuts) shall be utilized for all splices or joints.

7. Where indicated on the Drawings, cables entering enclosures shall be sealed using strain relief connectors suitable for Class I, Division 1, Group D hazardous locations. The purpose of the connector is to provide a seal

135-2021-01 (03/2022)

between the hazardous and non-hazardous location without the use of sealing fittings.

8. Each wire shall be labeled at both termination points. Individual conductor or circuit identification shall be carried throughout, with circuit numbers or other identification clearly stamped on terminal strips and shown in wiring diagrams.

9. In all junction boxes, cabinets, control compartments and terminal boxes where no terminal board is provided, each wire, including all power wires, shall be properly identified by plastic coated, self-adhesive, wire marker.

10. In cases similar to the above where the terminal boards are provided for the control, indicating, and metering wires, all wires including motor leads and other power wires shall be identified by wire markers as specified above.

11. Equipment ground wire insulation shall be colored green or green with two or more yellow stripes. Isolated grounding conductors shall be green with striping that identifies the conductor as "isolated ground" and different from the equipment (bonded) ground.

12. In general and unless otherwise shown on the drawings, no two wires of the same color shall be run in the same conduit except such as control wiring, switch legs, neutral, and ground. Where a conduit run is shown on the drawings to have two or more wires connected to the same phase and, therefore, are the same color, pressure sensitive, plastic marked wire marker identification tape shall be used wherever the wire is accessible (junction boxes, panels, device boxes, etc). The numbers shall in each case, correspond to the circuit number and panelboard from which the circuit emanates. Control wiring inside any compartment which may be energized from a source outside the compartment shall have insulation. Where yellow insulated wires are used inside any cabinet, compartment, etc., a machine engraved, laminated plastic identification marker shall be installed on the outside of the compartment.

13. Insulation on ungrounded conductors larger than AWG #10 and on grounded (neutral) and grounding (equipment ground) conductors larger than AWG #6 may be black with color coding accomplished with the use of colored plastic tape. Tape shall be installed on the conductors wherever they are visible and shall be wrapped at least three (3) turns around the conductor.

14. All wiring on this project, except control wiring, shall reflect the phase relationship as follows:

480 volt system:	brown, orange and yellow for ungrounded conductors, gray with brown tracer for neutral conductors.

135-2021-01 (03/2022)

208Y/120 volt system:	black, red and blue for ungrounded conductors, white for neutral conductors.
120/240 volt, 3-phase 4-wire,delta system:	black, red for ungrounded conductors, orange for ungrounded conductor connected to "high leg", white for neutral.

C. Grounding

1. Ground rods shall be driven vertically into the earth to at least one foot below finished grade. Where a counterpoise or grounding grid is indicated and where rock is encountered at a depth of less than four (4) feet, rods shall be buried in a trench at not less than two feet below finished grade, and at equal angles from any two adjacent sides on the outside of the counterpoise or grid. In these cases, at the Contractor's option, equal lengths of bare conductor of the same size as the counterpoise or grid may be used in place of ground rods.

2. Conductors connecting the main ground bars in switchgear to the earth shall be continuous without joints or splices. Connections to the grounding system at the switchgear shall be made with pressure connectors such as defined in Article 100, "Connector, Pressure (Solderless)", of the National Electrical Code.

3. Connections to ground rods and all other ground connections below grade shall have a minimum mechanical contact surface area between the conductor and the ground rod of not less than 3 square inches.

4. All connections made below finished grade shall be exothermic.

5. Installation of grounding conductors shall be such that they are not exposed to physical damage. All connections shall be firm and tight. Conductors and connectors shall be so arranged and provided so that there is no strain upon the connection. Buried equipment grounding conductors shall be buried at least 24 inches below finished grade and shall not be buried below concrete pads, paving, etc. except where running a tap to the grid or where shown on the contract drawings. Where buried below concrete or paving, grounding conductors shall be in rigid conduit unless shown on the drawings as a part of a grid.

6. Resistance measurements shall be made between the main grounding bar in the switchgear and a good earth ground. If this resistance is not equal to or less than 5 Ohms, an additional grounding electrode system in the form of ground rods installed and connected together in a 10-foot by 10-foot grid shall be added. The rods shall be connected together and this grid connected to the system with AWG #3/0 bare tinned copper. The number of rods shall be as required to register the resistance value mentioned above. Measurements shall be made in normally dry conditions and, in no case, less than 48 hours after rainfall. Submit a

ground test report to the Engineer using the “Fall of Potential” method and appropriate ground testing instrumentation.

7. Where a bare conductor is the only conductor installed in conduit or other raceway, and this conductor is serving as a grounding conductor, it shall be bonded to the raceway that contains it at each end of the raceway. The bond shall be made using a grounding type bushing and bonding jumper. The size of the jumper shall be the maximum size that the grounding bushing lug will accept and it shall be connected to the bushing with the lug and to the grounding conductor with a split bolt connector.

8. All metal electrical equipment cabinets (wireways, panels, switchgear, device boxes, junction and pull boxes, motor control panels, etc.) shall be securely bonded to a grounding conductor running through any conduit terminating at the cabinet or enclosure by use of a grounding lug bushing and jumper wire to the enclosure wall. Switchgear, panelboards and motor control equipment shall be provided with an equipment ground bus (including lugs or screw terminals) securely bonded to the enclosure. Junction boxes and other enclosures shall utilize an equipment ground bus or lug as required to securely bond the equipment grounding conductor to the enclosure. The grounding conductor shall be connected with pressure connectors at the main switchgear to the main grounding system. Where screw terminals or set screw lugs are used, sufficient lugs shall be provided such that not more than one conductor is installed into each lug or terminal.

9. No raceway (including rigid steel conduit, EMT, etc.) shall serve as a grounding conductor.

10. All main feeder circuits and all branch circuits shall contain a grounding conductor sized according to Table 250-95, Article 250 of the National Electrical Code or as shown on the drawings. This grounding conductor shall be connected to the main grounding conductor in the switchgear from which the circuit emanates. Individual components of the system served by the main feeder circuit shall have their enclosures connected to the main feeder grounding conductor with pressure connectors.

11. The grounding conductor serving motor circuitry shall be connected inside the entrance compartment to the motor frame with a bolted solderless pressure connector. Bolts, nuts, washers and other assorted hardware shall be bronze, cadmium plated steel, or other corrosion resistant material. The motor ground connection shall be to the motor frame and independent of the mounting bolts or sliding base.

12. Grounded and Grounding Conductor: Connections to the grounding conductor and/or the neutral (grounded) conductor shall be made in such a manner that removal of any device or equipment will not interrupt the continuity of these conductors to any device downstream from the device removed.

135-2021-01 (03/2022)

D. Lighting

1. The Contractor shall furnish all light fixtures, lighting equipment, components, hangers, etc., as shown on the Contract Drawings and shall install them at the locations shown on the Contract Drawings.

E. Light Poles

1. A concrete foundation shall be provided for each pole as detailed on the Contract Drawing. The poles shall be mounted utilizing anchor bolts set in the concrete. The anchor bolts shall have galvanized or plated threads and shall be furnished with the pole by the manufacturer. Bases shall have 1" chamfer all around and rubbed and buffed smooth to below grade.

2. When anchor bolts are positioned prior to pouring concrete, spacing and projection must be verified with pole manufacturer's recommendations. A plastic or plywood template should be fabricated from the manufacturer's instructions to use when setting the anchor bolts. Anchor bolts that are not installed plumb and in the correct locations shall be removed and replaced. The Contractor shall not be allowed to bend the anchor bolts back to plumb after concrete is set.

3. Leveling nuts shall be utilized for the mounting of poles to foundations. A nut should be screwed down on each bolt until it meets the concrete, then the nuts must be adjusted until they are level.

4. The pole shall be carefully lowered onto the anchor bolts and allowed to rest on the leveling nuts. Flat washers followed by lockwashers should be placed on the anchor bolts and the top nut installed. Minor adjustments on the leveling nuts may be necessary to plumb the pole before the top nuts are tightened down. Special care shall be taken to tighten the top nuts to the torque level recommended by the pole manufacturer. All nuts and washers shall be galvanized or plated.

5. Concrete grout of the nonshrink type must be installed between the base of the pole and the concrete foundation. The grout should be puddled around the edge of the pole base and firmly packed in the space between the pole and foundation. A short piece of small diameter pipe must be installed to make a drain hole through the grout to the pole interior.

6. Aluminum poles must have the bottom of the base painted with Koppers bitumastic No. 50 or equal substitute product before grouting so that the aluminum does not come in contact with the concrete.

7. Poles shall not be modified or drilled on the job site.

8. Under no circumstances should a ground wire be wrapped around an anchor bolt underneath an anchor bolt nut.

135-2021-01 (03/2022)

9. Manufacturer's installation instructions should be followed as well as those instructions contained herein. Should a discrepancy exist, promptly contact the Engineer for clarification.

10. Anchor bolt covers shall be furnished and installed.

END OF SECTION

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135-2021-01 (03/2022)

SECTION 16900

PUMP CONTROL PANEL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide a pump control panel as specified herein and as shown on the Contract Drawings.

1.02 RELATED WORK

A. Drawings and General and Supplementary Conditions of the Contract and Division 1 Specifications sections apply to this Section.

1.03 SUBMITTALS

A. Panel and enclosure plan and elevation drawings depicting all components and wiring duct

B. Complete wiring diagrams

C. Catalog cut-sheets on all components, with options clearly indicated and non-applicable items clearly excluded

D. Shop Drawings shall be clearly marked and or highlighted as to which product, type, option, etc. is being submitted. Product literature with one or more styles/ configurations for a single product shall have a written description of use for each of the styles/configurations represented on the literature.

E. O&M manuals shall be submitted in accordance with Section 16020. They shall include all field modifications made such that the wiring diagrams exactly match the field-installed equipment and control panels. They shall also include complete cut-sheets, product data, operation, and maintenance information.

1.04 REFERENCES

A. NFPA 79 – All control panels shall comply with NFPA 79.

B. NEC – All control panels shall comply with NEC article 409.

C. UL698 – The pump control panel shall be listed to UL698 and shall bear the UL label.

1.05 GENERAL REQUIREMENTS

A. All control panels furnished under this Contract shall be manufactured in accordance with industry standards and as herein specified. The Contractor shall coordinate all subcontractors and vendors to ensure that the control panels are furnished and meet the requirements specified herein.

135-2021-01 (03/2022)

B. Control panels shall be as manufactured by ControlWorks, Inc., or other UL or ETL qualified panel vendor. Panel construction shall comply with OSHA requirements and shall be either UL or ETL listed.

C. Control panels to be furnished on this project shall be wired to function according to schematics shown on the Contract Drawings. All Control Panels shall be manufactured using “relay logic as shown on schematics (control circuits) located in the Contract Drawings. In addition to the requirements shown on the Contract Drawings, the panels shall adhere to additional requirements as written herein, and in the utilization equipment specifications.

D. All components shall be mounted with threaded screws to a subpanel inside the enclosure such that they are replaceable without removing the subpanel. All wiring must be stranded and protected by a circuit breaker. Supplementary circuit breakers may be utilized for circuits that require wiring smaller than 14 gauge. Wiring ducts for cable/conductor management are required to be utilized for routing of conductors and cables. Ducts are also required to be provided for field-wiring at the top and bottom of the panels. All field wires should terminate at a terminal strip upon entering the control panel enclosure.

E. Elementary control schematics and connection diagrams showing the spatial relationship of components and wiring shall be submitted for review. Also, a bill of materials, drawing of device arrangement on front, and enclosure fabrication drawings shall be submitted. Further, descriptive literature is required on all components. A copy of the as-built wiring diagrams and BOM shall be stored in a pocket inside the control panel enclosure.

F. Labels shall be installed on all wires, keynoted back to the elementary schematic or the connection diagram, and all terminals identified.

G. Short circuit ampacity: The minimum short circuit ampacity of the control panel shall be 10 kA.

H. Controlled equipment shall restart automatically after a power outage is restored, unless specifically exempted by Engineer due to safety concerns.

PART 2 PRODUCTS

2.01 ENCLOSURES

A. Control panel enclosure shall be wall-mount type where sized at 30” width x 42” height or less. Otherwise, it shall be floor-mount type. All panels indicated on the Drawings to be floor-mounted shall be floor-mounted regardless of size. Enclosures shall be single or double-door as required. Enclosure shall include a NEMA flange-mounted lockable disconnect for three-phase power supply, or an IEC style rotary lockable disconnect for single phase power supply. Enclosures shall be manufactured by Hoffman, or equal.

B. Enclosure NEMA rating shall be NEMA 4X type 316. Enclosure shall be sized with 10 percent spare din-rail space for future relays. Seams shall be continuously welded and ground smooth.

135-2021-01 (03/2022)

C. Enclosure door shall have a 3-point latch. Screw clamps are not acceptable. The latch handle shall have a padlock hasp.

D. Enclosures to be installed outside shall have an interior dead-front swing out panel for panel-mounting of all pilot devices and displays. Operator devices shall not be mounted on the exterior of the enclosure, except for a single alarm strobe where indicated on the Drawings. The enclosure shall also have an interior pocket for holding wiring diagrams, and an interior sub-panel for mounting control equipment.

2.02 WIRING REQUIREMENTS

A. Wire and cable shall comply with Section 16020 except Type MTW conductors shall be used inside the control panel for control circuits. Control circuit wiring shall be 18 gauge or larger. All wiring shall be done in the factory, in accordance with the National Electric Code.

B. Control wiring shall be terminated using crimp-type ferrule, fork, or ring terminals. Power wiring shall utilize compression lugs.

C. Wiring shall extend to terminal blocks for connection to external equipment.

2.03 TEMPERATURE CONTROL DEVICES

A. Electric Heater for Control Panels

1. Provide an electric heater for exterior control panels

2. Heater shall be sized as indicated on the Contract Drawings, or shall be sized and submitted in the Enclosure Heat Gain calculation

3. The heater shall include an integral thermostat, adjustable from 0˚F to 100˚F, and a fan

4. Heater housing shall be anodized aluminum

5. Fan shall have ball bearings and shall be designed for continuous operation

6. Terminal strip shall accept both solid and stranded wire

7. The heater shall be UL Recognized and CSA listed

8. The heater shall be Hoffman’s thermostatically controlled fan-driven heater, or equal.

135-2021-01 (03/2022)

2.04 MOTOR CONTROLS

A. Starters

1. All magnetic starters and contactors shall be steel mounted, front wired with all terminals accessible for wiring directly from the front. Movable contact blocks shall depend on gravity only and not the use of springs for operation to the open position.

2. Starters shall be NEMA type and sized appropriately for the motor to be controlled, but in no case shall any starter or contactor be smaller than NEMA size 1 or smaller than as indicated on the Drawings. IEC starters are not acceptable.

3. All contactors shall be double break, solid silver cadmium oxide alloy, or equal. Bare copper or silver flashed copper contacts which require periodic filing or cleaning maintenance will not be permitted.

4. Operating coils shall be pressure molded and so designed that, if accidentally connected to excessive voltage they will not expand, bubble or melt. When a coil fails under and condition, the starter shall open and shall not "freeze" in the closed (on) position. Coils shall be replaceable from the front of the starter without having to remove the starter from the panel or enclosure.

5. Combination starters shall be of the molded case circuit breaker type. Trip elements of multi-pole breakers shall be effectively insulated from one another. Multi-pole breakers shall be designed such that an overload on one pole opens all poles simultaneously. Breakers shall be quick-make, quick-break and shall be entirely trip free to prevent the contacts being held in a closed position against a short circuit. Breakers for full voltage starters shall be the magnetic only type. All others shall be thermal magnetic.

6. Each starter leg shall have a thermal overload device in each ungrounded leg.

7. The pump station control panel will not require any cooling equipment as long as there are no VFD pumps. If VFD pumps are installed, pump station cooling fans will be required.

2.05 POWER SUPPLIES

A. DC Power Supplies

1. DC power supplies shall be switched mode and Din-rail mountable.

2. Input power range shall be from 85-264 VAC.

3. Output voltage range shall be as needed with a tolerance of 1 percent. Output voltage shall be adjustable up and down at least 10 percent from the nominal value.

135-2021-01 (03/2022)

4. The power supply shall include an internal input fuse.

5. Power supply shall have a “DC Ok” signaling LED.

6. Operating temperature rating shall be –25 C to +70 C and up to 95 percent relative humidity.

7. Output power shall be buffered for full output power ridethrough for 20 milliseconds in the event of a power outage.

8. The power supply shall be able to supply 150 percent of its continuous capacity for short periods of time.

9. The power supply shall have internal short circuit protection with automatic recovery.

10. The power supply shall be Phoenix Contact, Sola, Allen-Bradley, or equal.

2.06 OVERCURRENT PROTECTION

A. Main 3-Phase Breakers – Shall be thermal-magnetic, molded-case, Type FA or KA as needed, Square D or equal. Provide service entrance rating where indicated on the Drawings as being used in a service entrance application. See short circuit rating requirements above. Provide cable assembly to connect to flange-mounted disconnect.

B. Main Single-Phase Breakers – Shall be Din-rail mountable with clear “on,” “off,” and “tripped” positions, Square D QOU or equal. Where a substantial number of breakers are used, provide a panelboard mounting base.

C. Combination Starters – Circuit breakers for use with combination starters shall be magnetic-only, Square D MagGuard, or equal, with adjustable trip settings.

D. Supplementary Protectors – Shall be Din-rail mountable UL489 listed. Trip rating shall match load served.

E. Power Fuses – Utilize Class J fuses and fuse blocks. Fuse blocks must have protective cover. Fuses may only be used where indicated on the Drawings. Otherwise, use circuit breakers.

2.07 MISCELLANEOUS PANEL COMPONENTS

A. Terminal Blocks, #10 conductor size and smaller.

1. Terminal blocks shall be Din-rail mountable IEC style with minimum width of 6.2 mm. They shall be rated for conductors from #10 to #24 AWG. Current rating shall be 30A, minimum. Terminal blocks shall be finger-safe. Double level terminal blocks may be utilized where necessary to conserve space.

2. Screw clamp terminal blocks are required. Terminal blocks that rely upon spring pressure only for conductor termination are not acceptable.

135-2021-01 (03/2022)

3. Provide cross connection bridges, partition plates, end anchors, zack strip labels, and all other components necessary for a complete installation. Each block shall be labeled with a machine-printed label. No more than 2 conductors may be landed under on single terminal block terminal screw.

4. Utilize the following terminal block colors:

   a. 120V Power – Black
   b. 120V Control – Red
   c. 120V Neutral – White
   d. Equipment Grounding – Green or Green/Yellow
   e. DC Positive – Blue
   f. DC Negative/Grounded – Gray
   g. Conductor energized from remote source: Yellow

5. Terminal blocks shall be manufactured by Phoenix Contact, Allen-Bradley, or equal.

B. Fuse blocks (control circuits) – Fuse blocks shall be finger safe and shall have LED indication when the fuse is blown. Fuses may be used only where indicated on the Drawings; otherwise use circuit breakers.

C. Conductor Labels – Shall be the heat-shrink type, machine printed. Brady, or equal.

D. Component nameplates – Shall be engraved, rigid, laminated plastic with adhesive back and letter height of 3/16” minimum. Nameplates shall be white with black letters.

E. Intrinsic Safety Barriers – Provide UL listed intrinsic safety barriers for circuit extensions into hazardous areas. The barriers shall be Phoenix Contact, or equal.

F. Transient/Surge protectors shall comply with Section 16020.

G. Control transformers shall be machine tool type transformers with epoxy encapsulated coils or resin impregnated coils, high quality silicon steel laminations, copper magnet wire, molded-in terminals, and 55˚C rise insulation system.

H. Voltage/Phase Monitor – Shall continually measure the voltage of all phases of incoming power and provide protection for any motors or other equipment that could be damaged. The phase monitor shall sense under and overvoltage, voltage unbalance, phase loss, and phase reversal. It shall have a relay output.

I. Pilot Devices

1. Selector switches shall be NEMA 4X, 30mm, oil-tight construction, and of the quick-make, quick-break type.

2. Pushbuttons shall be NEMA 4X oil-tight, 30mm.

135-2021-01 (03/2022)

3. Pilot lights shall be 30mm, oil-tight, push-to-test, NEMA 4X LED type. Green pilot lights shall be used for indicating “pump running,” and yellow shall be used for “seal leak.”

4. Elapsed time meters shall be non-resettable.

5. Timing relays shall have an adjustable time range suitable for the application, with the time delay occurring after energization.

J. Control Relays

1. Control relays shall be magnetic, general purpose, "ice cube" type with 3-pole (minimum), double throw contacts rated at 5 amperes (minimum), 120 volts (minimum). Coils shall be rated to operate at the indicated control voltage.

2. Provide proper bases, mounting track, etc. for a complete installation. All relays shall have a retainer clip, manual operator, and pilot light. Coils connected to solid-state digital outputs shall have transient surge protection.

PART 3 EXECUTION

3.01 LABELING

A. Provide labels for all conductors and components.

B. Legends for starter nameplates shall be taken from the one line diagram in the Contract Drawings. Wire and miscellaneous component labels shall match the O&M manual wiring diagrams.

3.02 GROUNDING

A. Enclosures shall be grounded in accordance with the NEC.

3.03 PROTECTION

A. All electrical and electronic components of the Control Panel shall be protected against damage due to electrical transients induced in interconnecting lines from lightning discharges and surges in nearby electrical systems. Provide a surge protection device (SPD).

B. The control panel shall be equipped with a voltage/phase monitor.

135-2021-01 (03/2022)

3.04 INSTALLATION/ERECTION

A. Equipment furnished under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the Drawings, Specifications, manufacturer Shop Drawings, and manufacturer installation instructions.

END OF SECTION

***

Kentucky Transportation Cabinet

Highway District 2 (1)

And

_____ (2), Construction

Kentucky Pollutant Discharge Elimination System Permit KYR10 Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

Widen KY 911 to a 3 lane from the DOD RR to KY 115 (Section 2) in CHRISTIAN County (1)

Project: CID ## -

Revised 3/4/2016

Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District 2 (1)

2. Resident Engineer: (2)

3. Contractor name: (2)
   Address: (2)

   Phone number: (2)
   Contact: (2)
   Contractors: agent responsible for compliance with the KPDES permit requirements (3):

4. Project Control Number (2)

5. Route (Address) KY 911 (1)

6. Latitude/Longitude (project mid-point) 36.663872, -87.420386(1)

7. County (project mid-point) Christian (1)

8. Project start date (date work will begin): (2)

9. Projected completion date: (2)

KyTC BMP Plan for Project CID ## - ####

A. Site description:

1. Nature of Construction Activity (from letting project description) New Connector from KY 115 to US 41 (Section 1) in Christian County (1)

2. Order of major soil disturbing activities (2) and (3)

3. Projected volume of material to be moved CY (1)

4. Estimate of total project area (acres) 30 (1)

5. Estimate of area to be disturbed (acres) 23.25 (1)

6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information. (1)

7. Data describing existing soil condition (1) & (2) See Geotech report if available. See Roadway Plans

8. Data describing existing discharge water quality (if any) No existing water quality information available (1) & (2)

9. Receiving water name West Fork Red River (1)

10. TMDLs and Pollutants of Concern in Receiving Waters: (1 DEA)

11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.

12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

B. Sediment and Erosion Control Measures:

1. Plans for highway construction projects will include erosion control sheets that depict Disturbed Drainage Areas (DDAs) and related information. These plan sheets will show the existing project conditions with areas delineated by DDA within the right of way limits, the discharge points and the areas that drain to each discharge point. Project managers and designers will analyze the DDAs and identify Best Management Practices (BMPs) that are site specific. The balance of the BMPs for the project will be listed in the bid documents for selection and use by the contractor on the project with approval by the resident engineer.

   Projects that do not have DDAs annotated on the erosion control sheets will employ the same concepts for development and managing BMP plans.

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as “Do Not Disturb” until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP’s shall be for the first phase (generally clearing and grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA’s as the work progresses. <u>All DDA’s will have adequate BMP’s in place before being disturbed.</u>

3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:

   - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.
   - At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants.

Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.

- Clearing and Grubbing – The following BMP's will be considered and used where appropriate.
  - Leaving areas undisturbed when possible.
  - Silt basins to provide silt volume for large areas.
  - Silt Traps Type A for small areas.
  - Silt Traps Type C in front of existing and drop inlets which are to be saved
  - Diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
  - Brush and/or other barriers to slow and/or divert runoff.
  - Silt fences to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence may be considered.
  - Temporary Mulch for areas which are not feasible for the fore mentioned types of protections.
  - Non-standard or innovative methods.
- Cut & Fill and placement of drainage structures - The BMP Plan will be modified to show additional BMP's such as:
  - Silt Traps Type B in ditches and/or drainways as they are completed
  - Silt Traps Type C in front of pipes after they are placed
  - Channel Lining
  - Erosion Control Blanket
  - Temporary mulch and/or seeding for areas where construction activities will be ceased for 21 days or more.
  - Non-standard or innovative methods
- Profile and X-Section in place – The BMP Plan will be modified to show elimination of BMP's which had to be removed and the addition of new BMP's as the roadway was shaped. Probably changes include:
  - Silt Trap Type A, Brush and/or other barriers, Temporary Mulch, and any other BMP which had to be removed for final grading to take place.
  - Additional Silt Traps Type B and Type C to be placed as final drainage patterns are put in place.
  - Additional Channel Lining and/or Erosion Control Blanket.
  - Temporary Mulch for areas where Permanent Seeding and Protection cannot be done within 21 days.
  - Special BMP's such as Karst Policy

- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
  - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.
  - Permanent Seeding and Protection
  - Placing Sod
  - Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are: Seeding and Protection, Erosion Control Blanket. (1)

C. Other Control Measures

1. No solid materials, including building materials, shall be discharged to waters of the commonwealth, except as authorized by a Section 404 permit.

2. Waste Materials

All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in appropriate covered waste containers. Waste containers shall be removed from the project site on a sufficiently frequent basis as to not allow wastes to become a source of pollution. All personnel will be instructed regarding the correct procedure for waste disposal. Wastes will be disposed in accordance with appropriate regulations. Notices stating these practices will be posted in the office.

3. Hazardous Waste

All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the Section Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

4. Spill Prevention

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

- **Good Housekeeping:**

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

- An effort will be made to store only enough product required to do the job
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site contractor will inspect daily to ensure proper use and disposal of materials onsite

- **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

- **Petroleum Products:**

Vehicles and equipment that are fueled and maintained on site will be monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products onsite will be stored in tightly sealed containers, which are clearly labeled and will be protected from exposure to weather.

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

This project (will / will not) (3) have over 1,320 gallons of petroleum products with a total capacity, sum of all containers 55 gallon capacity and larger.

- **Fertilizers:**

Fertilizers will be applied at rates prescribed by the contract, standard specifications or as directed by the resident engineer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

- **Paints:**

All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

- **Concrete Truck Washout:**

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

- **Spill Control Practices**

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

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contract with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations.

D. Other State and Local Plans

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. No other local requirements are being added to this project. (1)

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.

- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.

- Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for

the purpose of post construction storm water management with specific guidance for any non-routine maintenance. No features of this project will require post construction maintenance over and above normal maintenance procedures. (1)

F. Inspections

Inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by individuals that have successfully completed the KEPSC-RI course as required by Section 213.02.02 of the Standard Specifications for Road and Bridge Construction, current edition.
- Inspection reports will be written, signed, dated, and kept on file.
- Areas at final grade will be seeded and mulched within 14 days.
- Areas that are not at final grade where construction has ceased for a period of 21 days or longer and soil stock piles shall receive temporary mulch no later than 14 days from the last construction activity in that area.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Sediment basins will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

G. Non – Storm Water discharges

It is expected that non-storm water discharges may occur from the site during the construction period. Examples of non-storm water discharges include:

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

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

H. Groundwater Protection Plan (3)

This plan serves as the groundwater protection plan as required by 401 KAR 5:037.

- Contractors statement: (3)

The following activities, as enumerated by 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan, will or may be may be conducted as part of this construction project:

_____ 2. (e) land treatment or land disposal of a pollutant;

_____ 2. (f) Storing, …, or related handling of hazardous waste, solid waste or special waste, …, in tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);

_____ 2. (g) …. Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;

_____ 2. (j) Storing or related handling of road oils, dust suppressants, …., at a central location;

_____ 2. (k) Application or related handling of road oils, dust suppressants or deicing materials, (does not include use of chloride-based deicing materials applied to roads or parking lots);

_____ 2. (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

_____ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

The contractor is responsible for the preparation of a plan that addresses the

401 KAR 5:037 Section 3. (3) Elements of site specific groundwater protection plan:

(a) General information about this project is covered in the Project information;
(b) Activities that require a groundwater protection plan have been identified above;
(c) Practices that will protect groundwater from pollution are addressed in section C. Other control measures.
(d) Implementation schedule – all practices required to prevent pollution of groundwater are to be in place prior to conducting the activity;
(e) Training is required as a part of the ground water protection plan. All employees of the contractor, sub-contractor and resident engineer personnel will be trained to understand the nature and requirements of this plan as they pertain to their job function(s). Training will be accomplished within one week of employment and annually thereafter. A record of training will be maintained by the contractor with a copy provide to the resident engineer.
(f) Areas of the project and groundwater plan activities will be inspected as part of the weekly sediment and erosion control inspections
(g) Certification (see signature page.)

KyTC BMP Plan for Project CID ## -

Contractor and Resident Engineer Plan certification

The contractor that is responsible for implementing this BMP plan is identified in the Project Information section of this plan.

The following certification applies to all parties that are signatory to this BMP plan:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, this plan complies with the requirements of 401 KAR 5:037. By this certification, the undersigned state that the individuals signing the plan have reviewed the terms of the plan and will implement its provisions as they pertain to ground water protection.

Resident Engineer and Contractor Certification:

(2) Resident Engineer signature

Signed _____title_____, _____
Typed or printed name[2] signature

(3) Signed _____title_____, _____
Typed or printed name[1] signature

1. Contractors Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

2. KyTC note: to be signed by the Chief District Engineer or a person designated to have the authority to sign reports by such a person (usually the resident engineer) in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601 Reference the Project Control Number (PCN) and KPDES number when one has been issued.

Sub-Contractor Certification

The following sub-contractor shall be made aware of the BMP plan and responsible for implementation of BMPs identified in this plan as follows:

Subcontractor

Name:
Address:
Address:

Phone:

The part of BMP plan this subcontractor is responsible to implement is:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System permit that authorizes the storm water discharges, the BMP plan that has been developed to manage the quality of water to be discharged as a result of storm events associated with the construction site activity and management of non-storm water pollutant sources identified as part of this certification.

Signed _____title_____, _____
Typed or printed name[1] signature

1. Sub Contractor Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-564-2150
TELEFAX: 502-564-4245

September 19, 2022

Deneatra Henderson
KYTC District 2
1840 N Main St
Madisonville, KY 42431

Re: KYR10 Coverage Acknowledgment
KPDES No.: KYR10Q755
2-180.2 - Christian County - KY 911 Widen from DOD
Permit Type: Construction Stormwater
AI ID: 164211
Christian County, Kentucky

Dear Deneatra Henderson :

The discharges associated with the Notice of Intent you submitted have been approved for coverage under the "Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR100000)" master general permit. Your coverage becomes effective on the date of this letter. This coverage automatically terminates two years from the effective date of your coverage unless an extension is requested prior to the termination date, until the KYR100000 master general permit expires on November 30, 2024, or the Division of Water revokes coverage, whichever comes first. During this period of coverage all discharges shall comply with the conditions of the KYR100000 master general permit. This permit and links to the eNOI (and permit coverage extension) and eNOT forms can be found on our website:
https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/KYR10PermitPage.pdf.

Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470, and the regulations promulgated thereto. The request for hearing should be submitted in writing to the Energy and Environment Cabinet, Office of Administrative Hearings, 211 Sower Boulevard, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Energy and Environment Cabinet, Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

Any questions concerning the general permit and its requirements should be directed to me at 502-782-7123 or email me at Karina.Villanueva@ky.gov

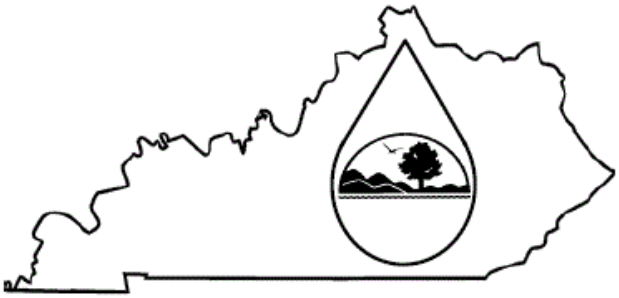
Construction Site GPS Coordinates: 36.663872, -87.420386
Receiving Water: West Fork Red River

Sincerely,

Karina Villanueva
Surface Water Permits Branch
Division of Water

Signed by: Karina Villanueva

cc: George Phelps, eNOI Preparer
Randy Thomas, Madisonville Regional Office
Shawn Hokanson, Division of Water



KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM (KPDES)

Notice of Intent (NOI) for coverage of Storm Water Discharge Associated with Construction Activities Under the KPDES Storm Water General Permit KYR100000

Click here for Instructions (Controls/KPDES_FormKYR10_Instructions.ht

Click here to obtain information and a copy of the KPDES General Permit. (http://dep.ky.gov/formslibrary/Documents/KYR10PermitPage.pdf)

(*) indicates a required field; (✓) indicates a field may be required based on user input or is an optionally required field

Reason for Submittal:(*)	Agency Interest ID:	Permit Number:(✓)
Application for New Permit C	Agency Interest ID	KPDES Permit Number

If change to existing permit coverage is requested, describe the changes for which modification of coverage is being sought:(✓)

ELIGIBILITY:
Stormwater discharges associated with construction activities disturbing individually one (1) acre or more, including, in the case of a common plan of development, contiguous construction activities that cumulatively equal one (1) acre or more of disturbance.

EXCLUSIONS:
The following are excluded from coverage under this general permit:
1) Are conducted at or on properties that have obtained an individual KPDES permit for the discharge of other wastewaters which requires the development and implementation of a Best Management Practices (BMP) plan;
2) Any operation that the DOW determines an individual permit would better address the discharges from that operation;
3) Any project that discharges to an Impaired Water listed in the most recent Integrated Report, §305(b) as impaired for sediment and for which an approved TMDL has been developed.

SECTION I -- FACILITY OPERATOR INFORMATION (PERMITTEE)

Company Name:(✓)	First Name:(✓)	M.I.:	Last Name:(✓)
Kentucky Transportation Cabinet - District 2	Deneatra	M	Henderson

Mailing Address:(*)	City:(*)	State:(*)	Zip:(*)
1840 North Main Street	Madisonville	Kentucky	42431

eMail Address:(*)	Business Phone:(*)	Alternate Phone:

Deneatra.Henderson@ky.gov	270 824 7080	270 791 4396

SECTION II -- GENERAL SITE LOCATION INFORMATION

Project Name:(*) 2-180.2 - Christian County - KY 911 Widen from DOD	Status of Owner/Operator(*) State Government	SIC Code(*) 1611 Highway and

Company Name:(✓) Kentucky Transportation Cabinet - District 2	First Name:(✓) Deneatra	M.I.: M	Last Name:(✓) Henderson

Site Physical Address:(*)
Christian County - KY 911 Widen from DOD RR to KY 115

City:(*) Oak Grove	State:(*) Kentucky	Zip:(*) 42262

County:(*) Christian	Latitude(decimal degrees)(*)DMS to DD Converter (https://www.fcc.gov/media/radio/dms-decimal) 36.663872	Longitude(decimal degrees)(*) -87.420386

SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION

Section III requires part A or part B to be completed.

Project Description:(*)
Christian County - KY 911 Widen from DOD RR to KY 115

a. For single projects provide the following information

Total Number of Acres in Project:(✓) 30	Total Number of Acres Disturbed:(✓) 23.25
Anticipated Start Date:(✓) 3/15/2023	Anticipated Completion Date:(✓) 3/15/2026

b. For common plans of development provide the following information

Total Number of Acres in Project:(✓) # Acre(s)	Total Number of Acres Disturbed:(✓) # Acre(s)
Number of individual lots in development, if applicable:(✓) # lot(s)	Number of lots in development:(✓) # lot(s)
Total acreage of lots intended to be developed:(✓)	Number of acres intended to be disturbed at any one time:(✓)

Project Acres	Disturbed Acres
Anticipated Start Date:(✓)	Anticipated Completion Date:(✓)

List Building Contractor(s) at the time of Application:(*)

Company Name

SECTION IV -- IF THE PERMITTED SITE DISCHARGES TO A WATER BODY THE FOLLOWING INFORMATION IS REQUIRED

Complete the following table if the permitted site discharges to a water body. Please note that if you enter a row in hte below table, all columns are required to be filled out.

Unnamed Tributary?: Does discharge enter an unnamed tributary prior to entering a named receiving water?

Latitude in decimal degrees: Format must be between 36.490000 and 39.150000, with a minimum of 5 decimal points of accuracy.

Longitude in decimal degrees: Format must be between -89.580000 and -81.960000, with a minimum of 5 decimal points of accuracy.

Receiving Water Name: Recieving water name must be from the following list of possible receiving waters.(click here for a list (Controls/ReceivingStream.htm)). If the discharge flows into an unnamed tributary, please enter the first “named” receiving water for which the unnamed tributary(ies) eventually flows into.

Discharge Point(s):

Unnamed Tributary?	Latitude	Longitude	Receiving Water Name
Yes	36.659699	-87.414294	West Fork Red River
Yes	36.659619	-87.414311	West Fork Red River
Yes	36.659746	-87.414379	West Fork Red River
Yes	36.659703	-87.414462	West Fork Red River
Yes	36.659888	-87.41486	West Fork Red River
Yes	36.659890	-87.415109	West Fork Red River
Yes	36.660025	-87.415161	West Fork Red River
Yes	36.660407	-87.416091	West Fork Red River
Yes	36.660346	-87.416166	West Fork Red River
Yes	36.661040	-87.418266	West Fork Red River
Yes	36.663043	-87.419995	West Fork Red River
Yes	36.664350	-87.422229	West Fork Red River
Yes	36.664098	-87.423738	West Fork Red River
Yes	36.663982	-87.427041	West Fork Red River
Yes	36.664713	-87.427723	West Fork Red River
Yes	36.664772	-87.429079	West Fork Red River
Yes	36.664957	-87.434889	West Fork Red River
Yes	36.664958	-87.435023	West Fork Red River

Yes	36.664590	-87.435190	West Fork Red River
Yes	36.665263	-87.435724	West Fork Red River
Yes	36.665291	-87.437937	West Fork Red River

SECTION V -- IF THE PERMITTED SITE DISCHARGES TO A MS4 THE FOLLOWING INFORMATION IS REQUIRED

List all MS4 Discharge Points
Latitude in decimal degrees. Format must be between 36.490000 and 39.150000, with a minimum of 5 decimal points of accuracy.
Longitude in decimal degrees. Format must be between -89.580000 and -81.960000, with a minimum of 5 decimal points of accuracy.

Name of MS4:

Date of application/notification to the MS4 for construction site permit coverage:
Date

Discharge Point(s):(*)
Latitude | Longitude

SECTION VI -- WILL THE PROJECT REQUIRE CONSTRUCTION ACTIVITIES IN A WATER BODY OR THE RIPARIAN ZONE?

Will the project require construction activities in a water body or the riparian zone?:(*)	No
If Yes, describe scope of activity: (✓)	describe scope of activity
Is a Clean Water Act 404 permit required?:(*)	Yes
Is a Clean Water Act 401 Water Quality Certification required?:(*)	Yes

SECTION VII -- NOI PREPARER INFORMATION

First Name:(*)	M.I.:	Last Name:(*)	Company Name:(*)
George	M	Phelps	KYTC D-02

Mailing Address:(*)	City:(*)	State:(*)	Zip:(*)
1840 North Main Street	Madisonville	Kentucky	42431

eMail Address:(*)	Business Phone:(*)	Alternate Phone:

GeorgeB.Phelps@ky.gov	270 824 7082	270 339 1870

SECTION VIII -- ATTACHMENTS

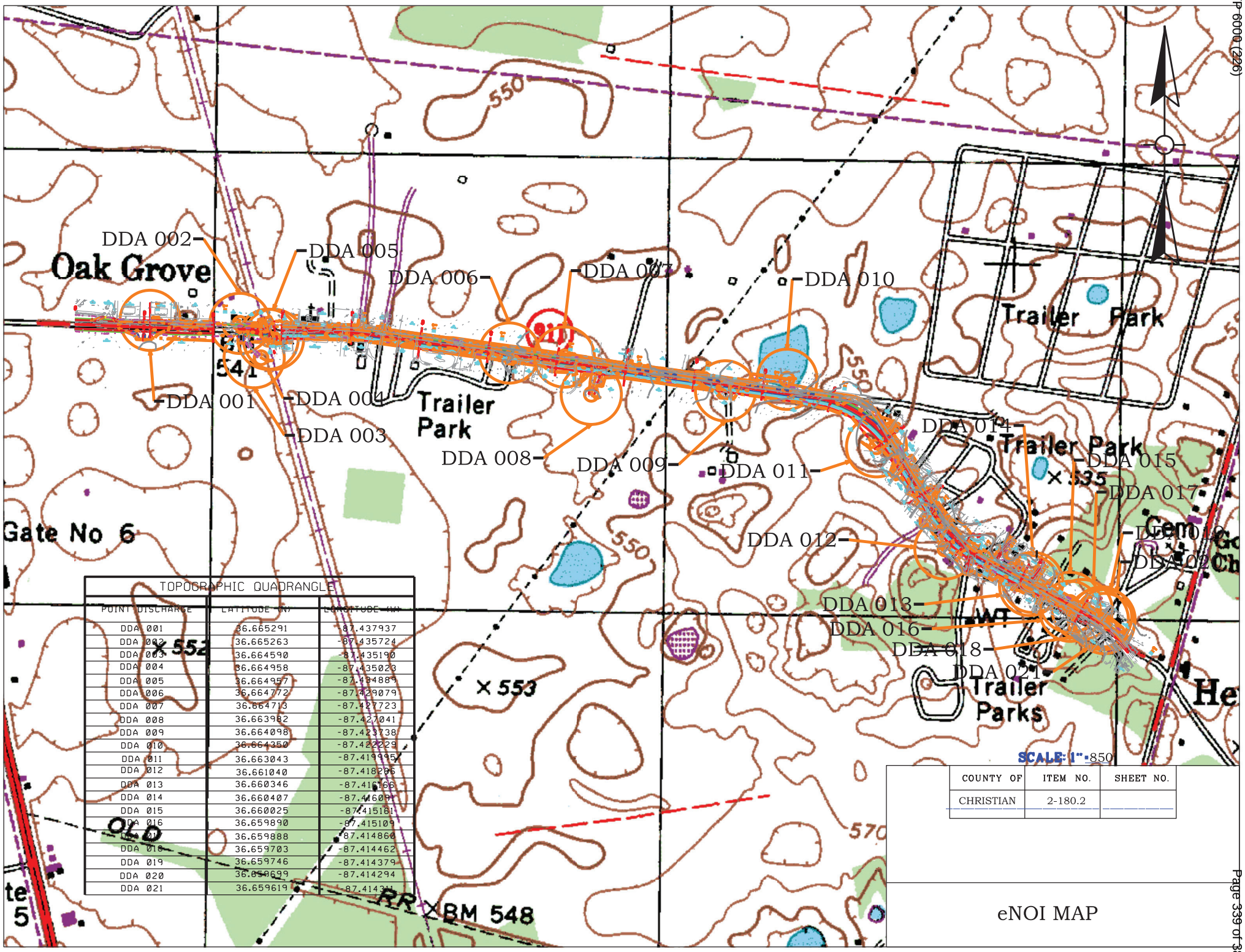
Facility Location Map:(*)	Upload file
Supplemental Information:	Upload file

SECTION IX -- CERTIFICATION

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

Signature:(*) Deneatra Henderson		Title:(*) Chief District Engineer	
First Name:(*) Deneatra	M.I.: MI	Last Name:(*) Henderson	
eMail Address:(*) Deneatra.Henderson@ky.gov	Business Phone:(*) 270 824 7080	Alternate Phone: 270 791 4396	Signature Date:(*) 9/15/2022

Click to Save Values for Future Retrieval | Click to Submit to EEC



TOPOGRAPHIC QUADRANGLE

POINT DISCHARGE	LATITUDE (N)	LONGITUDE (W)
DDA 001	36.665291	-87.437937
DDA 002	36.665263	-87.435724
DDA 003	36.664590	-87.435190
DDA 004	36.664958	-87.435023
DDA 005	36.664957	-87.434889
DDA 006	36.664772	-87.429079
DDA 007	36.664713	-87.427723
DDA 008	36.663982	-87.427041
DDA 009	36.664098	-87.423738
DDA 010	36.664350	-87.422229
DDA 011	36.663043	-87.419995
DDA 012	36.661040	-87.418296
DDA 013	36.660346	-87.416166
DDA 014	36.660407	-87.416091
DDA 015	36.660025	-87.415161
DDA 016	36.659890	-87.415109
DDA 017	36.659888	-87.414860
DDA 018	36.659703	-87.414462
DDA 019	36.659746	-87.414379
DDA 020	36.659699	-87.414294
DDA 021	36.659619	-87.414311

COUNTY OF	ITEM NO.	SHEET NO.
CHRISTIAN	2-180.2	

eNOI MAP

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

STANDARD SPECIFICATIONS

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2020.*

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting. The Supplemental Specifications can be found at the following link:
http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

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SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS

This Special Note will apply when indicated on the plans or in the proposal.

1.0 DESCRIPTION. Furnish, install, operate, and maintain variable message signs at the locations shown on the plans or designated by the Engineer. Remove and retain possession of variable message signs when they are no longer needed on the project.

2.0 MATERIALS.

2.1 General. Use LED Variable Message Signs Class I, II, or III, as appropriate, from the Department's List of Approved Materials.

Unclassified signs may be submitted for approval by the Engineer. The Engineer may require a daytime and nighttime demonstration. The Engineer will make a final decision within 30 days after all required information is received.

2.2 Sign and Controls. All signs must:

1) Provide 3-line messages with each line being 8 characters long and at least 18 inches tall. Each character comprises 35 pixels.
2) Provide at least 40 preprogrammed messages available for use at any time. Provide for quick and easy change of the displayed message; editing of the message; and additions of new messages.
3) Provide a controller consisting of:
   a) Keyboard or keypad.
   b) Readout that mimics the actual sign display. (When LCD or LCD type readout is used, include backlighting and heating or otherwise arrange for viewing in cold temperatures.)
   c) Non-volatile memory or suitable memory with battery backup for storing pre-programmed messages.
   d) Logic circuitry to control the sequence of messages and flash rate.
4) Provide a serial interface that is capable of supporting complete remote control ability through land line and cellular telephone operation. Include communication software capable of immediately updating the message, providing complete sign status, and allowing message library queries and updates.
5) Allow a single person easily to raise the sign to a satisfactory height above the pavement during use, and lower the sign during travel.
6) Be Highway Orange on all exterior surfaces of the trailer, supports, and controller cabinet.
7) Provide operation in ambient temperatures from -30 to + 120 degrees Fahrenheit during snow, rain and other inclement weather.
8) Provide the driver board as part of a module. All modules are interchangeable, and have plug and socket arrangements for disconnection and reconnection. Printed circuit boards associated with driver boards have a conformable coating to protect against moisture.
9) Provide a sign case sealed against rain, snow, dust, insects, etc. The lens is UV stabilized clear plastic (polycarbonate, acrylic, or other approved material) angled to prevent glare.
10) Provide a flat black UV protected coating on the sign hardware, character PCB, and appropriate lens areas.
11) Provide a photocell control to provide automatic dimming.

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12) Allow an on-off flashing sequence at an adjustable rate.
13) Provide a sight to aim the message.
14) Provide a LED display color of approximately 590 nm amber.
15) Provide a controller that is password protected.
16) Provide a security device that prevents unauthorized individuals from accessing the controller.
17) Provide the following 3-line messages preprogrammed and available for use when the sign unit begins operation:

/KEEP/RIGHT/⇒⇒⇒/
/KEEP/LEFT/⇐⇐⇐/
/LOOSE/GRAVEL/AHEAD/
/RD WORK/NEXT/**MILES/
/TWO WAY/TRAFFIC/AHEAD/
/PAINT/CREW/AHEAD/
/REDUCE/SPEED/**MPH/
/BRIDGE/WORK/***0 FT/
/MAX/SPEED/**MPH/
/SURVEY/PARTY/AHEAD/
/MIN/SPEED/**MPH/
/ICY/BRIDGE/AHEAD/ /ONE LANE/BRIDGE/AHEAD/
/ROUGH/ROAD/AHEAD/
/MERGING/TRAFFIC/AHEAD/
/NEXT/***/MILES/
/HEAVY/TRAFFIC/AHEAD/
/SPEED/LIMIT/**MPH/
/BUMP/AHEAD/
/TWO/WAY/TRAFFIC/

*Insert numerals as directed by the Engineer.
Add other messages during the project when required by the Engineer.

2.3 Power.

1) Design solar panels to yield 10 percent or greater additional charge than sign consumption. Provide direct wiring for operation of the sign or arrow board from an external power source to provide energy backup for 21 days without sunlight and an on-board system charger with the ability to recharge completely discharged batteries in 24 hours.

3.0 CONSTRUCTION. Furnish and operate the variable message signs as designated on the plans or by the Engineer. Ensure the bottom of the message panel is a minimum of 7 feet above the roadway in urban areas and 5 feet above in rural areas when operating. Use Class I, II, or III signs on roads with a speed limit less than 55 mph. Use Class I or II signs on roads with speed limits 55 mph or greater.

Maintain the sign in proper working order, including repair of any damage done by others, until completion of the project. When the sign becomes inoperative, immediately repair or replace the sign. Repetitive problems with the same unit will be cause for rejection and replacement.

Use only project related messages and messages directed by the Engineer, unnecessary messages lessen the impact of the sign. Ensure the message is displayed in either one or 2 phases with each phase having no more than 3 lines of text. When no message is needed, but it is necessary to know if the sign is operable, flash only a pixel.

When the sign is not needed, move it outside the clear zone or where the Engineer directs. Variable Message Signs are the property of the Contractor and shall be removed from the project when no longer needed. The Department will not assume ownership of these signs.

4.0 MEASUREMENT. The final quantity of Variable Message Sign will be

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the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

5.0 PAYMENT. The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 – Revised October 23, 2023

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the “Statement of Compliance” required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) 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, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) 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. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. 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 any Federal 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.

b. 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 Federal 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.

2. 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 31 U.S.C. 1352. 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.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

EMPLOYMENT REQUIREMENTS
RELATING TO
NONDISCRIMINATION OF EMPLOYEES
(APPLICABLE TO FEDERAL-AID SYSTEM CONTRACTS)

AN ACT OF THE KENTUCKY GENERAL ASSEMBLY TO PREVENT DISCRIMINATION IN EMPLOYMENT

KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

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

Revised: January 25, 2017

Standard Title VI/Non-Discrimination Assurances

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **Federal Highway Administration** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **Federal Highway Administration**, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **Federal Highway Administration** may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the **Federal Highway Administration** may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Standard Title VI/Non-Discrimination Statutes and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq*., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq*.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

a) The date of leaving office or termination of employment; or
b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 1025 Capital Center Drive, Suite 104, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: May 23, 2022

"General Decision Number: KY20240040 02/09/2024

Superseded General Decision Number: KY20230040

State: Kentucky

Construction Type: Highway

Counties: Allen, Ballard, Butler, Caldwell, Calloway, Carlisle, Christian, Crittenden, Daviess, Edmonson, Fulton, Graves, Hancock, Henderson, Hickman, Hopkins, Livingston, Logan, Lyon, Marshall, McCracken, McLean, Muhlenberg, Ohio, Simpson, Todd, Trigg, Union, Warren and Webster Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024
1	02/09/2024

BRIN0004-002 06/01/2023

BALLARD, BUTLER, CALDWELL, CARLISLE, CRITTENDEN, DAVIESS, EDMONSON, FULTON, GRAVES, HANCOCK, HENDERSON, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, MCLEAN, MUHLENBERG, OHIO, UNION, and WEBSTER COUNTIES

	Rates	Fringes
BRICKLAYER		
Ballard, Caldwell, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, Marshall, and McCracken Counties	$ 34.17	19.60
Butler, Edmonson, Hopkins, Muhlenberg, and Ohio Counties	$ 32.28	15.95
Daviess, Hancock, Henderson, McLean, Union, and Webster Counties	$ 34.17	19.60

BRTN0004-005 06/01/2023

ALLEN, CALLOWAY, CHRISTIAN, LOGAN, SIMPSON, TODD, TRIGG, and WARREN COUNTIES

	Rates	Fringes
BRICKLAYER	$ 32.28	15.95

CARP0357-002 04/01/2023

	Rates	Fringes
CARPENTER	$ 31.81	22.86
DIVER	$ 48.09	22.86
PILEDRIVERMAN	$ 32.06	22.86

ELEC0369-006 06/01/2022

BUTLER, EDMONSON, LOGAN, TODD & WARREN COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 34.60	19.57

ELEC0429-001 06/01/2022

ALLEN & SIMPSON COUNTIES:

	Rates	Fringes

ELECTRICIAN.....$ 31.55 14.08

ELEC0816-002 07/01/2023

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON (Except a 5 mile radius of City Hall in Fulton), GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	$ 34.94	28%+8.35

Cable spicers receive $.25 per hour additional.

ELEC1701-003 07/01/2023

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	$ 35.60	8.35+30.8%

Cable spicers receive $.25 per hour additional.

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* ELEC1925-002 01/01/2024

FULTON COUNTY (Up to a 5 mile radius of City Hall in Fulton):

	Rates	Fringes
CABLE SPLICER.....	$ 28.20	15.27
ELECTRICIAN.....	$ 27.95	15.26

ENGI0181-017 07/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	$ 38.55	18.60
GROUP 2.....	$ 35.69	18.60
GROUP 3.....	$ 36.14	18.60
GROUP 4.....	$ 35.37	18.60

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete;

Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Conrete Pump; Skid Steer Machine with all Attachments; Switchman or Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points;& Whirley Oiler

GROUP 3 -All Off Road Material Handling Equipment, including Articulating Dump Trucks; Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steerman; Tamping Machine; Tractor (Under 50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where the length of the boom in combination with the length of the piling equals or exceeds 150 ft. - $1.00 above Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID 10% ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

IRON0070-005 06/01/2023

BUTLER COUNTY (Eastern eighth, including the Townships of Decker, Lee & Tilford);
EDMONSON COUNTY (Northern three-fourths, including the Townships of Asphalt, Bee Spring, Brownsville, Grassland, Huff, Kyrock, Lindseyville, Mammoth Cave, Ollie, Prosperity, Rhoda, Sunfish & Sweden)

	Rates	Fringes
IRONWORKER		
Structural; Ornamental; Reinforcing; Precast Concrete Erectors	$ 32.59	24.50

IRON0103-004 04/01/2023

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, OHIO, UNION & WEBSTER COUNTIES

BUTLER COUNTY (Townships of Aberdeen, Bancock, Casey, Dexterville, Dunbar, Elfie, Gilstrap, Huntsville, Logansport, Monford, Morgantown, Provo, Rochester, South Hill & Welchs Creek);
CALDWELL COUNTY (Northeastern third, including the Township of Creswell);
CHRISTIAN COUNTY (Northern third, including the Townships of Apex, Crofton, Kelly, Mannington & Wynns);
CRITTENDEN COUNTY (Northeastern half, including the Townships of Grove, Mattoon, Repton, Shady Grove & Tribune);
MUHLENBERG COUNTY (Townships of Bavier, Beech Creek Junction, Benton, Brennen, Browder, Central City, Cleaton, Depoy, Drakesboro, Eunis, Graham, Hillside, Luzerne, Lynn City, Martwick, McNary, Millport, Moorman, Nelson, Paradise, Powderly, South Carrollton, Tarina & Weir)

	Rates	Fringes
Ironworkers:	$ 31.99	26.20

IRON0492-003 05/01/2023

ALLEN, LOGAN, SIMPSON, TODD & WARREN COUNTIES
BUTLER COUNTY (Southern third, including the Townships of Boston, Berrys Lick, Dimple, Jetson, Quality, Sharer, Sugar Grove & Woodbury);
CHRISTIAN COUNTY (Eastern two-thirds, including the Townships of Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
EDMONSON COUNTY (Southern fourth, including the Townships of Chalybeate & Rocky Hill);
MUHLENBERG COUNTY (Southern eighth, including the Townships of Dunnior, Penrod & Rosewood)

	Rates	Fringes
Ironworkers:	$ 32.53	17.23

IRON0782-006 08/01/2023

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES
CALDWELL COUNTY (Southwestern two-thirds, including the Townships of Cedar Bluff, Cider, Claxton, Cobb, Crowtown, Dulaney, Farmersville, Fredonia, McGowan, Otter Pond & Princeton);
CHRISTIAN COUNTY (Western third, Excluding the Townships of Apex, Crofton, Kelly, Mannington, Wynns, Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
CRITTENDEN COUNTY (Southwestern half, including the Townships of Crayne, Dycusburg, Frances, Marion, Mexico, Midway, Sheridan & Told)

	Rates	Fringes
Ironworkers:		
Projects with a total contract cost of $20,000,000.00 or above	$ 34.75	25.52
All Other Work	$ 33.01	25.52

LABO0189-005 07/01/2023

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN,
LIVINGSTON, LYON, MARSHALL & MCCRACKEN COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 23.96	17.57
GROUP 2	$ 24.21	17.57
GROUP 3	$ 24.26	17.57
GROUP 4	$ 24.86	17.57

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-006 07/01/2023

ALLEN, BUTLER, CALDWELL, CHRISTIAN, DAVIESS, EDMONSON, HANCOCK,
HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, SIMPSON, TODD, TRIGG
& WARREN COUNTIES

	Rates	Fringes
Laborers:		

GROUP 1	$ 23.96	17.57
GROUP 2	$ 24.26	17.57
GROUP 3	$ 24.21	17.57
GROUP 4	$ 24.86	17.57

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0561-001 07/01/2023

CRITTENDEN, HENDERSON, UNION & WEBSTER COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 24.81	17.60
GROUP 2	$ 25.06	17.60
GROUP 3	$ 25.11	17.60
GROUP 4	$ 25.71	17.60

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson;

Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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PAIN0032-002 09/01/2023

BALLARD COUNTY

	Rates	Fringes
Painters:		
Bridges	$ 36.12	20.97
All Other Work	$ 33.82	20.97

Spray, Blast, Steam, High & Hazardous (Including Lead Abatement) and All Epoxy - $1.00 Premium

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PAIN0118-003 06/01/2014

EDMONSON COUNTY:

	Rates	Fringes
Painters:		
Brush & Roller	$ 18.50	11.97
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning	$ 19.50	11.97

PAIN0156-006 04/01/2023

DAVIESS, HANCOCK, HENDERSON, MCLEAN, OHIO, UNION & WEBSTER COUNTIES

	Rates	Fringes
Painters:		
BRIDGES		
GROUP 1	$ 28.45	20.08
GROUP 3	$ 29.45	20.08
GROUP 4	$ 30.70	20.08
ALL OTHER WORK:		
GROUP 1	$ 27.30	20.08
GROUP 2	$ 27.55	20.08
GROUP 3	$ 28.30	20.08
GROUP 4	$ 29.55	20.08

PAINTER CLASSIFICATIONS

GROUP 1 - Brush & Roller

GROUP 2 - Plasterers

GROUP 3 - Spray; Sandblast; Power Tools; Waterblast; Steamcleaning; Brush & Roller of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

GROUP 4 - Spray of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

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PAIN0500-002 06/01/2023

CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
Painters:		
Bridges	$ 30.00	15.40
All Other Work	$ 23.75	15.40

Waterblasting units with 3500 PSI and above - $.50 premium
Spraypainting and all abrasive blasting - $1.00 premium
Work 40 ft. and above ground level - $1.00 premium

PLUM0184-002 07/01/2023

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN and TRIGG COUNTIES

	Rates	Fringes
Plumber; Steamfitter	$ 39.86	18.98

PLUM0502-004 08/01/2021

ALLEN, BUTLER, EDMONSON, SIMPSON & WARREN

	Rates	Fringes
Plumber; Steamfitter	$ 38.07	20.78

PLUM0633-002 07/01/2022

DAVIESS, HANCOCK, HENDERSON, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, TODD, UNION & WEBSTER COUNTIES:

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 33.97	19.30

TEAM0089-003 03/31/2023

ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES

	Rates	Fringes
Truck drivers:		
Zone 1:		
Group 1	$ 23.22	25.56
Group 2	$ 23.40	25.56
Group 3	$ 23.48	25.56
Group 4	$ 23.50	25.56

GROUP 1 - Greaser; Tire Changer

GROUP 2 - Truck Mechanic; Single Axle Dump; Flat Bed; All Terrain Vehicles when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors

GROUP 3 - Mixer All Types

GROUP 4 - Winch and A-Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker; Euclid and Other Heavy Earth Moving Equipment; Low Boy; Articulator Cat; Five Axle Vehicle

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TEAM0215-003 03/31/2023

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO & WEBSTER COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 24.85	25.56
Group 2	$ 25.54	20.95
Group 3	$ 25.15	25.56
Group 4	$ 25.16	25.56

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; 5 Axle Vehicle; Winch and A- Frame when used in transporting materials; Ross Carrier; Fork

Lift when used to transport building materials; Driver on Pavement Breaker

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TEAM0236-001 03/31/2023

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN,TODD & TRIGG COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 23.22	25.56
Group 2	$ 23.40	25.56
Group 3	$ 23.48	25.56
Group 4	$ 23.50	25.56
Group 5	$ 23.50	25.56

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Drivers of Distributors

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; Five Axle Vehicle; Winch and A-Frame when used in transporting materials; Ross Carrier

GROUP 5: Mixer All Types

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

Fringe benefit amounts are applicable for all hours worked except when otherwise noted.

No laborer, workman or mechanic shall be paid at a rate less than that of a Journeyman except those classified as bona fide apprentices.

Apprentices or trainees shall be permitted to work as such subject to Administrative Regulations adopted by the Commissioner of Workplace Standards. Copies of these regulations will be furnished upon request from any interested person.

Before using apprentices on the job the contractor shall present to the Contracting Officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U. S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U. S. Bureau of Apprenticeship and Training.

The contractor shall submit to the Contracting Officer, written evidence of the established apprenticeship-journeyman ratios and wage rates in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

The wages indicated on this wage schedule are the least permitted to be paid for the occupations indicated. When an employee works in more than one classification, the employer must record the number of hours worked in each classification at the prescribed hourly base rate.

OVERTIME:

Overtime is to be paid to an employee at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek. Wage violations or questions should be directed to the designated Engineer or the undersigned.

Director
Division of Construction Procurement
Frankfort, Kentucky 40622
502-564-3500

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (Executive Order 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

GOALS FOR MINORITY PARTICIPATION IN EACH TRADE	GOALS FOR FEMALE PARTICIPATION IN EACH TRADE
18.2%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4, 3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Notification of Construction Contract Award Portal (NCAP) is OFCCP's preferred method for receiving construction contract award notifications. The NCAP can be found on OFCCP's website at https://www.dol.gov/agencies/ofccp/ncap. Users who prefer not to use the portal maintain the option to send their notifications via mail, email and facsimile to the OFCCP Regional office in which the work will be performed. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification must include: Prime Contract Number (issued by the federal agency or applicant); Name of Awarding Federal Agency, Applicant or Contractor; Contracting Officer, Applicant Representative or Contractor Representative Submitting Notification with name, phone number, email address; Contractor Awarded Contract or Subcontract with name, address, phone number, email address, EIN, dollar amount of the contract, estimated start date of the contract, estimated completion date of the contract, geographical area in which the contract is to be performed (state, county's city (if applicable)).
The notification shall be mailed to:

Regional Director
Office of Federal Contract Compliance Programs
61 Forsyth Street, SW, Suite 7B75
Atlanta, Georgia 30303-8931
Main Number: 404-893-4545 Fax: 404-893-4546
Regional Director Contact: OFCCP-SE@dol.gov
Construction Award Email: OFCCP-SE-ConstructionAward@dol.gov

4. As used in this Notice, and in the contract resulting from this solicitation, the **"covered area"** is Christian County.

(Revised: 1/1/2023)

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

241302

PROPOSAL BID ITEMS

Report Date 2/26/24

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	15,779.00	TON		$	
0020	00003		CRUSHED STONE BASE -TEMPORARY PAVEMENT	215.00	TON		$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	30,214.00	TON		$	
0040	00212		CL2 ASPH BASE 1.00D PG64-22	11,941.00	TON		$	
0050	00212		CL2 ASPH BASE 1.00D PG64-22 -TEMPORARY PAVEMENT	167.00	TON		$	
0060	02101		CEM CONC ENT PAVEMENT-8 IN	2,000.00	SQYD		$	
0070	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0080	02677		ASPHALT PAVE MILLING & TEXTURING	499.00	TON		$	
0090	23362ES403		CL2 ASPH SURF 0.50B PG64-22	2,734.00	TON		$	
0100	24970EC		ASPHALT MATERIAL FOR TACK NON-TRACKING	27.00	TON		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0110	01634		CAP CURB BOX INLET	4.00	EACH		$	
0120	01810		STANDARD CURB AND GUTTER	11,174.00	LF		$	
0130	02014		BARRICADE-TYPE III	4.00	EACH		$	
0140	02091		REMOVE PAVEMENT	917.00	SQYD		$	
0150	02159		TEMP DITCH	3,796.00	LF		$	
0160	02160		CLEAN TEMP DITCH	1,898.00	LF		$	
0170	02200		ROADWAY EXCAVATION	36,183.00	CUYD		$	
0180	02223		GRANULAR EMBANKMENT	171.00	CUYD		$	
0190	02242		WATER	718.00	MGAL		$	
0200	02429		RIGHT-OF-WAY MONUMENT TYPE 1	27.00	EACH		$	
0210	02432		WITNESS POST	3.00	EACH		$	
0220	02469		CLEAN SINKHOLE	1.00	EACH		$	
0230	02545		CLEARING AND GRUBBING 23.116 ACRES	1.00	LS		$	
0240	02562		TEMPORARY SIGNS	240.00	SQFT		$	
0250	02585		EDGE KEY	762.00	LF		$	
0260	02602		FABRIC-GEOTEXTILE CLASS 1	74,696.00	SQYD		$	
0270	02603		FABRIC-GEOTEXTILE CLASS 2	178.00	SQYD		$	
0280	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	10,970.00	SQYD	$2.00	$	$21,940.00
0290	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0300	02671		PORTABLE CHANGEABLE MESSAGE SIGN	3.00	EACH		$	
0310	02690		SAFELOADING	18.00	CUYD		$	
0320	02701		TEMP SILT FENCE	3,796.00	LF		$	
0330	02703		SILT TRAP TYPE A	24.00	EACH		$	
0340	02704		SILT TRAP TYPE B	24.00	EACH		$	
0350	02705		SILT TRAP TYPE C	24.00	EACH		$	
0360	02706		CLEAN SILT TRAP TYPE A	24.00	EACH		$	
0370	02707		CLEAN SILT TRAP TYPE B	24.00	EACH		$	
0380	02708		CLEAN SILT TRAP TYPE C	24.00	EACH		$	
0390	02720		SIDEWALK-4 IN CONCRETE	6,827.00	SQYD		$	

241302

PROPOSAL BID ITEMS

Report Date 2/26/24

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0400	02726		STAKING	1.00	LS		$	
0410	05950		EROSION CONTROL BLANKET	10,289.00	SQYD		$	
0420	05952		TEMP MULCH	74,588.00	SQYD		$	
0430	05953		TEMP SEEDING AND PROTECTION	55,941.00	SQYD		$	
0440	05963		INITIAL FERTILIZER	2.33	TON		$	
0450	05964		MAINTENANCE FERTILIZER	3.89	TON		$	
0460	05985		SEEDING AND PROTECTION	56,523.00	SQYD		$	
0470	05990		SODDING	8,303.00	SQYD		$	
0480	05992		AGRICULTURAL LIMESTONE	46.56	TON		$	
0490	06510		PAVE STRIPING-TEMP PAINT-4 IN	41,242.00	LF		$	
0500	06513		PAVE STRIPING-TEMP PAINT-12 IN	140.00	LF		$	
0510	06515		PAVE STRIPING-PERM PAINT-6 IN	42,875.00	LF		$	
0520	06547		PAVE STRIPING-THERMO-12 IN Y	272.00	LF		$	
0530	06563		PAVE MARKING-R/R XBUCKS 16 IN	120.00	LF		$	
0540	06568		PAVE MARKING-THERMO STOP BAR-24IN	294.00	LF		$	
0550	06574		PAVE MARKING-THERMO CURV ARROW	36.00	EACH		$	
0560	06578		PAVE MARKING-THERMO MERGE ARROW	3.00	EACH		$	
0570	06585		PAVEMENT MARKER TY IVA-MW TEMP	942.00	EACH		$	
0580	06588		PAVEMENT MARKER TY IVA-BY TEMP	585.00	EACH		$	
0590	06610		INLAID PAVEMENT MARKER-MW	103.00	EACH		$	
0600	06612		INLAID PAVEMENT MARKER-BY	432.00	EACH		$	
0610	10020NS		FUEL ADJUSTMENT	23,102.00	DOLL	$1.00	$	$23,102.00
0620	10030NS		ASPHALT ADJUSTMENT	58,026.00	DOLL	$1.00	$	$58,026.00
0630	20166ES810		TEMPORARY PIPE	321.00	LF		$	
0640	20430ED		SAW CUT	163.00	LF		$	
0650	21289ED		LONGITUDINAL EDGE KEY	915.00	LF		$	
0660	23158ES505		DETECTABLE WARNINGS	383.00	SQFT		$	
0670	23756EC		PAVE MARK-THERM R/R ADVANCE WARN SYMBOL	3.00	EACH		$	
0680	24683ED		PAVE MARKING-THERMO DOTTED LANE EXTEN	113.00	LF		$	
0690	24814EC		PIPELINE INSPECTION	7,153.00	LF		$	
0700	26205ED		PRECAST PANEL RAILROAD CROSSING	1.00	LS		$	
0710	26206ED		RAILROAD GATE ARM ASSEMBLY	2.00	EACH		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0720	00440		ENTRANCE PIPE-15 IN	125.00	LF		$	
0730	00441		ENTRANCE PIPE-18 IN	38.00	LF		$	
0740	00462		CULVERT PIPE-18 IN	205.00	LF		$	
0750	00520		STORM SEWER PIPE-12 IN	8.00	LF		$	
0760	00521		STORM SEWER PIPE-15 IN	2,575.00	LF		$	
0770	00522		STORM SEWER PIPE-18 IN	2,958.00	LF		$	
0780	00524		STORM SEWER PIPE-24 IN	698.00	LF		$	
0790	00526		STORM SEWER PIPE-30 IN	250.00	LF		$	
0800	00528		STORM SEWER PIPE-36 IN	36.00	LF		$	
0810	00552		STORM SEWER PIPE-18 IN EQUIV	59.00	LF		$	
0820	00554		STORM SEWER PIPE-24 IN EQUIV	236.00	LF		$	

241302

PROPOSAL BID ITEMS

Report Date 2/26/24

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0830	00556		STORM SEWER PIPE-30 IN EQUIV	139.00	LF		$	
0840	01000		PERFORATED PIPE-4 IN	743.00	LF		$	
0850	01010		NON-PERFORATED PIPE-4 IN	12.00	LF		$	
0860	01032		PERF PIPE HEADWALL TY 4-4 IN	1.00	EACH		$	
0870	01202		PIPE CULVERT HEADWALL-15 IN	1.00	EACH		$	
0880	01204		PIPE CULVERT HEADWALL-18 IN	9.00	EACH		$	
0890	01208		PIPE CULVERT HEADWALL-24 IN	3.00	EACH		$	
0900	01211		PIPE CULVERT HEADWALL-30 IN EQUIV	1.00	EACH		$	
0910	01212		PIPE CULVERT HEADWALL-36 IN	1.00	EACH		$	
0920	01456		CURB BOX INLET TYPE A	76.00	EACH		$	
0930	01496		DROP BOX INLET TYPE 3	3.00	EACH		$	
0940	01497		DROP BOX INLET TYPE 3 MOD	4.00	EACH		$	
0950	01550		DROP BOX INLET TYPE 12A	40.00	LF		$	
0960	01559		DROP BOX INLET TYPE 13G	1.00	EACH		$	
0970	01568		DROP BOX INLET TYPE 13S	1.00	EACH		$	
0980	01577		DROP BOX INLET TYPE 14	4.00	EACH		$	
0990	01580		DROP BOX INLET TYPE 15	2.00	EACH		$	
1000	01641		JUNCTION BOX-15 IN	3.00	EACH		$	
1010	01740		CORED HOLE DRAINAGE BOX CON-4 IN	78.00	EACH		$	
1020	02483		CHANNEL LINING CLASS II	34.00	TON		$	
1030	02484		CHANNEL LINING CLASS III	418.00	TON		$	
1040	24810ED		SIDEWALK FLUME -	6.00	EACH		$	

Section: 0004 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1050	15015		S ENCASEMENT STEEL BORED RANGE 2	222.00	LF		$	
1060	15016		S ENCASEMENT STEEL BORED RANGE 3	170.00	LF		$	
1070	15018		S ENCASEMENT STEEL BORED RANGE 5	380.00	LF		$	
1080	15026		S FORCE MAIN AIR RLS/VAC VLV 02 IN	3.00	EACH		$	
1090	15547		S FORCE MAIN SPECIAL INST	306.00	LF		$	
1100	15057		S FORCE MAIN PVC 02 INCH	880.00	LF		$	
1110	15059		S FORCE MAIN PVC 04 INCH	284.00	LF		$	
1120	15061		S FORCE MAIN PVC 08 INCH	2,692.00	LF		$	
1130	15071		S FORCE MAIN TIE-IN 02 INCH	9.00	EACH		$	
1140	15073		S FORCE MAIN TIE-IN 04 INCH	3.00	EACH		$	
1150	15112		S PIPE PVC 08 INCH	216.00	LF		$	
1160	15114		S PIPE PVC 12 INCH	4,162.00	LF		$	
1170	15118		S PIPE SPECIAL	1,186.00	LF		$	
1180	15119		S PUMP STATION	1.00	EACH		$	
1190	15123		S LINE MARKER	3.00	EACH		$	
1200	15153		S MANHOLE OVERSIZE	9.00	EACH		$	
1210	15570		S MANHOLE INST	22.00	EACH		$	

Section: 0005 - WATERLINE

241302

PROPOSAL BID ITEMS

Report Date 2/26/24

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1220	14002		W AIR RELEASE VALVE SPECIAL (02 INCH)	5.00	EACH		$	
1230	14010		W ENCASEMENT STEEL BORED RANGE 5	275.00	LF		$	
1240	14019		W FIRE HYDRANT ASSEMBLY	11.00	EACH		$	
1250	14021		W FIRE HYDRANT REMOVE	1.00	EACH		$	
1260	14058		W PIPE PVC 04 INCH	74.00	LF		$	
1270	14059		W PIPE PVC 06 INCH	306.00	LF		$	
1280	14060		W PIPE PVC 08 INCH	6,468.00	LF		$	
1290	14074		W PLUG EXISTING MAIN	1.00	EACH		$	
1300	14077		W SERV PE/PLST LONG SIDE 1 IN	1.00	EACH		$	
1310	14079		W SERV PE/PLST LONG SIDE 2 IN	5.00	EACH		$	
1320	14082		W SERV PE/PLST SHORT SIDE 1 IN	2.00	EACH		$	
1330	14084		W SERV PE/PLST SHORT SIDE 2 IN	2.00	EACH		$	
1340	14085		W SERV PE/PLST SHORT SIDE 3/4 IN	3.00	EACH		$	
1350	14089		W TAPPING SLEEVE AND VALVE SIZE 1	1.00	EACH		$	
1360	14093		W TIE-IN 04 INCH	1.00	EACH		$	
1370	14094		W TIE-IN 06 INCH	8.00	EACH		$	
1380	14095		W TIE-IN 08 INCH	2.00	EACH		$	
1390	14104		W VALVE 04 INCH	1.00	EACH		$	
1400	14105		W VALVE 06 INCH	7.00	EACH		$	
1410	14106		W VALVE 08 INCH	11.00	EACH		$	

Section: 0006 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1420	02568		MOBILIZATION	1.00	LS		$	
1430	02569		DEMOBILIZATION	1.00	LS		$	