



CALL NO. 103

CONTRACT ID. 231306

BULLITT COUNTY

FED/STATE PROJECT NUMBER STP 5119 (016)

DESCRIPTION I65 / KY480 INTERCHANGE

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 11/1/2025

LETTING DATE: January 26,2023

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME January 26,2023. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 9%

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

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PART I
SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 05

CONTRACT ID - 231306
STP 5119 (016)
COUNTY - BULLITT
PCN - DE01504802247
STP 5119 (016)

I65 / KY480 INTERCHANGE RECONSTRUCTION, A DISTANCE OF 0.56 MILES.GRADE & DRAIN WITH ASPHALT
SURFACE SYP NO. 05-00391.30.
GEOGRAPHIC COORDINATES LATITUDE 37:58:46.00 LONGITUDE -85:41:51.00
ADT 27,619

COMPLETION DATE(S):
COMPLETED BY 11/01/2025 APPLIES TO THE 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 fax (502) 564-7299 or 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/contract). 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.

BUILD AMERICA, BUY AMERICA ACT (BABA)

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (IIJA), Pub. L. No. 117-58, includes the Build America, Buy America Act (“the Act”). Pub. L. No. 117-58, §§70901-52. The Act strengthens the Buy America preference to include “construction materials.” The current temporary waiver for **“construction materials”** will expire on November 10, 2022.

The Act will apply to construction materials as outlined in the guidance issued in OMB [M-22-11](#).

Construction Materials – Includes an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives – that is or consists primarily of:

- Non-ferrous metals
- Plastic/polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

Construction Materials only applies to items, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project.

Construction Materials does not apply to tools, equipment or supplies brought to the jobsite and removed before completion.

October 14, 2022

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 | 102.08 Preparation and Delivery of Proposals |
| 102.13 Irregular Bid Proposals | 102.14 Disqualification of Bidders |
| 102.09 Proposal Guaranty | |

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. Sub-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.

UPON AWARD AND BEFORE A WORK ORDER WILL BE ISSUED

Contractors must submit the signed subcontract between the contractor and the DBE contractor, along with the DBE's certificate of insurance. If the DBE is a supplier of materials for the project, a signed purchase order must be submitted to the Division of Construction Procurement.

Changes to 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 certainty 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. Melvin Byne. Mr. Byne's current contact information is email address – melvin.bynes2@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)

Revised: 5/3/2022

**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.

NATIONAL HIGHWAY

Be advised this project is on the NATIONAL HIGHWAY SYSTEM.

PROJECT TRAFFIC COORDINATOR (PTC)

Be advised this project is a significant project pursuant to section 112.03.12.

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.

MATERIAL TRANSFER VEHICLE (MTV)

Provide and use a MTV in accordance with Sections 403.02.10 and 403.03.05.

**SPECIAL NOTE
FOR
PETROLEUM CONTAMINATED SOIL**

**Bullitt County
I-65 @ KY 480 Interchange Reconstruction
Item No. 5-391.30**

The contractor MAY impact petroleum contaminated soils on parcels 4 and 7, which had or has an underground storage tank (UGST). The petroleum contaminated soil should be minimal, around 200-300 cubic yards. If petroleum contaminated soil is encountered, it should be disposed of properly at an off-site landfill.

SPECIAL NOTE FOR CONCRETE SEALING

These Notes or designated portions thereof, apply where so indicated on the plans, proposals or bidding instruction.

- I. DESCRIPTION. Perform all work in accordance with the Department's 2019 Standard Specifications, and applicable Supplemental Specifications, the attached sketches, and these Notes. Section references are to the Standard Specifications.
This work consists of: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

II. MATERIALS.

- A. Sealer. Use one of the following:

Product	Supplier
Protectosil BHN	Evonik Industries
Protectosil 300S	Evonik Industries
TK-590-40 Tri-Silane 40%	TK Products
SW-244-100	Chemical Products Industries, Inc.
TK-590-1 MS Tri-Silane	TK Products
MasterProtect H1000	BASF
Aquanil Plus 40	ChemMasters
SIL-ACT ATS-100	Advanced Chemical Technologies
Certivex Penseal BTS 100%	Vexcon
Pentreat 244-40	W.R. Meadows
Aquanil Plus 40A	ChemMasters

- B. Coverage Rate:** Follow all manufacturers recommendations for coverage rates except the application rate must not exceed the square footage coverage rate per gallon of sealer as given in the chart below. If the manufacturer recommends a coverage rate greater than given in the table below, apply sealer at the rate given in the table below for the chosen sealers silane percentage.

% Silane	Coverage rate (ft ² /gallon)
100	300
40	120
20	60

III. CONSTRUCTION.

- A. Curing Compound.** Contrary to Section 609.03.12 of the specifications, curing compound is not to be used on this deck due to potentially causing issues with the concrete sealer. During the deck pour, finishing, and tining operations the Class AA concrete shall be kept continuously moist with the use of a mister until burlap or curing blankets are applied to the surface. At no point should water be pooling or running off the surface or the surface of the concrete be allowed to become dry. After the burlap or curing blankets are installed, cure in accordance with the specifications. Include all costs in the unit price bid for Class AA concrete. Failure to properly cure the concrete in accordance with this note and the specifications may result in weakened or cracked concrete. If the concrete is weakened or cracked due to improper curing, the contractor will be responsible for providing alternates to fix the issues to the Engineer for review and the contractor will be solely responsible for all costs to do so, up to complete replacement. Do not begin any construction on fixing any issues without approval of the Engineer.
- B. Cleaning the Deck.** Dry clean the deck to remove all loose debris. Remove all visible hydrocarbons from the surface with detergent approved by the manufacturer of the deck sealant. Pressure wash all surfaces to be sealed at 2000 to 3000 psi. Install pressure gauges at each wand to verify pressure. Use 30° fan tip or as recommended by the manufacturer of the deck sealant. Hold pressure washing wand a minimum of 45° from the deck with a maximum stand-off distance of 12 inches.
- C. Sealing the Deck.** Allow new concrete to cure a minimum 28 days prior to application of sealer. Monitor weather conditions prior to sealer application. Refer to manufacturer's recommendations for proper ambient conditions. Do not apply sealer if precipitation is anticipated within the time stated by the manufacturer. Allow the deck to dry 24 hours (after washing or rain event) before sealer application. The deck can be reopened to traffic while drying. Sealer must be applied within 48 hours of washing or the deck must be rewashed. Divide the deck into predefined areas of specific square footage to aid in determining usage. Comply with manufacturer's usage recommendation. Using a low

pressure pump, apply sealer and spread evenly with broom or squeegee; do not allow pooling to remain. When each predefined area is complete, measure the amount of sealer used to verify proper usage. After sealing, follow manufacturer's recommended cure time before opening to traffic. On vertical surfaces, apply the sealer in a flooding application from the bottom up, so the material runs down 6 to 8 inches below the spray pattern.

D. Inspection: Monitor all aspects of the project to assure compliance to this specification. Observe and document general conditions during the entirety of the project. Verify that each phase of work has been satisfactorily completed prior to beginning the next phase. Phases are described as follows:

1. Dry cleaning to remove loose debris, verify and document:
 - a. All debris has been removed and disposed of properly.
2. Removal of hydrocarbons, verify and document:
 - a. The manufacturer's recommended detergent is used for removal.
 - b. Hydrocarbons have been satisfactorily removed.
3. Pressure washing, verify and document:
 - a. Washing pressure at the wand.
 - b. Tip size used.
 - c. Wash angle and stand-off distance.
 - d. The deck is satisfactorily cleaned.
4. Sealer application, verify and document:
 - a. Proper cure time for new concrete.
 - b. Deck surface is dry.
 1. Document time since washed.
 2. Was deck opened to traffic after washing?
 - c. Ambient conditions.
 1. Document ambient temperature, surface temperature, relative humidity, and dew point.
 - d. Application and distribution method.
 - e. Coverage to be complete and even.
 - f. Material is not allowed to remain pooled.
 - g. Monitor material usage.
 - h. No traffic until proper cure time is allowed.

IV. MEASUREMENT

- A. Concrete Sealing.** The Department will measure the quantity per square feet of each area sealed.

V. PAYMENT

- A. Concrete Sealing.** Payment at the contract unit price per square feet is full compensation for the following: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

SPECIAL NOTE FOR INLAID PAVEMENT MARKERS

I. DESCRIPTION

Except as provided herein, perform all work in accordance with the Department's Standard and Supplemental Specifications and applicable Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications. This work shall consist of:

- (1) Maintain and Control Traffic; and (2) furnish and install Inlaid Pavement Markers (IPMs) in recessed grooves; and (3) any other work as specified by these notes and the Contract.

II. MATERIALS

The Department will sample all materials in accordance with the Department's Sampling Manual. Make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these Notes.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Markers. Provide reflective lenses with depth control breakaway positioning tabs. Before furnishing the markers, provide to the Engineer the manufacturer's current recommendations for adhesives and installation procedures. Use one brand and design throughout the project. Use markers meeting the specifications in the table below.

SPECIFICATIONS FOR HOUSING AND REFLECTOR	
Material:	Polycarbonate Plastic
Weight:	Housing 2.00 oz.
	Reflector 2.00oz.
Housing Size:	5.00" x 3.00" x 0.70" high
Specific Intensity of Reflectivity at 0.2° Observation Angle	
White:	3.0 at 0°entrance angle
	1.2 at 20°entrance angle
Yellow:	60% of white values
Red:	25% of white values

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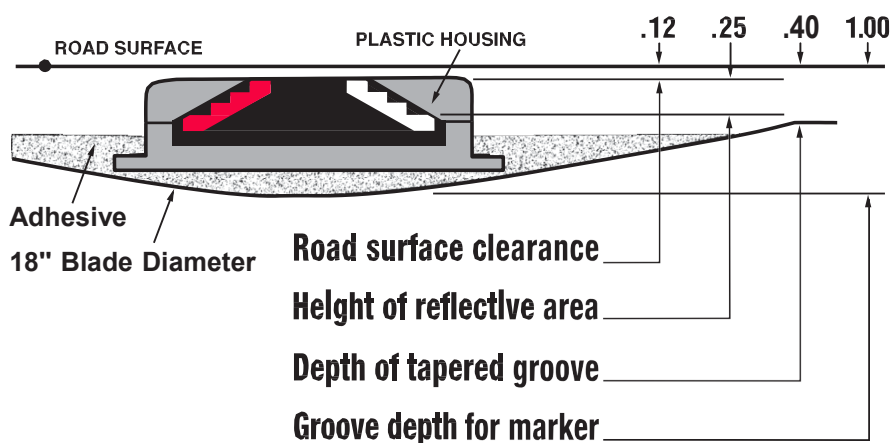
C. Adhesives. Use adhesives that conform to the manufacturer's recommendations.

III. CONSTRUCTION

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Installation. Install IPMs in recessed grooves cut into the final course of pavement according to the manufacturer's recommendations. Do not cut the grooves until the pavement has cured sufficiently to prevent damaging the pavement. Cut installation grooves using diamond blades on saws that accurately control groove dimensions. Remove all dirt, grease, oil, loose or unsound layers, and any other material from the marker area which would reduce the bond of the adhesive. Maintain pavement surfaces in a clean condition until placing markers.

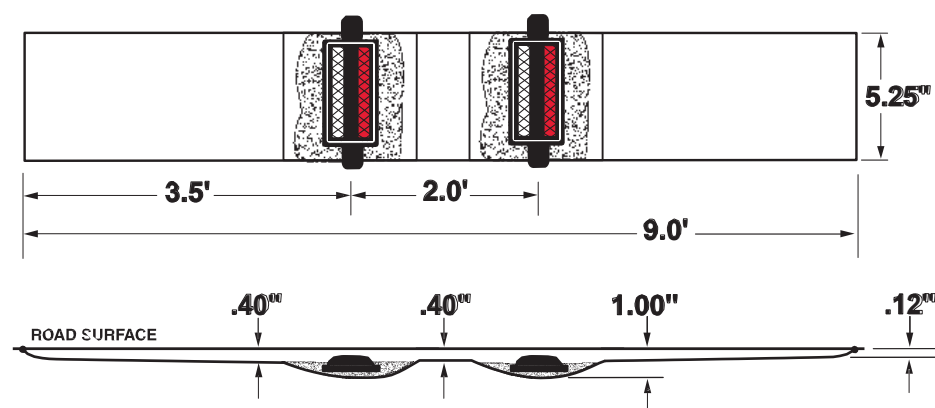
Prepare the pavement surfaces, and install the markers in the recessed groove according to the drawing below. Use an approved snowplowable epoxy adhesive. Ensure that the adhesive bed area is equal to the bottom area of the marker, and apply adhesive in sufficient quantity to force excess out around the entire perimeter of the marker. Use materials, equipment, and construction procedures that ensure proper adhesion of the markers to the pavement surface according to the manufacturer's recommendations. Remove all excess adhesive from in front of the reflective faces. If any adhesive or foreign matter cannot be removed from the reflective faces, or if any marker fails to properly adhere to the pavement surface, remove and replace the marker at no additional cost to the Department.



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C. Location and Spacing. Install the markers in the pattern for high reflectivity with two (2) IPMs per groove. Locate and space markers as shown in the current standard drawings or sepias (note: use Inlaid Pavement Markers wherever Type V Pavement Markers are called for). Do not install markers on bridge decks. Do not install a marker on top of a pavement joint or crack. Offset the recessed groove a minimum of 3 inches from any longitudinal pavement joint or crack and at least one inch from the painted stripe, ensuring that the finished line of markers is straight with minimal lateral deviation. Give preference to maintaining the 3-inch offset between recessed groove and joint as opposed to keeping the line of markers straight.



Place inlaid markers as much in line with existing pavement striping as possible. Place markers installed along an edge line or channelizing line so that the near edge of the plastic housing is no more than one inch from the near edge of the line. Place markers installed along a lane line between and in line with the dashes. Do not place markers over the lines except where the lines deviate visibly from their correct alignment, and then only after obtaining the Engineer's prior approval of the location.

If conflicts between recessed groove placement in relation to pavement joint and striping cannot be resolved, obtain the Engineer's approval to eliminate the marker or revise the alignment.

D. Disposal of Waste. Dispose of all removed pavement, debris, and other waste at sites off the right of way obtained by the Contractor at no additional cost to the Department. See Special Note for waste and Borrow.

E. Restoration. Be responsible for all damage to public and/or private property resulting from the work. Restore all damaged features in like kind materials and design at no additional cost to the Department.

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F. On-Site Inspection. Make a thorough inspection of the site prior to submitting a bid and be thoroughly familiar with existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid as evidence of this inspection having been made and will not honor any claims for money or grant Contract time extensions resulting from site conditions.

G. Caution. Do not take information shown on the drawings and in this proposal and the types and quantities of work listed as an accurate or complete evaluation of the material and conditions to be encountered during construction, but consider the types and quantities of work listed as approximate only. The bidder must draw his own conclusion as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation or extension of Contract time if the conditions encountered are not in accordance with the information shown.

IV. MEASUREMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. "INLAID PAYMENT MARKER" shall be measured as each. One (1) installation of "INLAID PAVEMENT MARKER" will consist of grooving the pavement, removing cuttings and debris, preheating pavement to remove moisture, adhesives, and installation of two (2) markers with all lenses in accordance with this note.

Note: Each pay item of Inlaid Pavement Marker will require two markers.

V. PAYMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Inlaid Pavement Markers. The Department will make payment for the completed and accepted quantity of completely installed "INLAID PAVEMENT MARKERS" at the Contract unit price, each. Accept payment as full compensation for all labor, equipment, materials, and incidentals to accomplish this work to the satisfaction of the Engineer. A system of one (1) groove and two (2) markers shall be paid as one "INLAID PAVEMENT MARKER". The bid item "INLAID PAVEMENT MARKER" shall be used regardless of the color and type of lenses required.

December 5, 2018

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

—

BULLITT COUNTY

LETTING: CHANGE ORDER
ITEM NUMBER: 5-391.30

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PROJECT DESCRIPTION

GENERAL

This project includes furnishing and installing WEB cameras on lowering device pole. This equipment will expand the traffic monitoring and advisory capabilities of the District 5 and TRIMARC.

This ITS Project complies with the requirements of 23 CFR 940. The ITS work to be performed is referenced in the current Kentucky 2015 Statewide ITS Architecture at Appendix C-4,5 and C-4 (Traffic Incident Management System ATMS08, and Traffic Information Dissemination ATMS06), and in the Updated Section 5 and Appendix B of the 2015 Addendum to the Original Kentucky ITS Business Plan.

EQUIPMENT AND MATERIALS

All equipment and materials shall be new, free of defects and damage.

SPECIFICATIONS AND WORKMANSHIP

Unless otherwise specified, all work shall conform to the following:

- Kentucky Standard Specifications for Road and Bridge Construction, latest edition.
- FHWA, Manual on Uniform Traffic Control Devices, latest edition.
- National Electrical Code, latest edition.
- National Electric Safety Code, latest edition.
- KYTC Department of Highways Standard Drawings, current editions.
- KYTC Department of Highways Sepia Drawings, current editions.
- International Municipal Signal Association (IMSA) Specification No. 51-7, current edition.
- AASHTO, Roadside Design Guide, latest edition.
- AASHTO, Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest edition.

All work shall be performed in a neat and professional manner. The Contractor shall remove debris and trash from work areas during construction. The Contractor shall restore areas to original condition and clean up all debris after construction.

DAMAGE TO EXISTING FACILITIES

The Contractor shall be responsible for locating all underground utilities prior to excavation. The contractor shall repair damage caused to any public or private facilities at his expense. Utilities include but are not limited to telephone, power, water, gas, fiber optic cable, underground vaults, roadway lighting wiring, traffic signal wiring, and roadway drainage systems.

MATERIALS LIST

The contractor shall provide an equipment list in Microsoft Excel format to the Engineer containing the following information:

- Type of equipment
- Field location
- Make
- Model
- Serial number
- Date of purchase
- Manufacturer contact information
- Equipment vendor contact information (if different)

- Date of Installation
- Date warranty expires

This list shall be provided to the Division of Traffic Operations prior to burn-in testing.

WARRANTY

The Contractor shall provide a copy of all equipment warranty information to the Division of Traffic Operations. The Contractor shall provide documentation from the manufacturer that ownership of the warranty is transferred to the following:

Kentucky Transportation Cabinet
Division of Traffic Operations
200 Mero Street
Frankfort, KY 40622

TESTING

The Contractor shall demonstrate proper functioning of all devices at the field cabinets.

A 30 day equipment burn-in test will begin after each device is accepted. If a device fails during the 30 burn-in day test the Contractor shall repair or replace the device and demonstrate that the device is functioning at the field cabinet and a new 30 day burn-in test will begin for that device. Each device will be accepted after it has successfully completed its 30 day test. The 30 day burn-in test will be conducted by TOC personnel in Frankfort from the operations center and consist of operational control of PTZ and video of the remote camera location and sign control.

SHOP DRAWINGS

All items that are used on this project shall have shop drawings sent to Engineer, who will contact Division of Traffic Operations for approval. All items shall be approved before purchase of said items.

AS-BUILT DRAWINGS

The Contractor, at the completion of the project, shall submit as-built drawings. As-built drawings shall be submitted in electronic format such as .pdf, .tiff, .dgn or other standard image format acceptable to the Engineer. As-built drawings may be scanned from marked up field plans or drawn in MicroStation. As-built drawings shall be scanned at a resolution that will allow them to be clearly legible on a computer display. As-built drawings shall include the exact location of all above ground equipment, underground conduit, wire, sensors and other equipment. Drawings shall indicate any changes to the design including changes to the numbers of conductors, wire gage, splices, additional conduit, etc. Conduit locations shall be drawn to scale or shall be dimensioned and referenced to permanent roadway features. Turns in conduit shall be referenced so that the conduit paths may be derived from the as-built drawings. Existing underground utilities shall be indicated on the drawings. Two copies of the drawings shall be submitted. One copy of the drawings shall be submitted to the Engineer. One copy of the drawings shall be submitted to the KYTC Division of Traffic Operations Design Services Branch. The Contractor shall correct any drawings that are deemed

unacceptable to the Engineer. As-built drawings shall be delivered prior to burn-in testing.

COORDINATION

SYSTEM COMPATIBILITY

The Contractor is responsible for coordinating with TRIMARC to insure equipment compatibility and to complete integration of equipment into the TRIMARC project.

COMMUNICATIONS

Camera shall communicate with the control center over the new phone lines and/or DSL connection (coordinated with the TRIMARC). The Contractor shall be responsible for furnishing and installing all conduits, junction boxes and communication cables installed on Kentucky right-of-way as specified in the plans. The Contractor shall be responsible for the installation and correct operation of all communications systems located in the field cabinet to the field devices. Testing of the Contractor's work will be performed both locally at the cabinet and remotely at the TRIMARC Traffic Operations Center. TRIMARC personnel will assist with any troubleshooting necessary to resolve problems with the communication equipment.

EQUIPMENT LIST

The contractor shall provide an equipment list in Microsoft Excel format to the Engineer containing the following information:

- Type of equipment
- Field location
- Make
- Model
- Serial number
- Date of purchase
- Manufacturer contact information
- Equipment vendor contact information (if different)
- Date of Installation
- Date warranty expires

This list shall be provided to the Division of Traffic Operations and TRIMARC Systems Administrator prior to burn-in testing. See below for TRIMARC Info:

Mr. Todd Hood
TRIMARC Systems Administrator
901 W. Main St.
Louisville, KY 40202
Phone: 502-587-6624
Fax: 502-587-6645

Email: Todd.Hood@ngc.com

TESTING

The contractor shall demonstrate proper functioning of all devices at the field communications demarcation point. After each device can be successfully operated at the field communications demarcation point the devices will be integrated into the TRIMARC Traffic Operations Center. A 30 day equipment burn-in test will begin after each device is integrated and can be remotely controlled from the operations centers. The Contractor is responsible for repairing or replacing defective equipment during the period between the field test and the start of the 30 day burn-in test.

The 30 day burn-in test will be conducted by TRIMARC from the operations center and consist of operational control of PTZ and video of the remote camera location.

If a device fails during the 30 burn-in day test, TRIMARC personnel will test the device at the field cabinet. If the device cannot be operated at the field cabinet the Contractor shall repair or replace the device and a new 30 day burn-in test will begin for that device.

The project will be accepted after all devices have completed their 30 day test successfully, acceptable as-built drawings and warranty information have been received.

SITE PREPARATION

DESCRIPTION

Site Preparation shall be performed in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Site Preparation shall include all materials required to access and protect the work area.

INSTALLATION

The Contractor shall coordinate with the Engineer prior to performing any site preparation work. This item includes excavation, guardrail removal, guardrail replacement, temporary ditch crossings, temporary barriers and clearing of debris and foliage. Salvaged materials may be used at the discretion of the Engineer. Site preparation shall be one per VMS sign location and WEB/CCTV camera location. There shall not be site preparation for locations that have web cameras installed on existing signal poles and existing highmast.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Site Preparation will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

ADVANCED GROUNDING SYSTEM

DESCRIPTION

Furnish and install Advanced Grounding System in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Unless otherwise specified, the grounding system provided will be as shown in “Advanced Grounding System Details”. Minimum ground resistance reading needs to be 10 ohms or less as tested via the 3 point fall of potential test method.

If the installation of the advanced grounding system is not possible due to physical constraints of the location or other extenuating factors, the TRIMARC Systems Engineer or Traffic Engineer may allow for a standard ground installation. The standard installation would be with ground wiring consisting of solid bare copper #4 AWG and securely connected inside enclosures with #4 AWG copper clamp connectors. Nuts and washers securing the wire are not acceptable. All grounding shall meet the National Electric Code. Ground wires shall be exothermically welded to the ground rods. Ground rod clamps are not acceptable. The following devices shall be grounded to an array of two or three, 10' X 1" copper coated steel ground rods:

- Model 334/336 Enclosures (two ground rods required)
- Camera Poles (three ground rods required)
- Side-mounted VMS(two ground rods required)
- Service Locations(two ground rods required)

All ground rods in arrays shall have a minimum of 6' separation.

The resistance to ground shall be less than 10 Ohms as measured with an AEMC clamp on ground resistance meter or equivalent. The Contractor shall leave all exothermic welds exposed for inspection by the TRIMARC Systems Engineer or Traffic Engineer before backfilling.

INSTALLATION

All grounding shall be according to standards shown on “Advanced Grounding System Details”. If contractor needs help with installation, they can contact Alltec Corporation for further assistance at 800-203-2658.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Advanced Grounding System will be measured for payment per each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

POLE BASE

DESCRIPTION

Furnish and install Pole Base in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Pole Base includes concrete, anchor bolts, reinforcing steel, and conduit within base. The Contractor shall submit to material testing at the discretion of the Engineer.

INSTALLATION

The Contractor shall stake all proposed pole base locations and obtain approval before excavation. The Traffic Engineer (District 5) will approve locations for pole bases in their districts. Any poles bases in Bullitt shall be approved by the TRIMARC representative. The Contractor shall have utilities marked in the field prior to requesting approval. The Contractor shall allow two weeks to schedule the location approval. KYTC/TRIMARC approval of field device location does not relieve the contractor from his responsibility to avoid utilities and repair any damage to buried infrastructure. The Contractor shall grade and re-seed all disturbed areas and restore the area to the satisfaction of the Engineer. Poles located behind guardrail shall have a minimum 5' spacing from edge of pole to face of guardrail. Otherwise, poles shall be located as according to the plans sheets or a minimum of 30' from all driving lanes. This item includes all excavation including any special equipment required to install the base in rock. This item shall include a vented rodent barrier furnished and installed by the contractor. See Vented rodent barrier detail.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Pole Base/Pole Base-High Mast will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

POLE WITH LOWERING DEVICE

General Description

The camera lowering system shall be designed to support, lower and raise an Ethernet fed IP CCTV Camera, housing, and PTZ mechanism without damage or causing degradation of camera operations. The camera lowering system and the pole are interdependent; and thus, must be considered a single unit or system. The lowering system shall consist of a pole, adjustable plate mounted pole top tenon, tenon adapter for lowering device attachment to the pole top tenon, suspension contact unit, divided support arm, pole top junction box, conduit mount adapter, camera junction box, external mounted stabilization weights, and a permanently mounted winch on the interior of the pole. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and ensure the contact unit cannot twist under high wind conditions. For maximum arm strength, round support arms are not acceptable. The camera-lowering device shall withstand wind forces of 100mph with a 30 percent gust factor using a 1.65 safety factor. The lowering device manufacturer, upon request, shall furnish independent laboratory testing documents certifying the device's adherence to the stated wind force criteria utilizing, as a minimum effective projected area, the actual EPA or an EPA greater than that of the camera system to be attached. The camera lowering system to be furnished shall be the product of manufacturers with a minimum of 5 years of experience in the successful manufacturing of camera lowering systems. The camera lowering device shall be the [MG]² Model CLDMG2-HYPIP6(2)-XXX(ST)-PERM or pre-bid approved equal. (The requirements for submitting alternative devices for approval prior to the bid opening date are found in the project documents.)

The lowering device manufacturer shall furnish an authorized factory representative to oversee the installation contractor's assembly and testing of the first lowering system onto the pole assembly for each project. The manufacturer shall furnish the applicable DOT engineer documentation certifying that the installation contractor has been instructed on the installation, operation, maintenance and safety features of the lowering device for the particular project. Thereafter, the contractor shall be responsible for providing applicable maintenance personnel "on site" operational instructions.

Suspension Contact Unit and Contact Block

The suspension contact unit shall have a minimum load capacity of 600 lbs. with a 4 to 1 safety factor. There shall be a locking mechanism between the fixed and moveable components of the lowering device. The movable assembly shall have a minimum of 2 latches. This latching mechanism shall securely hold the device and its mounted equipment. The latching mechanism shall operate by alternately raising and lowering the assembly using the winch and lowering cable. When latched, all weight shall be removed from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall

be weatherproof with a gasket provided to seal the interior from dust and moisture. The entire unit shall have a minimum temperature rating of -40 degrees F to +190 degrees F (-40C to 90C).

The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the network and/or power cabling of the CCTV or any other device mounted upon the pole. The lowering device manufacturer shall provide a conduit mount adapter for housing the stainless steel lowering cable. This adapter shall have an interface to allow the connection of a contractor provided 1.25 inch PVC conduit and be located just below the cable stop block at the back of the lowering device. The Contractor shall supply internal conduit in the pole as directed by the Camera Lowering Device (CLD) provider. The only cable permitted to move within the pole or lowering device during lowering or raising operations shall be the stainless steel lowering cable. All other cables must remain stable and secure during lowering and raising operations.

ETHERNET CONTACT BLOCK

The CLD must be properly equipped with a multiple contact connector designed and tested specifically for Ethernet devices or equipment utilizing Gigabit communications with or without POE. The Contact Connectors shall be designed for extreme environmental outdoor use per the technical requirements in the specifications and plans. Each Lowering Device shall be equipped with TWO distinct Shielded Ethernet contact connector blocks providing TWO separate individual Ethernet feeds regardless of whether one or two Ethernet devices is mounted upon the CLD. In the instance where only one Ethernet device being mounted, a second completed installed and readied Ethernet feed shall remain available for future equipment or as a back-up to the initial Ethernet feed.

Each Ethernet contact block shall consist of a female and male half. For environmental durability, the female and male socket contact halves shall be made of an outdoor rated thermosetting synthetic rubber. The female barrel contacts and the male pin contacts shall be permanently and integrally encased in this rubber material to ensure optimum protection against moisture and the environment. For optimum weatherproofing, each male pin shall be self-wiping with a shoulder or "O" ring at the base of each male contact so that it will recess into the female block, thereby giving a rain-tight seal to each individual contact when mated. Further, the wire leads from both the male and female rubber contact blocks shall be permanently and integrally molded in the overall synthetic rubber contact block body.

For optimum electrical conductivity and durability, all signal carrying male pin and female socket/barrel contacts shall be copper alloy and Gold plated per ASTM B-488. To ensure pins are not easily bent, the Male contact sizing shall be a minimum of 0.09 inches O.D., while the female contacts shall be at least 0.09 inches I.D. at the contact area. All contacts shall be a minimum of 0.09 inches in diameter at the contact area. Each individual female barrel contact shall have a sleeve which prevents foreign particles

from entering the contact area as well as preclude the possibility of the tines of the female contact from opening beyond allowable limits and ensure a snug fit around the respective male pins. The contact block shall have a spring loaded design that provides constant pressure on the contact block enabling consistent electrical and data performance during moderate shaking conditions.

For proper and complete performance, each Ethernet/IP Male-Female connector shall be equipped with a total of (14) specifically designed contacts. Nine (9) of the (14) male contacts shall be silver soldered to Cat6a High Flex Shielded Industrial Ethernet Cable and end terminated with a RJ45 (shielded) male connector, and Five (5) of the (14) male contacts shall be silver soldered to (5) individual #18/1 UL lead wires – bare and numbered 1-5, which may be used for additional camera/equipment requirements including but not limited to power, alarms or grounds. Nine (9) of the (14) female contacts shall be silver soldered to Cat6a High Flex Shielded Industrial Ethernet Cable and end terminated with a 10Gbps rated M12 8-position, shielded connector which will interface and provide a minimum IP65 rated connection with the Ethernet cable fed from the pole (or ground mounted) equipment cabinet. Five (5) of the (14) female contacts shall be silver soldered to (5) individual #18/1 UL lead wires – bare and numbered 1-5, which may be used for additional camera/equipment requirements including but not limited to power, alarms or grounds. These leads shall be factory or field terminated with an applicable AMP type circular connector as an interface with the applicable wire leads on the cable fed from the pole (or ground mounted) equipment cabinet. The installation of the M12 and AMP connector shall either be done at the CLD factory or in the field by the installation contractor. All connections and terminations must have field verifiable continuity prior to each pole's erection. All cable jackets shall be outdoor rated. All silver soldering shall be per IPC J STD-001E. Each individual contact shall be rated for up to 600v and 7A but de-rated according to the wire used in the application.

Each Ethernet connector block must be tested & verified for Ethernet Data Transmission speeds of up to 1000Base-T (1 GigaBit per Second). If requested, a copy of the verified connector test report showing 1000Base-T compliance shall be provided.

CAMERA JUNCTION BOX

The camera junction box is essential for providing both a mounting location for the CCTV as well as an interface compartment for wire leads from the lowering device to the CCTV or applicable switches or surge suppression modules. The camera junction box shall be of two piece clamshell design with one removable hinge side and one latch side with single toggle bolt to facilitate easy access. The general shape of the box shall be cylindrical to minimize the effective projected area. The Camera Junction Box shall be cast aluminum with stabilizing weights on the outside of the box to increase room on the interior. The box shall be capable of having up to 40 pounds of stabilizing weights. The bottom of the Camera Junction Box shall be drilled and tapped with a 1-1/2"

NPT/Female thread to accept industry standard dome housings and be able to be modified to accept a wide variety of other camera mountings. The junction box shall be gasketed to prevent water intrusion. The bottom of the box shall incorporate a screened and vented hole to allow airflow and reduce internal condensation.

LOWERING WINCH

The camera lowering device (CLD) shall be operated by use of a permanently mounted winch. This winch shall be securely bolted on the interior of the pole as designed and shown on the plans. The winch shall operate by use of an included manual hand crank. The winch shall have the ability to operate (raise and lower but not latch) electrically by use of additional equipment noted in the provisions. The winch shall be designed to spool the required amount of stainless steel lowering cable to lower and raise the CCTV camera and shall be accessed and operated through the handhole approximately 30-36 inches from ground level. This handhole shall be sized according to the requirements of the lowering device provider. The winch and stainless steel cable shall support the load during lowering/raising operations. The winch assembly shall include an integrated automatic breaking system that prevents freewheeling when loaded and shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise and lower a capacity load. The lowering winch shall be made of durable and corrosion resistant materials or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment. The unit shall have a Thern model winch with a 2.85 to 1 gear ratio.

(e.1) Electrical Operation of the CLD Winch

If required, a quantity (as designated by the provisions and plans) of Electric Drill Assemblies & Custom Clutch Adapters can be provided to interface with the standard permanently mounted winch.

One complete set of Electric Drill Assembly & Custom Clutch Adapter is not required for EACH Pole, but rather a certain quantity shall be required per project and noted on the plans or otherwise herein. All Electrical Drill Assemblies shall be a CLD Manufacturer authorized LOW RPM, Variable Speed, Reversible, ½ inch chuck, Corded Electric Drill. Each Drill shall be provided with an attachable factory tensioned adjustable clutch adapter which will serve as the attachment mechanism of the drill to the winch. The clutch adapter will be factory tensioned to prohibit over-torqueing of the winch during the electric operation. All Electric drill assemblies and clutch adapters shall be delivered to the applicable DOT engineer upon project completion.

MATERIALS

All pulleys for the camera lowering device shall have sealed, self lubricated bearings, oil tight bronze bearings, or sintered- oil impregnated, bronze bushings. The lowering cable shall be a minimum 1/8-inch diameter stainless steel aircraft cable with a minimum breaking strength of 1740 pounds with (7) strands of 19 wire each.

The fixed and lowerable portion of the contact block and the individual contacts shall be protected from exposure to the weather by both a gasket on the bottom side of the bell housing enclosure as well as the “O” ring shoulders at the base of each male contact pin.

The interface and locking components shall be made of stainless steel and/or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

In the event the mounted camera is a non-dome or otherwise not centrally weight balanced and plumb, the Camera Manufacturer shall provide weights and /or counterweights and/or brackets as necessary to assure that the alignment of pins and connectors are plumb when tethered on the cable to allow the camera to be raised and locked into position without binding.

The Camera Manufacturer or integrator shall provide any alternate power/signal connectors and weatherproof interface couplers for attachment to the 1-5 bare leads and Ethernet cable in the pole top and/or camera junction boxes in a manner acceptable to the project engineer.

The Camera Manufacturer, camera supplier or integrator shall provide appropriate length (Per camera location) of outdoor rated Ethernet cable and any additional power/signal cables in one continuous run from the respective equipment cabinet to the pole top junction box of each lowering device pole.

The contractor shall demonstrate to the Engineer the proper and repeated operation of the lowering device. Proper camera operation and electrical connections shall be verified after each lowering/raising cycle.

CAMERA LOWERING SYSTEM POLE

DESIGN: Design shall be in accordance with the 2013 edition of AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals including all addendums. Minimum Loading requirements shall be based on an isotach wind velocity for the area of installation according to the current AASHTO isotach wind chart. PE Stamped Calculations and detailed drawings for each height pole shall be submitted demonstrating compliance with the AASHTO specifications and any additional performance requirements herein.

Loading shall be based on:

- basic wind speed of 90 mph

- 30 percent gust factor / 1.65 safety factor
- design life/recurrence interval of 50 years
- fatigue category I.
- a total mounted weight of 130 LBS. and an Effective Projected Area (EPA) of 3.0ft² for the CLD & Camera

To avoid vortex shedding, the steel pole members shall have a taper of 0.14 in/ft. All structures shall be designed to natural wind gust conditions. The yearly mean wind speed for natural wind gusts will be assumed to be 11.2 per hour. Design for galloping and truck induced gust fatigue is not required for these structures.

Poles up to 50' in length shall be one-piece construction. Poles greater than 50' in length shall be of two-piece construction. Poles shall conform to ASTM A595, Grade A minimum yield strength of 55 ksi, or ASTM A572 minimum yield strength of 65 ksi. Pole, base plate, and all associated hardware shall be galvanized per ASTM A123 or A153. Poles greater than 50' in length shall be of multi-piece slip-fit construction. The shaft shall be round or 16 sided with a four inch corner radius and contain only one longitudinal seam weld. Circumferential welded tube butt splices and laminated tubes are not permitted. Longitudinal seam welds within 6 inches of complete penetration pole to base plate welds shall be complete penetration welds. The shaft shall be hot dip galvanized per the requirements of the contract documents. The interior diameter of any top shaft at the point of Tenon attachment, regardless of pole height, shall be at least 5.5 inches to accommodate lowering device requirements. The interior diameter of the pole at the location of the permanent winch must be satisfactory to allow the installation, operation and maintenance of the winch. The winch shall be equipped with a winch mount plate or shelf for the permanent attachment of the winch mechanism.

The pole top deflection shall not exceed one inch in a 30-mph (non-gust) wind. The calculations shall include a pole, base plate, and anchor bolt analysis. The pole detail analysis shall be analyzed at the pole base, at 5-ft. pole intervals, and at each slip joint splice.

A detail analysis of the pole shall be submitted. The detailed analysis shall include, but not be limited to, the following calculations:

1. Provide Group I, II, III, IV load combinations as listed in Table 3-1 Group Load Combinations in AASTHO.
2. Provide dimensions and weights for all attachments. This includes areas used for wind, ice and fatigue loads, drag coefficients, projected areas, velocity pressures and wind force for each segment.

3. For Group Loads II, III, and IV, which have wind loads, provide calculations for each controlling "worst case" wind direction that controls any aspect of the design (anchor bolts, pole sizing, ect.)
4. Anchor Bolts shall be designed for the orientation that would provide the maximum stress on any individual bolt.
5. Provide all structural properties for poles, anchor bolts and base plates. This includes the poles diameter, thickness, section modulus, moment of inertia, and cross sectional area.
6. Calculations for each member shall include loads, section properties, member forces (axial, shear and bending), member deflections (angular and linear), member stresses (actual and allowable), and the combined stress ratio (CSR).
7. Fatigue calculations should be shown for all fatigue related connections. Provide the corresponding detail, stress category and example from Table 11-2 in AASHTO.
8. In fatigue calculations, the effective throat thickness of a complete joint penetration groove weld shall be the thickness of the thinner part joined per AISC J2.1a.

Each pole shall be equipped with a permanently affixed label/tag - 6 feet from the bottom of the base plate on the outside with the following information:

manufacturer

height

minimum stringing tension at yield

order number, and

maximum deflection rate.

ALL detailed calculations shall be stamped & certified by current licensed Professional Engineer.

FABRICATOR: The Fabricator shall be certified under Category I, "Conventional Steel Structures" as set forth by the American Institute of Steel Construction Quality Certification Program. Proof of this certification will be required prior to bid opening to ensure that the fabricator has the personnel, organization, experience, procedures, knowledge, equipment, capability and commitment to fabricate quality pole structures.

WELDING: All welding shall be in accordance with Sections 1 through 8 of the American Welding Society (AWS) D1.1 Structural Welding Code. Tackers and welders shall be qualified in accordance with the code. Tube longitudinal seam welds shall be free of cracks and excessive undercut, performed with automatic processes, and be visually inspected. Longitudinal welds suspected to contain defects shall be magnetic particle

inspected. All circumferential butt-welded pole and arm splices shall be ultrasonically or radiographically inspected.

MATERIAL CERTIFICATIONS: All materials and products shall be manufactured in the United States of America, and comply with ASTM or AASHTO specifications. Mill certifications shall be supplied as proof of compliance with specifications.

HAND HOLE for PERMANENT WINCH: The hand hole opening shall be reinforced with a minimum 2-inch wide hot rolled steel rim and be of a size that allows proper and safe installation, operation and maintenance of the permanent winch. Unless otherwise noted on the plans, the bottom lip of the handhole shall be located on the shaft between 30"-36" from the baseplate. The handhole shall have a **HINGED** and **Gasketed** cover plate. The hinge shall provide adjustability to insure a weather-tight fit for the cover. On the frame side opposite the hinge, provide a mechanism on the handhole cover/frame to place the Department's standard padlock. The handhole cover shall be manufactured from 0.25 inch thick galvanized steel (ASTM 153) and have a neoprene rubber gasket that is permanently secured to the handhole frame to insure weather-tight protection.

POLE TOP TENON: The pole shall have a custom plate mounted adjustable tenon that allows the field modification of the arm/camera orientation up to 360 degrees. With this design, the DOT engineer can make slight orientation modifications to the camera mount to allow optimum viewing in case of future road development, change in terrain or a change in the viewing needs priority. The tenon shall have mounting holes and slot as required by the CLD manufacturer for the mounting of the camera-lowering system. The tenon shall be of dimensions necessary to facilitate camera lowering device component installation. The CLD mounting slot shall be parallel to the pole centerline for mounting the lowering device. There shall be a mounting slot for each required camera lowering device. Unless otherwise noted, when DUAL mount lowering devices, the mounting slots shall be 180 degrees apart. .

CABLE SUPPORTS / Electrical Cable Guides and Parking Stand (Eyebolts): Top and bottom electrical cable guides shall be located within the pole aligned with each other as referenced in the drawings. One cable guide-strain relief ring shall be positioned 2 inches below the winch operation handhole and the other shall be positioned 1 inch directly below the top of tenon. A parking stand ring shall be welded directly to the center and inner portion of the upper handhole frame. Note drawings for applicable details.

BASE PLATE: Provide base plates that conform to ASTM A36 for grade 36 or ASTM 572 for grade 50.

Ensure transverse plates have a thickness ≥ 2 inches. Provide a base plate for the vertical pole that fits inside a 48 in diameter concrete base. Plates shall be integrally welded to the tubes with a telescopic welded joint or a full penetration butt weld with backup bar. Plates shall be hot dip galvanized per the requirements of the contract documents.

ANCHOR BOLTS: The anchor bolt design shall follow the NCHRP Report 494 Section 2.4 and NCHRP 469 Appendix A Specifications. Use anchor bolts that conform to the requirement of ASTM F 1554 grade 55 for hooked smooth bars or grade 105 for headed. Anchor bolts shall conform to AASHTO M 314 grade 55. Anchor bolts and all associated hardware shall be fully galvanized per ASTM A 153. . Each anchor bolt shall be supplied with two hex nuts and two flat washers. The strength of the nuts shall equal or exceed the proof load of the bolts. For anchor bolt design, pole forces shall be positioned in such a manner to maximize the force on any individual anchor bolt regardless of the actual anchor bolt orientation with the pole. There shall be two steel templates (one can be used for the headed part of the anchor bolt when designed in this manner) provided per pole. Templates shall be contained within a 26.5 inch diameter. All templates shall be fully galvanized (ASTM A 153). Anchor bolt lengths should be based on NCHRP Report 494 Section 2.4.5.5 using #8 bars for the foundation reinforcing steel. The headed anchor bolt assembly shall be contained within 26.5 inch diameter. Minimum edge distance for bolt holes shall follow Table J3.4 of AISC Steel Construction Manual. NCHRP Report 494:

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_494.pdf

NCHRP Report 469:

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_469-a.pdf

INSTALLATION POLE

POLE

Pole shall be installed in the correct orientation and plumb. Pole shall be grounded in accordance with the plans and specifications. Damaged galvanizing shall be repaired with a paint approved by the Engineer. The pole shall have a 3' L x3' W x4" D concrete pad install for each door. Concrete for the pad is incidental to the cabinets. The Contractor shall grade and re-seed all disturbed areas to the satisfaction of the Engineer. This item includes the furnishing and installing of Fastrac bait bag in each pole for rodent control.

Pole shall be installed in the correct orientation and plumb. The anchor bolt orientation may be critical to provide the correct orientation. Authorized personnel shall be consulted to ensure the proper alignment of the anchor bolts and also consulted on the positioning of the lowering device arm. Pole shall be grounded in accordance with the plans and specifications found in this document and the project drawings. Damaged galvanizing shall be repaired with a paint or "cold galvanization" approved by the Engineer.

MEASUREMENT AND BASIS OF PAYMENT

Pole with Lowering Device will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

WEB CAMERA ASSEMBLY

DESCRIPTION

Furnish and install Web Camera Assembly in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Web Camera Assembly shall be an Axis Network Dome Model P5655-E or approved equivalent. This item shall include the color camera, zoom lenses, environmental enclosure, pan/tilt unit, housing, dome, parapet mount, and all mounting hardware, power cable, connections, and incidentals necessary to complete the work.

Proposed alternates shall be commercially available. The Contractor shall identify an installed site where the proposed alternate Web Camera Assembly has been operating for a period of at least one year in a similar climate region.

INSTALLATION

Web Camera Assembly shall be installed on a wood pole or steel strain pole as specified in the plans and in accordance with the manufacturer's instructions. Installation shall comply with all warranty provisions and warranty contract maintenance services. Installation shall comply with all local, state, and federal building, electrical and construction codes, and Motorola R-56 requirements. All wiring access to the Web Camera Assembly shall be through watertight fittings. Wiring access points shall be on the side or underneath components; no exposed top access is permitted. The Web Camera Assembly shall be installed so that the assembly is located on the side of the pole closest to the roadway when the camera is in its fixed position at the top of the pole. The contractor is responsible to verified all functions of the web camera through a laptop interface.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Web Camera Assembly will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

UNINTERRUPTIBLE POWER SUPPLY (RACK MOUNTED UPS)

DESCRIPTION

Furnish and install Uninterruptible Power Supply in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Uninterruptible Power Supply shall be provided emergency power to the load when the input power sources fails. The Uninterruptible Power Supply shall be APC UPS 1500VA USB RM 2U (networkable card AP9630) or approved equal. The Uninterruptible Power Supply shall be networkable and have the following technical specifications:

Output Power Capacity: 980 Watts/ 1440 VA
Nominal Output/Input voltage: 120 Volts
Efficiency at Full Load: 95%
Waveform Type: Sine Wave
Output/Input Connections: (6) NEMA 5-15R
Battery Type: Maintenance-free sealed Lead-Acid Battery with suspended electrolyte:leakproof

Interface Ports: DB-9 Rs 232, USB
Surge Energy Rating: 459 Joules
Filtering: Meets UL 1449
Mounting: shall be able to mount in 19" rack
Operating Environment: 0-40 degrees Celsius
Regulatory Approvals: CSA, FCC Part 15 Class A, UL 1778
Warranty: At least 3 year for repair or replace

Network card shall have the following:

Protocols: HTTP, HTTPS, IPv4, SMTP, SNMP v1, SNMP v3, SSH V1, SSH V2, SSL, TCP/IP, Telnet
Network Interface Connections: RJ-45 10/100 Base-T
Regulatory Approvals: AS/NZS 3548 (C-Tick) Class A, EN 55022 Class A, En 55024, FCC Part 15 Class A, GOST, ICES-003, VCCI Class A
Warranty: At least 3 year for repair or replace

INSTALLATION

Uninterruptible Power Supply shall be installed in 334/336 Cabinet as specified in the plans sheets. It shall be securely mounted the 19” frame which is included in supplied 334/336 cabinet. All cables, rack Mounting Brackets, Rack Mounting support rails shall be incidental to the item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Uninterruptible Power Supply will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

COMMUNICATIONS CABLE

DESCRIPTION

Furnish and install Communications Cable in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Communications cable shall be General Cable GenSpeed 5000 CAT 5e Outside Plant Cable 8 wire PN: 5136100 or approved equal. The cable shall meet or exceed the following specifications:

Performance:

- ANSI/TIA/EIA 568B (Category 5e)
- MIL-C-24640A Water Penetration
- Propagation Delay: 583 ns @ 100 MHz
- Return Loss @ 100 MHz: 20.1 DB
- Frequency Range: 1-350 MHz

Physical characteristics:

- Nominal Outside Diameter: 0.230 in
- Insulation Type: Polyolefin
- Maximum Pulling Tension: 25 lbs
- Maximum DC Resistance: 9.38 Ohms/100m
- Mutual Capacitance @ 1kHz: 17 pF/100m
- Operating Temperature: -45° C to 80° C

All connectors, terminators, fittings, etc. shall be incidental to the cost of installing the Communications Cable and no separate payment will be made.

INSTALLATION

The Contractor shall install all cable and wire splice-free from the controller/service location to each cabinet, VMS sign, or CCTV camera the cable or wire is feeding. The

Contractor shall not use excessive force when pulling wire through duct. The Contractor shall replace all wire damaged during installation. The Contractor shall submit to material testing at the discretion of the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Communications Cable will be measured for payment per unit linear foot. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

CONDUIT

DESCRIPTION

Furnish and install Conduit in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Conduit shall be rigid steel, schedule 80 PVC, or flexible, non-metallic conduit as specified. This item includes fittings, connectors, clamps, caps and other materials necessary for proper installation. The Contractor shall submit to material testing at the discretion of the Engineer.

INSTALLATION

All conduit installed above ground or below ground under pavement shall be rigid steel. All conduits installed below ground, not under pavement shall be PVC. Flexible, non-metallic conduit shall be used as required and shall be incidental to the project. Unused conduits shall be capped on both ends. Conduit containing wire or cable shall be sealed with a piece of steel wool and capped off with duct seal putty. All conduits shall be accessible inside junction boxes. All conduits shall have bushings included. If rigid steel conduit, the bushings shall be bonded together with other similar types of conduits.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Rigid Steel and PVC Conduit will be measured for payment per unit linear foot. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section. A direct measurement will not be made for flexible, non-metallic conduit. All flexible, non-metallic conduits shall be incidental to the project.

ELECTRICAL SERVICE

DESCRIPTION

Furnish and install Electrical Service in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Contractor shall coordinate with the local power company to determine the exact materials for the service. This includes but is not limited to conduit, meter base, stainless steel disconnect, fused cutout, ground rod, wire, 35 foot wood pole, 2 anchors, connectors, fittings and all associated hardware required to construct the service.

The Contractor shall coordinate with the local power company (coordinate with TRIMARC representative) for the exact location of the service. This item also includes all electrical inspection and other fees required to provide electrical service.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Electrical Service will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

MODEL 334 AND 336 ENCLOSURES

DESCRIPTION

Furnish and install Enclosure in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The two types of enclosures are Model 336 (36" H x 24" W x 22" D) and Model 334 (66" H x 24" W x 30" D). All enclosures shall be NEMA 3R rated/UL Listed. All components in the cabinet shall be designed according to the NEC 2017/UL Listed. The enclosures shall include: all mounting accessories, access doors (minimum of two doors), ventilation, locking system, handles, door stops, rack assembly, light(s), shelves, drawer, and all required peripherals per the requirements of the contract documents and per the equipment submitted by the Contractor. **The contractor shall provide a cabinet, wiring, and all components that are approved as an assembly. This approved assembly shall be incidental to this item. Verification that the cabinet, wiring, and all components are an approved assembly shall be submitted to Central Office Traffic Operations. This shall be stamped by an electrical engineer that it is compliance with the NEC 2017 and UL508A.**

This item includes all excavation and any special equipment required to install the enclosure on a pole for a Model 336 enclosure or construct the concrete base for a Model 334 enclosure.

The Contractor shall provide a terminal facility harness by means of mating "MS" type connectors for interconnections of the field equipment specified. All cabinets of the same type shall be identical in size, shape and quality. In addition, the cabinets shall be equipped internally as specified herein and as required to suit the specific equipment specified on the plans.

Cabinets shall be of welded construction, using 0.125" minimum thickness 5052H32 or equivalent sheet aluminum. The equipment design shall utilize the latest available techniques,

minimum number of different parts, subassemblies, circuits, cards and/or modules to maximize standardization and commonality.

Cabinets shall be provided with fully wired back and side panels with all necessary terminal boards, wiring harnesses, connectors and attachment hardware. All equipment shall be shelf or 19" rack mounted. Terminals and panel facilities shall be installed on the lower portion of the cabinet walls below all shelves.

Each field cabinet shall, at a minimum, be supplied with the following:

- Fan and Thermostat
- Left Side Power Distribution Panel
- Air Filter
- Adjustable Shelves (1-4 as needed for equipment submitted by the Contractor)
- Back Panel
- Right Side Panel
- Locking System
- Ground Bus (2)
- Terminal Blocks
- Duplex power outlet (weather resist)
- Surge Protector (See spec in surge section)
- Drawer that slides out for supporting a laptop computer
- All necessary installation and mounting hardware

All external screws, nuts and locking washers shall be stainless steel; no self-tapping screws are permitted unless specifically approved by the Engineer. All screws, nuts and locking washers used internally shall be manufactured from corrosion resistant materials.

All parts of the cabinet shall be cleaned, smoothed and free from flaws, cracks, dents and other imperfections. The cabinet shall be rigidly constructed to provide vibration free operation of the field equipment when installed. The cabinets shall be dust and rain tight and capable of maintaining a dry internal condition when subject to rain and wind gusts.

All components shall be made of corrosion resistant materials such as plastic, stainless steel, aluminum or brass; or shall be treated with corrosion resistance such as cadmium plating or galvanizing. All materials shall be resistant to fungus growth and moisture deterioration.

Individual cabinet components shall be pre-assembled upon installation in the cabinet such that the components can be easily replaced in the field. Modules of unlike function shall be mechanically keyed to prevent insertion into the wrong socket or connector.

Panels shall be designed to mount in the cabinet on mounting studs. It shall not be necessary to remove the panel to replace any panel-mounted equipment. The panels shall be capable of supporting specified equipment mounted on the panel. A lower input termination panel shall be provided to terminate all input field wires.

Electronic components shall meet the requirements contained herein and shall, at a minimum, comply with EIA Specifications. No component shall be of such design, fabrication, nomenclature or other identification as to preclude the purchase of said component from a wholesale electronics distributor or from the component manufacturer.

Components shall be down-rated by 50 percent with regard to ambient temperature, applied voltage, and power dissipation. All circuits shall be designed for reliability and maximum performance.

The design life of all components, under continuous operating conditions in their circuit application, shall be a minimum of ten years.

Each component shall meet all of its specified performance requirements when the input power is AC, 60 Hz, single phase, 120 volts +/- 20 volts. The equipment shall be designed such that the failure of a particular piece of equipment will not cause the failure of any other.

The cabinets shall be furnished with a power distribution panel mounted on the lower left hand inside wall when facing the front of the cabinet. This panel shall include a 115 VAC, convenience, dual outlet with integral ground fault interrupt protected by a circuit breaker. The left panel shall have:

- Circuit Breaker(s)
- Radio Interference Suppressor
- Power Cable Input and Junction Terminals

Circuit breakers shall be approved and listed by UL. Each cabinet shall have, at a minimum, a circuit breaker to protect the lamp, vent fan, and dual outlet. In addition, a properly rated equipment circuit breaker(s) shall be provided for the equipment shown on the plans. At each cabinet that houses VMS control equipment, a 220 VAC circuit breaker, sized to suit the cables that provide power to the VMS pixels shall be furnished and installed. Breakers shall have a minimum interrupt capacity of 50 amperes.

Each cabinet shall be equipped with a radio interference suppressor installed at the circuit breaker. The suppressor shall provide a minimum attenuation of 50 dB over a frequency range of 200 kHz to 75 MHz. The suppressor shall be hermetically sealed in a case filled with a suitable insulation compound.

The suppressor terminals shall be nickel-plated, with brass studs of sufficient external length to provide space for connection of two appropriately sized conductors and shall be mounted such that the terminals cannot be turned in the case. The suppressors shall be designed for operation at the proper current ampere rating as determined by the Contractor per the equipment specified on the plans and shall be approved by UL and EIA.

Power distribution blocks suitable for use as a power feed and junction points shall be furnished and installed for two and three wire circuits. The line side of each circuit shall be capable of handling the specified number of and size of all wires.

Each cabinet shall include a fully wired equipment panel mounted on the lower rear inside of the wall of the cabinet. The back panel shall be utilized to distribute and properly interconnect all cabinet wiring related to the specific equipment. Each piece of equipment specified shall have its cable harness properly connected at terminal boards on the back

panel. All functions available at the equipment connector shall be carried in the connector cable harness to a terminal board point on the back panel.

Wiring shall be provided for the equipment specified. All cabinet wiring, where connected to terminal strips, switches, radio interference suppressor, etc., shall be identified by the use of insulated pre-printed sleeving (wire markers) slipped over the wire before attachment of the lug or terminating the connection. The wire markers shall have a text label with sufficient detail so that a translating sheet is not required.

All wires shall be cut to the proper length before assembly. No wires shall be doubled back to take up slack. Wires shall be neatly secured with nylon lacing or cable ties. Cables shall be secured with nylon cable clamps.

The grounded side of the electric service shall be carried throughout the cabinet to the ground bus without a break.

All electrical connections in the cabinet shall have sufficient clearance between each terminal and the cabinet to prevent a leakage path or physical contact under stress. Where these distances cannot be maintained, barriers must be provided. All equipment grounds shall run directly and independently to the ground bus. The lay of the interconnect cable between the components must be such that when the door is closed, it does not press against the cables or force the cables against the various components inside the cabinet. Sufficient length of cable harnesses shall be provided to easily reach the electronic equipment placed anywhere on the shelves.

All wiring containing line voltage AC shall be routed and bundled separately and/or shielded from all low voltage (i.e. control) circuits. All conductors and live terminals or parts, which could be hazardous to maintenance personnel, shall be covered with suitable insulating materials.

All conductors used in the cabinet wiring shall be 22 AWG or larger with a minimum of 19 strands. The insulation shall have a minimum thickness of 10 MILS. All wiring containing line voltage shall be 14 AWG or larger.

The AC+, AC-, and equipment ground wiring shall be electrically isolated from the other by an insulation resistance of at least 10 Megohms when measured at 250 VAC. Return and equipment grounding wiring shall be color-coded white and green respectively.

Terminal blocks located on the panels shall be accessible such that it shall not be necessary to remove the electronic equipment from the cabinet to make a connection or perform an inspection.

Terminal blocks shall be two-position, multiple-pole, and barrier type. Shorting bars, along with integral marking strip, shall be provided. Terminal blocks shall be arranged such that they do not impede the entrance, training, or connection of incoming field conductors. All terminals shall be identified by legends permanently attached to the terminal blocks. Not more than three conductors shall be brought to any one terminal screw. No electrically live

parts shall extend beyond the protection afforded by the barriers. All terminal blocks shall be located below the shelves.

AC terminal blocks shall be Underwriter's Laboratory approved for 600 volts AC minimum and shall be suitable for outdoor use. Terminals used for field connections or interwiring connections shall secure conductors by means of a nickel or cadmium plated brass binder head screw.

All connections to and from the electronic equipment shall terminate at an interwiring block. These blocks shall act as intermediate connection points for all electronic equipment inputs and outputs.

A varistor shall be installed across the thermostat used to control the fan to act as a surge and transient noise suppressor. The varistor shall be GE VI5OLAIOA, Stetron 250NRO7-1, Siemens SIOK150, or approved equal.

MOUNTING

Model 336 cabinets shall be pole mounted or mounted to an existing concrete wall as specified. Model 334 cabinets shall be mounted on a poured concrete base or on existing concrete surfaces as specified. All holes drilled into existing concrete surfaces shall penetrate the concrete no more than 4 inches unless otherwise approved by the Engineer. Bolts inserted into any concrete surface shall be properly secured and epoxied, per manufacturer's recommendations. Prefabricated fiberglass bases used in lieu of poured concrete bases must be approved by the Engineer. Cabinet installation shall conform to the details shown. All cabinets shall be furnished with stainless steel mounting plates, nuts, bolts, washers and all other necessary hardware to mount the cabinet as shown or described.

DOORS

All cabinets shall be provided with doors in the front and back. Doors shall have secure gaskets to prevent the entrance of dust and moisture. Doors shall be sized to encompass the full area of the cabinet opening. Doors shall be provided with two stop positions to hold the door open at 90 degrees and 135 degrees. The stops shall hold the door securely open until released manually. The front door shall be hinged on the right-hand side by means of three butt hinges with 1/4" minimum stainless steel hinge pins.

VENTILATION

Cabinets shall be furnished with louvers properly designed to provide natural ventilation to the interior. The louver area shall be of sufficient size to permit the free flow of air corresponding to the rated capacity of the associated cabinet fan. A pleated media fiber filter shall be provided and shall cover all louvers.

Cabinets shall be furnished with an electric, thermostatically-controlled ventilation fan or fans mounted in the cabinet. The fan(s) shall have a rated capacity of at least 200 cubic feet per minute. The fan and cabinet ventilation louvers shall be located with respect to each other so as to direct the bulk of the air flow throughout the entire cabinet and, in particular, over the field equipment units. The thermostat shall be adjustable to turn on between 90 degrees and 120 degrees Fahrenheit.

LOCKING SYSTEM

Each door shall be furnished with a 3-point positive locking system. The lock for the door shall be a self-locking, heavy-duty, five-pin tumbler cylinder rim type. The handles shall be made of stainless steel and shall be provided with a padlock feature. Locks shall be keyed identically to Corbin #2. Two keys shall be provided for each cabinet.

LIGHT

A fluorescent light shall be provided in front for all cabinets and also in the back for Model 334 cabinets. A panel mounted 40-Watt weatherproof incandescent lamp with an on-off switch shall be positioned to provide light to the face of the equipment installed in the cabinet.

SHELF/DRAWER/RACK

A removable 19" EIA rack shall be provided for mounting sub-assemblies in Model 334 cabinet. Adjustable shelves shall be provided to hold the equipment. Vertical shelf adjustment intervals shall be 2" maximum. The shelves shall be positioned from the top of the cabinet in accordance with the actual equipment configuration of the particular cabinet. All devices/sub-assemblies shall be mounted on the rack if possible. Otherwise, they shall be placed on the shelves.

A sliding drawer shall be provided in each cabinet. The drawer shall be installed below the shelves in a suitable position for placement of a laptop computer. The drawer shall have a nominal depth of 1" and a hinged lid.

LABELING

The letters "KYTC ITS" shall be permanently displayed along the top of each door on the outside of each cabinet. The letters shall be a minimum of 1" tall. The letters shall be die-cut or engraved into the metal before galvanizing and shall be readable after galvanizing. All excess galvanizing shall be brushed off. The location and description of the label must be shown on the shop plan submittal for the cabinets. Stenciling with paint or other markers is not permitted. If required information is placed on a steel plate, the plate must match the surface profile of the cabinet. The plate must then be welded completely around the plate before galvanizing.

SPECIAL NOTE FOR THE DISCONNECT/Cabinet:

Only connect one side of the 120 volt in the disconnect at the camera only location. The other side of the 120 Volt shall still be install in meter, but not feed down to the disconnect.

Furnish a shock hazard warning sticker on

Disconnect with the following information:

Voltage (120 volt)

Glove class (0)

Limited approach boundary (42 in)

Restricted approach boundary (contact)
See nfpa 70e for additional ppe required

QUALITY ASSURANCE PROVISIONS

The following water spray test shall be performed on each empty cabinet: Water shall be sprayed from a point directly overhead at an angle of 60° from the vertical axis of the cabinet. This procedure shall be repeated for each of eight equally spaced positions around the cabinet for a period of not less than five minutes in each position. The water shall be sprayed using a domestic type-sprinkling nozzle at a rate of not less than one gallon per minute per square foot of the cabinet's surface area. The cabinet shall then be inspected for leakage. Evidence of water leakage shall be cause for rejection.

A manufacturer's certification of successful completion of the water spray test and that the cabinet conforms to these specifications shall be the basis of acceptance of the cabinet. Separate submission of test cabinets shall not be required.

MAINTENANCE

All components and assemblies shall be clearly identified with name, model number, serial number and any other pertinent information required to facilitate equipment maintenance.

All equipment shall be designed for ease of installation and maintenance. Location, accessibility, serviceability and features that will lead to simplified maintenance shall be a prime consideration. All component parts shall be readily accessible for inspection and maintenance. The only tools and test instruments required by maintenance personnel shall be simple hand tools and basic meters.

After the wiring is complete, all conduit penetrations into the cabinets shall be sealed in such a manner as to prevent rodents and insects from entering the cabinet. The conduit sealants and insect traps used shall be approved by the Engineer prior to installation.

DOCUMENTATION

Each field cabinet shall be supplied with three copies of the final cabinet wiring diagram. One copy shall be placed in a clear plastic envelope and left in the cabinet drawer. Two sets of Mylar plans shall be delivered to the Engineer.

INSTALLATION

Model 334/336 enclosure shall be installed in accordance with the plans and specifications. The Contractor shall stake all proposed enclosure locations and shall obtain approval of staked locations before excavation. A representative from the KYTC Division of Traffic Operations, Design Services Branch or the Traffic Engineer, District 5, TRIMARC representatives (for Jefferson/Oldham only) will approve locations for all field devices. The Contractor shall have all utilities marked in the field prior to requesting approval. The Contractor shall allow two weeks to schedule this location approval with KYTC. KYTC approval of field device locations does not relieve the contractor from his responsibility to repair any damage incurred during construction. Enclosures located behind guardrail shall have minimum 5 foot spacing from edge of pole to face of guardrail. Otherwise, enclosures shall be located as specified on the plan sheets or a

minimum of 30' from all driving lanes. All materials shall be installed in a neat and professional manner. All pole mount cabinets shall be mounted approximately 42" from the ground. All 336 pole mounted cabinets shall a 3' L x3' W x4" D concrete pad install for each door. Concrete for the pad is incidental to the cabinets. The Contractor shall grade and re-seed all disturbed areas to the satisfaction of the Engineer. This item includes the furnishing and installing of Fastrac bait bag in each cabinet for rodent control.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Model 334/336 Enclosure will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

JUNCTION BOX

DESCRIPTION

Furnish and install Junction Box in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Junction box shall meet or exceed ANSI/SCTE 77-2002, tier 15. Junction box covers shall be marked "ITS." Covers shall be attached with a minimum of two 3/8" stainless steel hex bolts.

INSTALLATION

Where required, junction box shall be oriented such that the dimensions comply with the NEC. Junction boxes used as pull boxes along a conduit run shall be spaced at a maximum of 250'. Junction boxes shall not be placed in ditch lines or in areas where standing water may accumulate. Junction box covers shall be flush with the finished surface. The Contractor shall restore all disturbed areas to the satisfaction of the Engineer. This item includes the furnishing and installing of Fastrac bait bag in each junction box for rodent control.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Junction Box will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

SURGE DEVICES

DESCRIPTION

Furnish and install video surge device, data surge device, power surge device, and RF surge device in accordance with the plans, specifications and Standard Drawings.

MATERIALS

GENERAL

Each surge device shall be compatible with the equipment it is protecting. Each surge device shall include cables, connectors, power supplies, and all incidentals required for operation.

VIDEO SIGNAL COAX CONDUCTOR SURGE DEVICE

Video Signal Coax Conductor Surge Device shall be EDCO CX12-BNC-Y or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 12 volts when subjected to a 3 kA, 8x20 microsecond wave
- Have a peak surge current of 20kA with 8x20 microsecond wave
- Have BNC connectors
- Pass signals from DC to 80 MHz with less than 3 dB insertion losses
- Be UL 497B listed

DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device shall be for RS 422 and RS 485 Communication conductors shall be EDCO PC642C-015 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 12 volts when subjected to a 1 kA 8x20 microsecond wave
- Have a peak surge current per wire of 10 kA with 8x20 microsecond wave
- Have a maximum inline resistance of 6 ohms
- Have a maximum attenuation of -3db at 50MHz

RS 232 COMMUNICATION DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device for RS 232 Communication conductors shall be EDCO PC642C-015 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 30 volts when subjected to a 1 kA 8x20 microsecond wave
- Have a peak surge current per wire of 3kA with 8x20 microsecond wave
- Have a maximum inline resistance of 6 ohms
- Have a maximum attenuation of -3 db at 0.5 MHz

100 BASE-T AND 10 BASE-T COMMUNICATION DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device for 100BaseT and 10BaseT Communication conductors shall be EDCO LCDP-30 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 30 volts when subjected to a 0.5 kA 8x20 microsecond wave
- Have a peak surge current per wire shall be 1kA with 8x20 microsecond wave
- Have a maximum attenuation shall be -3db at 100 MHz
- Have a N.E.X.T. worst pair of better than -40 db at 100 MHz
- Have a maximum attenuation of -3db at 0.5 MHz

POWER CONDUCTOR SURGE DEVICE

Conductor Surge Device for power carrying conductors shall be UL Listed Commercial rated. This surge protector shall meet or exceed the following specifications:

- Nominal Line Voltage 120 V
- Peak Current 20,000 Amps
- Clamp Voltage 280 volt typical @ 20kA
- Response time <5ns
- Continuous Service Current 10 Amps max. 120 VAC, 60 Hz

RF ANTENNA COAX CONDUCTOR SURGE DEVICE

RF Antenna Coax Conductor Surge Devices shall meet all manufacturer recommendations for the particular use of the radio antenna coax conductors.

INSTALLATION

The Contractor shall supply surge devices in model 334/336 enclosures, VMS signs, on poles, and on sign trusses as specified on layout sheets. Surge devices shall be located in said equipment such that they are easily accessible for maintenance activities.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Surge Device will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

TRENCHING AND BACKFILLING

DESCRIPTION

Trenching and Backfilling shall be performed in accordance with the plans, specifications and Standard Drawings.

MATERIALS

All trenches shall be marked with underground utility warning tape.

INSTALLATION

The Contractor shall be responsible for locating all underground utilities prior to excavation. The Contractor shall excavate the trench, place warning tape above the conduit, backfill the trench and restore all disturbed areas to the satisfaction of the Engineer. Backfill material shall be placed and compacted in lifts of 9 inches or less.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Trenching and Backfilling will be measured for payment per unit linear foot. The Department will make payment for complete, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

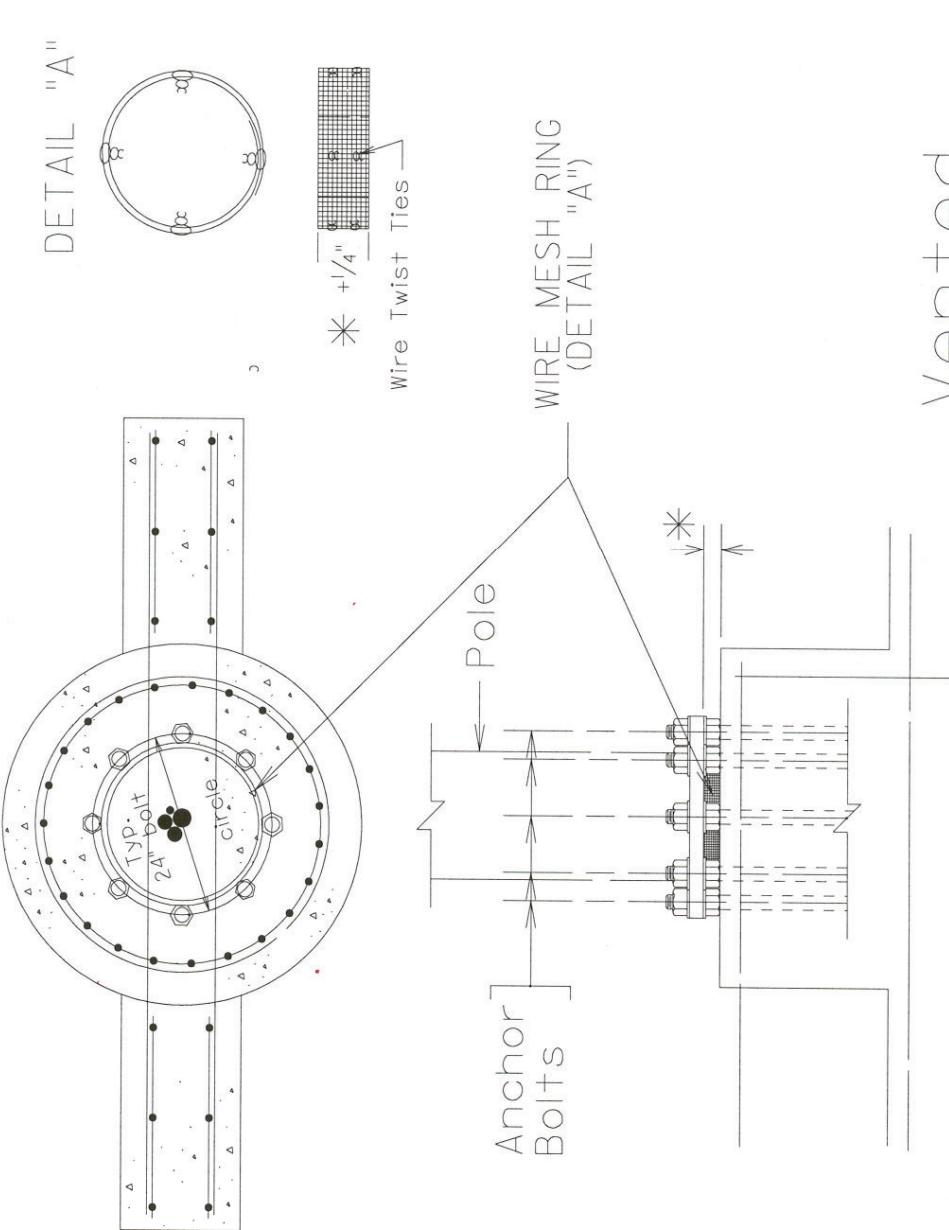
Vented Rodent Barrier Detail

Vented rodent barrier – Prior to erecting tubular structures and poles on concrete foundations formed with conduit sweeps, a double lapped ring barrier of standard commercial grade 27 gauge hot dipped galvanized 1/8 inch woven wire mesh shall be placed inside the foundations bolt circle. The height of the wire mesh ring barrier shall be from the concrete foundation to the top of the leveling nuts and washers plus 1/4 inch. The Contractor shall take all necessary steps to assure the wire mesh ring will remain in place to eliminate any access through the base plate opening of the tubular structure or pole when erected and plumbed. The Contractor shall not weld or drill to the base plate of the pole. Optional vented rodent barrier designs and materials may be used when approved by the Engineer and at no additional cost to the Department.

Vented Rodent Barrier

Notes:

- 1) Wire Mesh Ring
1/8" Woven Hardware Cloth
24 Gauge (Commercial Grade)
Hot dipped galvanized
Doubled Lapped
Length & Height determined by
field measurements
Secured with Wire Twist Ties
- 2) Wire mesh ring shall be placed inside the
bolt circle before pole is erected and plumbed.
- 3) Wire mesh ring shall be compressed between
pole base plate, concrete foundation and
bolt circle. Take all necessary steps to assure
the wire mesh ring will remain in place and
any access through the pole base plate
opening is eliminated.
- 4) Welding or drilling is not permitted on base
plate of pole.



SCALE: NONE

...\\Spec\\CADD\\special\\RATBAR~1.DGN 04/08/2004 09:52:45 AM

Vented
Rodent Barrier

GLOSSARY

The following acronyms, abbreviations, and definitions shall govern this specification:

- AASHTO – American Association of State Highway and Transportation Officials
- ABS - Acrylonitrile Butadiene Styrene
- AC – Alternating Current
- AlInGaP – Aluminum Indium Gallium Phosphide (refers to the chemical composition of an LED).
- ANSI – American National Standards Institute
- ASCII – American Standard Code for Information Interchange
- ASN.1 – Abstract Syntax Notation 1
- ASTM – American Society for Testing and Materials
- AWG - American Wire Gauge
- AWS – American Welding Society
- BCD – Binary Coded Decimal
- B frames – Bi-directional Predicted Frames
- BGP – Border Gateway Protocol
- Bin – Group of LEDs categorized and sorted by intensity or color. Each bin has upper and lower intensity or color specifications and contains only LEDs that are measured to be within that range. LED manufacturers sort LEDs into bins to ensure consistent intensity and color properties.
- BOOTP – Bootstrap Protocol
- CALTRANS – California Department of Transportation
- CAN – Control Area Network
- CCTV – Closed Circuit Television
- CDPD – Cellular Digital Packet Data
- CLI – Command Line Interface
- CNC – Computer Network Control
- Control Computer – A desktop or laptop computer used in conjunction with VMS control software to communicate with VMS sign controllers. The control computer can instruct a VMS sign controller to program and control the VMS, monitor VMS status, and run VMS diagnostic tests. A control computer can be used for remote control of one or more VMS, as well as for local control of a single VMS
- DC – Direct Current
- DHCP – Dynamic Host Configuration Protocol
- DMS – Dynamic Message Sign. An industry term that applies to various types of changeable sign technology
- DVI-D – Digital Visual Interface - Digital
- EIA – Electronic Industries Association
- ELFEXT – Equal Level Far End Crosstalk
- EPA – Effective Projected Area
- FCC – Federal Communications Commission
- FDA – Food and Drug Administration

- Font – The style and shape of alphanumeric characters that are displayed on the VMS matrix to create messages viewed by motorists and travelers
- Frame – see *Page*
- FSORS – Full, Standardized Object Range Support – an NTCIP term. See the NTCIP standards for additional information.
- GUI – Graphical User Interface
- HDPE – High Density Polyethylene
- HHR – Half Horizontal Resolution
- HTTP – Hypertext Transfer Protocol
- IEEE – Institute of Electrical and Electronic Engineers
- I frames – Intra-frames
- IC – Integrated Circuit
- IGMP
- InGaAlP – Indium Gallium Aluminum Phosphide
- I/O – Input/Output
- IP – Internet Protocol – in transceivers
- IRE – Institute of Radio Engineers
- ISO – International Organization for Standardization
- ITE – Institute of Transportation Engineers
- ITS – Intelligent Transportation System
- Kbps – Kilobits per second
- KYTC – Kentucky Transportation Cabinet
- LAN – Local Area Network
- LCD – Liquid Crystal Display
- LED – Light Emitting Diode
- MDPE – Medium Density Polyethylene
- Message – Information displayed on the VMS for the purpose of visually communicating with motorists. A VMS message can consist of one or more pages of data that are displayed consecutively
- MIB – Management Information Base
- Module – Assembly consisting of a two-dimensional LED pixel array, pixel drive circuitry, and mounting hardware. Modules are installed in the display adjacent to each other to form the display matrix.
- MTBF – Mean Time Between Failures
- MPEG – Moving Picture Experts Group
- NEC – National Electrical Code
- NEMA – National Electrical Manufacturers Association
- NESC – National Electrical Safety Code
- NEXT – Near End Crosstalk
- NCHRP – National Cooperative Highway Research Program
- NRZ – Non Return to Zero
- NRZI – Non Return to Zero Inverted
- NTCIP – National Transportation Communications for ITS Protocol

- NTSC - National Transmission Standards Committee
- Object – An NTCIP term referring to an element of data in an NTCIP-compatible device that can be manipulated to control or monitor the device.
- OER – Octet Encoding Rules
- OSHA – Occupational Safety and Health Administration
- OTDR – Optical Time Domain Reflectometer
- Page – An NTCIP term referring to the data that is displayed on the VMS display matrix at a given moment in time. Also referred to as a frame.
- P frames – Forward Predicted Frames
- PCB – Printed Circuit Board
- Pixel – Picture element. The smallest changeable (programmable) portion of a VMS display matrix
- PMPP – Point to Multi-Point Protocol
- PPP – Point to Point Protocol
- PSELFEXT – Power Sum Equal Level Far End Cross Talk
- PSNEXT – Power Sum Near End Crosstalk
- PTZ – Pan/Tilt/Zoom
- PVC – Polyvinyl Chloride
- PWM – Pulse Width Modulation
- QSIF – Quarter Source Input Format
- RAM – Random Access Memory
- RARP – Reverse Address Resolution Protocol
- RGB – Red-Green-Blue
- Schedule – A set of data that determines the time and date when a VMS sign controller will cause a stored message to be displayed on the VMS
- SDRAM – Synchronous Dynamic Random Access Memory
- SIF – Source Input Format
- SNMP – Simple Network Management Protocol
- STMP – Simple Transportation Management Framework
- Stroke – Refers to the vertical and horizontal width of the lines and curves of a display font. Single stroke denotes character segments that are one pixel wide. Double stroke denotes character segments that are two pixels wide.
- TFTP – Trivial File Transfer Protocol
- TIA - Telecommunications Industry Association
- TMA – Truck Mounted Attenuator
- TOC – Traffic Operations Center
- UL – Underwriters Laboratories
- UPS – Uninterruptible Power Supply
- USB – Universal Serial Bus
- VLAN – Virtual Local Area Network
- VMS – Variable Message Sign. A type of VMS that is fully programmable such that the content of its messages are fully changeable remotely and electronically.
- VMS Controller – A stand-alone computer that is located at a VMS site, which

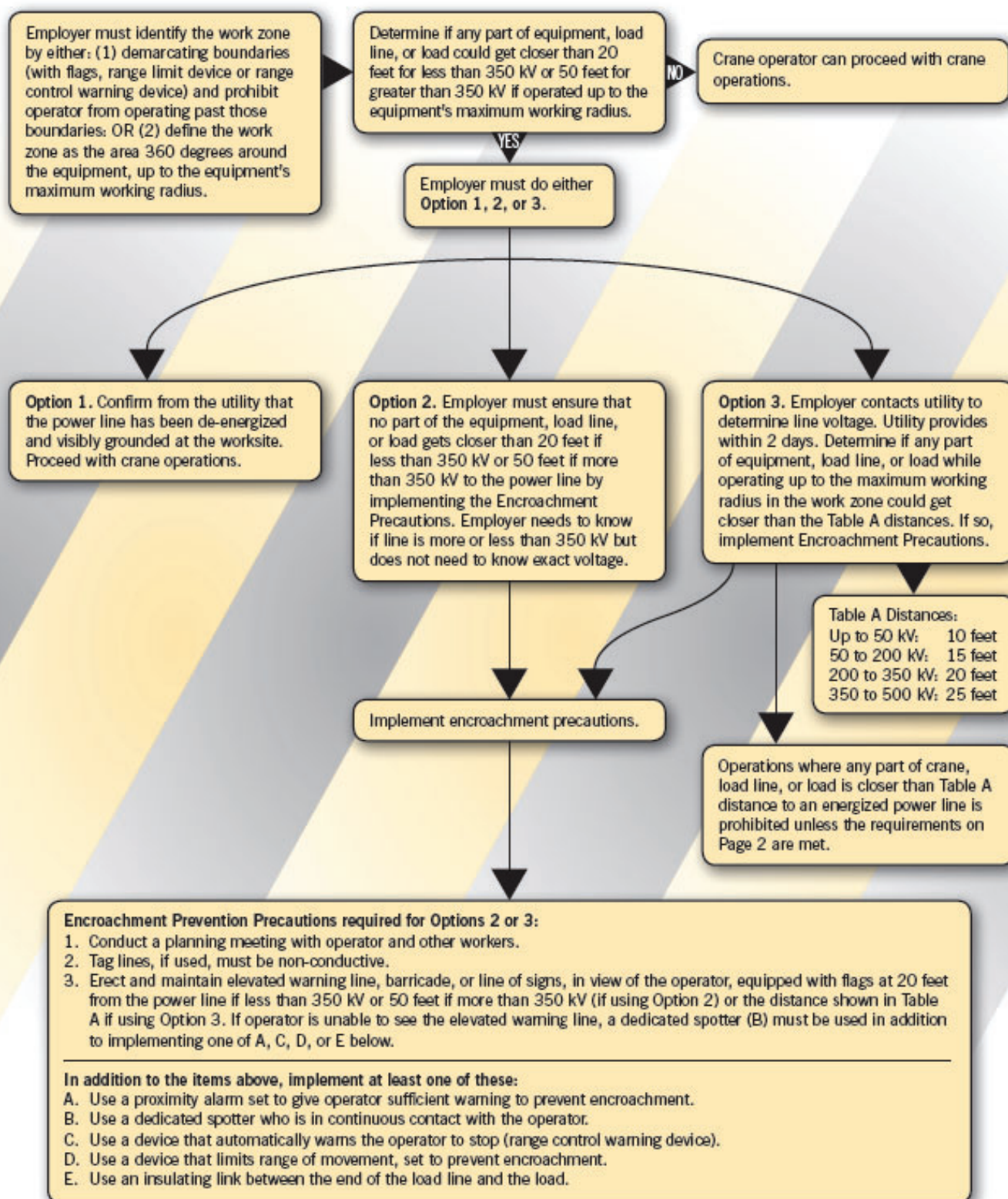
controls a single VMS. A sign controller receives commands from and sends information to a control computer

- WAN – Wide Area Network
- WYSIWYG – What You See Is What You Get. More specifically, what you see on the VMS control computer monitor is a scaled representation of how a message will appear when it is being displayed on the VMS. Similarly, after a pixel diagnostic test routine has been run, what you see on the control computer monitor is a scaled representation of the functional status of each pixel in the VMS display matrix.

POWER LINE SAFETY

OSHA Cranes in Construction Standard Power Line Safety Section 1926.1408 and 1926.1409

This is a high level summary only. Refer to www.osha.gov for details.



POWER LINE SAFETY

Power Line Safety requirements for getting closer than the Table A distances

Table A Distances:

Up to 50 kV: 10 feet
50 to 200 kV: 15 feet
200 to 350 kV: 20 feet
350 to 500 kV: 25 feet

Operations where any part of crane, load line, or load is closer than Table A distance to an energized power line is prohibited unless the requirements on this page are met.

Crane operator employer shall determine that it is infeasible to work without breaching Table A distances.

Employer determines after consulting with utility that it is infeasible to de-energize and ground or relocate the power line.

Utility or registered professional engineer (PE) shall determine minimum clearance distance that shall be maintained to prevent electrical contact.

Planning meeting with employer and utility (or PE) shall be held to determine procedures that shall be followed.

If so equipped, the automatic reclosing features shall be made inoperative by the utility before work begins.

Crane operator is required to have utility install line hose or coverup except where unavailable for the voltage.

Documented procedures must be developed and kept on site. Equipment user, operator and others shall meet with utility to review procedures.

Utility and employers of employees involved in the work shall identify one person to direct implementation of procedures.

If procedures are not effective, crane operator shall stop work OR have utility de-energize lines.

Crane operator is also required to do these items.

- Dedicated spotter shall be used.
- Elevated warning line or barricade in view of operator equipped with flags shall be installed.
- Insulating link shall be installed between end of load line and load.
- Non-conductive rigging shall be used.
- If equipment has device that limits range of movement, it shall be used.
- Tag lines shall be non-conductive.
- Barricades set up 10 feet around crane to prevent personnel from entering the work area.
- Workers, other than operator, shall be prohibited from touching load line.
- Only essential personnel shall be allowed.
- Crane shall be grounded.

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 36 inches 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:

$$\% \text{ Deflection} = [(AASHTO \text{ Nominal Diameter} - D2) / AASHTO \text{ Nominal Diameter}] \times 100\%$$

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:

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

Special Note for Bridge Demolition, Renovation and Asbestos Abatement

If the project includes any bridge demolition or renovation, the successful bidder is required to notify Kentucky Division for Air Quality (KDAQ) via filing of form (DEP 7036) a minimum of 10 working days prior to commencement of any bridge demolition or renovation work.

Any available information regarding possible asbestos containing materials (ACM) on or within bridges to be affected by the project has been included in the bid documents. These are to be included with the Contractor's notification filed with the KDAQ. If not included in the bid documents, the Department will provide that information to the successful bidder for inclusion in the KDAQ notice as soon as possible. If there are no documents stating otherwise, the bidders should assume there are no asbestos containing materials that will in any way affect the work.



COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
transportation.ky.gov

Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

Asbestos Inspection Report

To: Donna Hardin

District: 5

Date: July 1, 2022

Conducted By: O'Dail Lawson

Report Prepared By: O'Dail Lawson

Project and Structure Identification

Project Number: Bullitt 05-0391.30

Structure ID: 015B00096N

Structure Location: KY-480 (Cedar Grove Road) over Buffalo Run

Sample Description: Any suspect materials collected were negative for asbestos.

Inspection Date: June 28, 2022

Results and Recommendations

The results of the samples collected were negative for the presence of asbestos above 1%.
No abatement is required at this time.

It is recommended that this report accompany the 10-Day Notice of Intent for Demolition ([Notification Form DEP 7036](#)) which is to be submitted to the Kentucky Division of Air Quality prior to abatement, demolition, or renovation of any building or structure in the Commonwealth.

MRS, Inc. Analytical Laboratory Division

(502) 495-1212
Fax: (502) 491-7111

BULK SAMPLE ASBESTOS ANALYSIS

Analysis N#	# 3207012	Address:	Bullitt County
Client Name:	K Y T C		Item # 05-391.30 015B00096N
Sampled By:	O'Dail Lawson		(KY 480 Over Buffalo Run)

[illegible]

Methodology : EPA Method 600/R-93-116

Date Analyzed : 1-Jul-22
Analyst : Winterford Mensah

Reviewed By: Winterson Mendez
Signature

The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government. Partial reproduction of any part of this report is strictly prohibited. Samples shall be retained for (30) days.

AIHA # 102459


AJHA #1 02459

MRS, Inc. Analytical Laboratory Division

332 West Broadway, .Suite # 902
Louisville, Kentucky 40202

Phone # : (502) 495-1212
E-Mail Address : CEOMRSInc@AOL.Com

Client:	KYTC	Project No:	# 3207012 B
Address:	200 Mero Street	Sample ID:	# B - 1
	Frankfort, KY	Sampled:	28-Jun-22
	40601	Received:	1-Jul-22
		Analyzed:	1-Jul-22
	Attention : O'Dail Lawson		

Bulk Sample Analysis	
Sampled By	: O'Dail Lawson
Facility/Location:	Bullitt County - Item 05 - 391.30 015B00096N
Field Description:	Trowel On Sealant
Laboratory Description:	
	Brown Material
Asbestos Materials:	
	Chrysotile = 1/400 = 0.25 % (< 1 %) Sample Is Negative
Non-Asbestos Fibrous Materials :	
	Cellulose 0.25 %
	Binders 99.50 %
Remarks:	The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.
Analyst:	Winterford Mensah
Reviewed By:	 Signature



Chain of Custody Record

Kentucky Transportation Cabinet

200 Mero Street, 5th Floor West

Frankfort, Kentucky 40622

(502) 564-7250 fax (502) 564-5655

[illegible]

ENVIRONMENTAL TRAINING CONCEPTS, INC
P.O Box 99603 Louisville, KY 40269
(502)640-2951

Certification Number: ETC-AIR-031522-00137

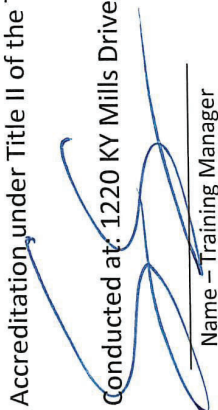
O'Dail Lawson


has on 03-15-2022, attended and successfully completed the requirements and passed the examination with a score of 70% of better on the entitled course.

ASBESTOS INSPECTOR REFRESHER

Training was in accordance with 40 CFR Part 763 (AHERA) approved by the Commonwealth of Kentucky, the Indiana Department of Environmental Management, Tennessee Department of Environment & Conservation and The Arkansas Department of Environmental Quality. The above student received requisite training for Asbestos Accreditation under Title II of the Toxic Substance Act (TSCA).

Conducted at: 1220 KY Mills Drive, Louisville, KY


Name - Training Manager


Expiration Date: 03-15-2023
Name - Instructor

**SPECIAL NOTE
FOR PROJECT COMPLETION DATE
AND
LIQUIDATED DAMAGES**

**Bullitt County
I-65 @ KY 480 Interchange Reconstruction
Item No. 5-391.30**

Specified fixed completion date for this contract is November 1, 2025. For each calendar day beyond a fixed completion date of November 1, 2025, the Department will assess liquidated damages per Section 108.09 of the current edition of the Standard Specifications for Road and Bridge Construction.

All liquidated damages will be applied cumulatively.
All other applicable portions of Section 108 apply.



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

<input type="checkbox"/>	Original	<input checked="" type="checkbox"/>	Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #		COUNTY		PROJECT # (STATE)	PROJECT # (FEDERAL)
5-391.30		Bullitt		12F0 FD52 015 7991603R	STP 5119 (016)
PROJECT DESCRIPTION					
Improvements to the I-65/KY 480 interchange including ramp improvements and turning lanes.					
<input type="checkbox"/> 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.					
<input checked="" type="checkbox"/> 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.					
<input type="checkbox"/> 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					
<input type="checkbox"/> 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		14	EXCEPTION (S) Parcel #		ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired					
Signed Deed		14			
Condemnation					
Signed ROE					
Notes/ Comments (Text is limited. Use additional sheet if necessary.)					
LPA RW Project Manager			Right of Way Supervisor		
Printed Name				Printed Name	
Signature				Signature	
Date				Tom Boykin <small>Digitally signed by Tom Boykin Date: 2022.10.06 09:21:11 -0400</small>	
Right of Way Director			FHWA		
Printed Name				Printed Name	
Signature				Signature	
Date		<small>Digitally signed by Kelly Divine Date: 2022.10.06 08:24:55 -05'00'</small>		<div style="color: red; text-align: center;"> No Signature Required as per FHWA-KYTC Current Stewardship Agreement </div>	

UTILITIES AND RAIL CERTIFICATION NOTE

Bullitt County
STP 5119 017 / FD52 015 79916 03U
Mile point: 0.800 TO 1.300
IMPROVE OPERATIONAL PERFORMANCE OF THE I-65/KY-480 INTERCHANGE
KYTC ITEM NUMBER: 05-391.30

PROJECT NOTES ON UTILITIES

The contractor should be aware that there is UTILITY WORK INCLUDED IN THIS ROAD CONSTRUCTION CONTRACT. The Contractor shall review the GENERAL UTILITY NOTES AND INSTRUCTIONS which may include KYTC Utility Bid Item Descriptions, utility owner supplied specifications, plans, list of utility owner preapproved subcontractors, and other instructions. 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.

For all projects over 2000 linear feet, which are defined as a "Large Project" in KRS 367.4903(18), the awarded contractor shall initially mark the first 2000 linear feet minimally of proposed excavation or construction boundaries of the project to be worked using the procedure set forth in KRS 367.4909(9)(k). This temporary field locating of the project excavation boundary shall take place prior to submitting an excavation location request to the underground utility protection Kentucky Contact Center. For large projects, the awarded contractor shall work with the impacted utilities to determine when additional white lining of the remainder of the project site will take place. This provision shall not alter or relieve the awarded contractor from complying with requirements of KRS 367.4905 to 367.4917 in their entirety.

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

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.

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.

UTILITIES AND RAIL CERTIFICATION NOTE

Bullitt County
STP 5119 017 / FD52 015 79916 03U
Mile point: 0.800 TO 1.300
IMPROVE OPERATIONAL PERFORMANCE OF THE I-65/KY-480 INTERCHANGE
KYTC ITEM NUMBER: 05-391.30

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

Bullitt County Schools - Communication

Charter Communications – Communication

City of Shepherdsville Sewer – Sewer

KCNA (KY Wired) - Communication

Louisville Gas & Electric - Natural Gas

Louisville Water Company – Water

Salt River Rural Electric - Electric

Windstream – Communication

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

**THE FOLLOWING FACILITY OWNERS ARE RELOCATING/ADJUSTING THEIR FACILITIES WITHIN THE PROJECT LIMITS
AND WILL BE COMPLETE PRIOR TO CONSTRUCTION**

Bullitt County Public Schools (BCPS) – Communication – The Company has aerial communications lines on SRE owned pole route better described below. The Company does not have buried facilities within the project limits.

Charter Communications (Insight/Spectrum/Time Warner) – Communication – The Company has aerial communications lines on SRE owned pole route better described below. The Company does not have buried facilities within the project limits.

KCNA (KY Wired) – Communication – The Company has aerial communications lines on SRE owned pole route better described below. The Company does not have buried facilities within the project limits.

Salt River Rural Electric (SRE) – Electric – The Company has an electric distribution pole route running north of, and parallel to KY 480 adjacent to disturbed limits from the beginning of the project, Dawson Drive, STA 367+21 routing eastward ~350 FT where the pole routes northeast, then routes outside the project limits. There is an electric distribution pole route running from the beginning of the project, northwest corner of KY 480 and Dawson Drive, STA 367+21 where 2 electric distributions crosses KY 480 routing in a southern direction ~250 FT where the pole route turns onto an east-west pole route, south of, and parallel to KY 480 adjacent to disturbed limits until the end of the project, Alpha Way, STA 71+01.26. An electric distribution crosses KY 480 from the east of Buffalo Run to the east of Love's entrance, then routes outside the project limits. The Company's work is complete with below exceptions noted.

UTILITIES AND RAIL CERTIFICATION NOTE

Bullitt County
STP 5119 017 / FD52 015 79916 03U
Mile point: 0.800 TO 1.300
IMPROVE OPERATIONAL PERFORMANCE OF THE I-65/KY-480 INTERCHANGE
KYTC ITEM NUMBER: 05-391.30

THE FOLLOWING FACILITY OWNERS HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE OWNER OR THEIR SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

Salt River Rural Electric – Electric – The Company has utility poles to be placed within the project limits. This work will be coordinated with the Road Contractor. The Company will coordinate with KYTC District Traffic Supervisor to verify current pole specifications are adequate if pole location differ from what is indicated on KYTC Traffic Signal and Roadway Lighting Plans. The Company will coordinate this work with KYTC District Traffic Supervisor prior to traffic signal & roadway lighting installation.

Louisville Gas & Electric (LG&E) - Natural Gas – The Company has a MP GM under KY 480 westbound travel lane from the beginning of the project, Dawson Drive, STA 368+21 to Love's Entrance, STA. 61+65. The gas main thence continues 10 FT north of, and parallel to KY 480 for the remainder of the project. The Company has an existing 2-IN MP GM connecting to the 4-IN main under KY 480 near STA. 370+50 and continues south along the east side of Sparrow Drive and leaves the project area. The Company also has an existing 2-IN MP steel GM connecting to the 6-IN main under KY 480 near STA. 145+75 (Ahead) and continues north and leaves the project area. Gas mains crossing KY 480 are located at Buffalo Run Rd and Alpha Way. The anticipated completion date for this work is 12/30/2022.

Windstream – Communication – The Company has aerial communications lines on SRE owned pole route better described above. The Company has buried facilities beginning south of KY 480, east of, and adjacent to Sparrow Drive, STA 373+30 179' RT, routing as follows: (I) 110 FT of (2) 4-IN HDPE ducts routing northeast under proposed Ramp B-2 (6' depth); (II) routes to a 4 FT x 4 FT manhole; (III) continues east with (2) 4-IN PVC (6 FT depth), STA 145+84 70' RT to STA 146+92; (IV) where the fiber enters a bored 12-IN encasement pipe under I-65, southwest quadrant of I-65 Interchange, STA 146+92 (6 FT depth) to the southeast quadrant of I-65 Interchange, STA 151+61 (4 FT depth); (V) exits the 12-IN encased pipe at STA 152+10 74' RT and continues with (2) 4-IN PVC (6 FT depth) routing southeast to a 4 FT x 4 FT manhole at STA 153+40 100' RT; (VI) continues with (2) 4-IN HDPE ducts routing eastward under proposed Ramp A-1 (6 FT depth), STA 153+40 to STA 154+52 82' RT; (VII) where the fiber enters a bored 12-IN encasement pipe under proposed Ramp A-2 and existing Ramp A, STA 154+52 82' RT to STA 61+28 100' RT (8 FT depth); then the fiber routes to aerial communication lines on SRE owned pole route better described above. The anticipated completion date for this work is 12/30/2022.

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

City of Shepherdsville Sewer – The City has an existing 10-IN sanitary sewer located the within the KY 480 corridor project limits. Refer to the City of Shepherdsville Sanitation Relocation Plans U1-U8.

Louisville Water Company – The Company has an existing 16-IN ductile iron water main located ~10-15 ft south of, and running parallel to, the right (south) edge of for the entire length of the project. Refer to the Louisville Water Company Relocation Plans U9-U21

RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

☒ **No Rail Involvement** ☐ **Rail Involved** ☐ **Rail Adjacent**

UTILITIES AND RAIL CERTIFICATION NOTE

Bullitt County
STP 5119 017 / FD52 015 79916 03U
Mile point: 0.800 TO 1.300
IMPROVE OPERATIONAL PERFORMANCE OF THE I-65/KY-480 INTERCHANGE
KYTC ITEM NUMBER: 05-391.30

AREA FACILITY OWNER CONTACT LIST

- | | |
|---|--|
| 1. AT&T KY
1340 E. John Rowan Blvd
Bardstown, KY 40004 | Scott Roche
Office (502) 348-4528
Cell (502) 827-4703
SR8832@att.com |
| 2. AT&T Legacy
7555 E. Pleasant Valley Road, Suite 140
Independence, OH 44131

AT&T Corporation, Long Haul | Bill Taggart, Sr. Tech Project Manager
WT2462@att.com
Office (614) 868-2511
Cell (614) 370-5414
Don Garr, Cell (502) 741-8374
DonGarr@outlook.com |
| 3. Bullitt County Public Schools
1040 Highway 44 East
Shepherdsville, KY 40165

(Consultant: LG Fiber)
LG Fiber
PO Box 1702
Mt. Vernon, KY 40456 | Kevin Fugate
Office (502) 869-8040
Cell (502) 639-3458
Kevin.Fugate@bullitt.kyschools.us
Larry Gregory
LGFiber@gmail.com
(606) 521-2649 |
| 4. Bullitt County Sanitation District
PO Box 818
Hillview, KY 40129
Jerry's-Covid 19- Redfern1@twc.com | Jerry Kennedy
Office (502) 957-6140
Cell (502) 643-3165
BullittSanitation@windstream.net |
| 5. Charter Communications
10168 Linn Station Road, Suite 120
Louisville, KY 40223 | Nathen L Howerton
Office (502) 357-4318
Cell (502) 639-6838
Nathen.Howerton@charter.com
Kevin Mercer
Office (502) 357-4724
Cell (502) 817-5055
Kevin.Mercer@charter.com
Michael York
Cell (502) 548-1632
Michael.York@charter.com |

UTILITIES AND RAIL CERTIFICATION NOTE

Bullitt County
STP 5119 017 / FD52 015 79916 03U
Mile point: 0.800 TO 1.300
IMPROVE OPERATIONAL PERFORMANCE OF THE I-65/KY-480 INTERCHANGE
KYTC ITEM NUMBER: 05-391.30

- | | |
|---|---|
| 6. City of Shepherdsville Sewer
634 Conestoga Parkway
PO Box 400
Shepherdsville, KY 40165 | Arthur Jones, Engineer
Office (502) 492-7404
AJones@shepcity.com
Office (502) 955-7803
Scott Fleming
Cell (502) 664-6254
SFleming@shepcity.com |
| 7. Crown Castle Network Operations
10300 Ormsby Park Place, Suite 501
Louisville, KY 40223 | Mona Couch
Office (317) 249-2029
Cell (317) 439-1578
Mona.Couch@crowncastle.com
Lisa Clark, Construction Manager
(810) 223-3780
Lisa.Clark@crowncastle.com
Craig Brown, Manager-Network Construction
Office (317) 819-8648, Cell (585) 402-8342
Craig.Brown@crowncastle.com |
| 8. Kentucky Wired, KCNA
500 Mero Street – Suite 1-1 NC #59
Frankfort, KY 40601

Ledcor, Service Provider
LTS Kentucky Managed Technical Services LLC
2008 Mercer Rd. 2nd floor
Lexington, KY 40511 | Mike Hayden,
Chief Operating Officer
Office (502) 782-2535
Mike.Hayden@ky.gov
Nick Blake
Operations Manager
Office (859) 286-8158
Cell (859) 447-0781
Nick.Blake@Ledcor.com |
| 9. LG&E KU (Electric)
820 West Broadway
Louisville, KY 40202
LG&E Emergency Number (502) 589-1444
LG&E and KU Emergency Number 1-800-331-7370 | Caroline Justice
Office (502) 627-3708
Caroline.Justice@LGE-KU.com |
| 10. LG&E (Gas)
820 West Broadway
Louisville, KY 40202
Gas Emergency Number (502) 589-5511
LG&E and KU Emergency Number 1-800-331-7370 | Caroline Justice
Office (502) 627-3708
Caroline.Justice@LGE-KU.com |
| 11. Louisville Water Company
550 South Third Street
Louisville, KY 40202 | Pat Howard, PE
Office (502) 569-3615
Cell (502) 287-7568 |

UTILITIES AND RAIL CERTIFICATION NOTE

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- | | |
|--|---|
| 12. Lumen Technologies Inc.
11857 Commonwealth Drive
Louisville, KY 40299 | Tim Sewell
Tim.Sewell@lumen.com
(502) 389-4812 / (502) 295-0940
Richard Compton
Richard.Compton@lumen.com |
| 13. Salt River Rural Electric Coop. Corp.
111 W. Brashear Ave.
Bardstown, KY 40004
(Telephone in Bullitt County) | Daniel Carrico
DCarrico@srelectric.com
(502) 350-1606 |
| 14. T-Mobile (Sprint) Fiber Optics
3007 Tucumcari Dr.
Sardinia, OH 45171 | Steven T. Hughes
Office (513) 459-5796
Cell (814) 553-2300
Steven.Hughes1@T-Mobile.com |
| 15. Verizon
730 West Henry Street
Indianapolis, IN 46225

Verizon
2421 Holloway Road
Louisville, KY 40299 | Dean Boyers
Office (615) 777-7855
Cell (615) 507-5287
Dean.Boyers@verizon.com
Jeffrey Tucker, Engr III Spec-Ntwk Eng & Ops
Office (502) 830-1827
Cell (502) 593-5585
Jeffrey.Tucker@verizon.com
Ronnie Kuerzi, Eng IV Spec-Ntwk Eng & Ops
Cell (502) 780-2748
Ronald.Kuerzi@verizon.com |
| 16. Windstream
111 S. Main Street
Elizabethtown, KY 42701

Windstream
Steve Johnson, Sr Engineer OSP
130 W New Circle Road, Suite 170
Lexington, KY 40505 | James Galvin
Office (270) 765-1818
Cell (270) 748-9249
James.Galvin@windstream.com
Steve Johnson, Sr Engineer OSP
Office (859) 357-6209
Cell (859) 321-2035
Steve.Johnson@windstream.com
Ronald (Todd) Moore
(502) 818-7605
Ronald.Moore@windstream.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. Those utility owners with a prequalification or preapproval requirement are as follows:

Louisville Water Company

The bidding contractor needs to choose a subcontractor who is a Louisville Water Company prequalified contractor in the category of 6-inch to 16-inch ductile iron water main.

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.

When the list of approved subcontractors for the utility work is not provided in these general notes, the utility work must be completed by either the prime contractor or a subcontractor that is 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.

UTILITY COORDINATION WITH THIRD PARTIES

The Contractor shall communicate, cooperate, and coordinate with the Department, the utility owners, and potentially affected third parties, as necessary for the utility relocation work. The Contractor shall be responsible for all coordination needed to ensure that the road construction and utility relocation work may concurrently and effectively take place. No delay claims will be considered due to utility relocations.

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.

STANDARD SPECIFICATIONS

The Contractor shall follow the Louisville Water Company *TECHNICAL SPECIFICATIONS AND STANDARD DRAWINGS FOR PIPELINE CONSTRUCTION 2008* (*Linked below*). All work shall be performed in accordance with accepted workmanship practices and the Technical Specifications and Standard Drawings.

https://www.louisvillewater.com/sites/louisvillewater.com/files/user_uploads/Procurement%20Other/2008%20TECHNICAL%20SPECIFICATIONS%20FOR%20PIPELINE%20CONSTRUCTION%20%28Final%20Complete%203-10-2008%20Print%20PDF%29.pdf

The contractor shall adhere to the current edition of the City of Shepherdsville STANDARD SPECIFICATIONS for sanitary sewer construction.

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:

“No materials are being supplied by the utility owner(s). 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

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. 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 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.

BOLLARDS This item is for payment for furnishing and installing protective guard posts at above ground utility installations. A bollard may consist of, but 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 at the location shown on the plans or as directed in accordance with the specifications. This item is not to be paid on new main installations. This pay item is only to be paid to cap existing mains. Caps on new mains are incidental to the new main. Any and all caps on existing mains 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.

W 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 water main 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) when complete.

W ENCASEMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing steel, backfill, restoration, and 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 encasement 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 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 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 on 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 reinstalling 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 on standard drawings complete 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 bid 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 where 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. Any and 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 locations 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 specification 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 ID or less as specified on the plans. This item shall include all labor, equipment, meter, meter box, 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. 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, and 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, and etc., to relocate the existing water meter (whatever size exists), meter yoke, meter box, casting, and 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 short side or long side service bid items. 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 ID 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 larger 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 ID or less as specified on the plans. This item shall include all labor, equipment, meter, PRV, meter box, casting, yoke, and any other associated material 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 description shall apply to all PVC, ductile iron, and polyethylene/plastic pipe bid items of every size and type 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 specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, sanitizing, backfill, and 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 and 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. 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 anchoring, labor, equipment, excavation, backfill, and restoration required to install the plug in an existing in-service main that is to remain at the location shown on the plans or as directed in accordance with the specifications. Any and all plugs on all existing in-service mains 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.

NOTE: This utility bid item is not to be paid on new main installations or abandoned mains. This pay item is to plug existing in-service mains only. Plugs on new mains are incidental to the new main just like all other fittings.

NOTE: Plugging of existing abandon mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications For Road And Bridge Construction and paid using Bid Code 01314 Plug Pipe.

W PRESSURE REDUCING VALVE This description 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, and 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 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 bid item description 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), and 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 plan or specification), 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 bid item description 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 plan or specification), 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. Payment shall be made under this item even if the service crosses a private residential or commercial entrance; but, not a public roadway. 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 variation. 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, and 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 restoration complete. 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, and 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 restoration complete. 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 SLEEVE 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 bid description 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.

W VALVE This description 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 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, disinfection, and 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 bid 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 is 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 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, and 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 CUT-IN This bid description 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 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 drawing, 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.

SUPPLEMENTARY SPECIFICATIONS

KY 480 & I-65 WATER MAIN RELOCATION PROJECT KYTC Item No. 5-0391.30

PROJECT LIMITS

The referenced project contains the area between the intersections of **Ky 480 (Cedar Grove Rd.)** with Steven Drive and Alpha Way. See plans for location.

PROJECT SUMMARY

The referenced project consists of water main relocations necessary to accommodate the proposed KYTC KY 480 interchange improvements. This work includes the installation of ductile iron and PVC pipe, gate valves, air release valves, casing pipe, a drain assembly, and corp. stops. Also included with the project is the relocation of fire hydrants.

SCOPE OF WORK

1. Supply and Install **1,701 +/-** linear feet of 16-inch Pressure Class 350 restrained joint ductile iron wrapped water main
2. Supply and Install **310 +/-** linear feet of 6-inch DR-18 C900 PVC water main
3. Supply and Install **42 +/-** linear feet of 6-inch Pressure Class 350 ductile iron wrapped water main
4. Supply and Install **14 +/-** linear feet of 12-inch DR-18 C900 PVC pipe
5. Construct or Install casing pipe, bore pits, gate valves, and automatic air valves per the plans.
6. Complete all tie-ins and cut and plugs as shown on the plans.
7. Complete fire hydrant relocations where indicated on plans.
8. Relocate services.

GENERAL INFORMATION

9. **The contractor is bound by and shall comply with the provisions of the “Louisville Water Company Technical Specifications and Standard Drawings for Pipeline Construction” (2008 Edition) which shall govern work on this project with the following additions/exceptions:** All materials shall be supplied and installed by the Contractor. Louisville Water Company will not supply any material. Contractor shall disregard any reference in the Louisville Water Company Technical Specification where it says Louisville Water Company shall/will supply materials.

GENERAL REQUIREMENTS

10. All work performed for the installation and relocation of the water main and related construction must be performed by an LWC pre-qualified contractor in the following category:
- Category 1: 4” – 16” Ductile Iron Water Main
 - Category 2: 4” – 16” PVC Water Main

PIPELINE MATERIALS

11. Unless otherwise approved by the LWC Project Manager, all pipe replacement work in this project scope shall be constructed with Contractor-supplied Pressure Class 350 ductile iron pipe in accordance with the plans using traditional trenching techniques and Contractor supplied DR-18 C900 PVC pipe in accordance with the plans using traditional trenching techniques. The contractor shall provide LWC with material submittals for all materials that the contractor plans to use for LWC work including but not limited to pipe, valves, fittings, casing pipe, etc. The submittals shall be reviewed and approved by the LWC Project Manager prior to installation of any material. The contractor shall provide alternate materials for any materials that the LWC Project Manager rejects until an acceptable material is selected by the contractor as approved by the LWC Project Manager. Material submittal review takes approximately two weeks for each submittal.

TRAFFIC CONTROL

12. This project will be bid and constructed in conjunction with a Kentucky Transportation Cabinet’s (KYTC) KY Highway project; therefore, no KYTC permits will be required. Contractor shall obtain all permits through KYTC and follow the procedures as specified.

VIDEO RECORDING

13. A preconstruction Video Recording of the water relocation limits shall be completed by the contractor and provided to the LWC Project Manager prior to construction.
14. Video Recording shall be provided in DVD format

SITE WORK

15. Field modifications to the proposed pipeline alignment may be necessary to avoid or minimize the effects of potential conflicts. To avoid potential conflicts with existing utilities located perpendicular and/or parallel to the proposed main, the Contractor should anticipate the need to use offsets, bends and fittings when installing the new main, and for large service connections at no additional cost to LWC or KYTC.
16. Utility locations are shown on the plans from available information and are approximate. The contractor is responsible for locating all existing utilities including water line facilities prior to start of construction. The contractor is responsible for relocating any existing utility that is in conflict with the proposed construction at no additional cost to LWC or KYTC.

RETURN OF USED HYDRANTS

17. Fire hydrants that are discontinued, abandoned or replaced shall be removed and returned with caps to the LWC Allmond Avenue Warehouse. The contractor shall also complete the "RETURN OF USED FIRE HYDRANTS" form, sign and submit the form to the inspector for record keeping and proper accounting. Any removed hydrant that is not returned to the LWC warehouse will be invoiced to the contractor in the amount of \$75 per hydrant.
18. Fire Hydrant Extension Kits shall not be used for any fire hydrant installation on this project. Contractor shall adjust the depth of the water main at the location where a hydrant will be installed to accommodate the height of a standard fire hydrant.

EXCAVATION

19. Excavation on this project shall be unclassified.
20. Rock shall be removed using mechanical methods (backhoe, hoe ram, or rock trenching machine). Blasting shall not be permitted.

INSTALLATION, HANDLING AND STORAGE

21. Forklifts' forks or other material handling equipment shall not be inserted into the barrels of pipe, valves or other fittings to lift or move them or for any other construction activity.
22. Pipe lengths should be stored and placed on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the pipe. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
23. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way.
24. Pipe shall not be stored on-site for periods greater than 3 months or as approved by the LWC Inspector and Project Manager.
25. Pipe shall be stored and stacked per the pipe supplier's guidelines and as approved by the LWC Inspector and Project Manager.

BACKFILLING PROCEDURES AND TAMPING

26. When under the *pavement in state right-of-way*, the final backfill material shall be selected, placed and compacted in accordance with section 7 of the LWC Technical Specifications and Standard Drawing No. 4000 – State of Kentucky Backfill and Paving Restoration.
27. When under *pavement other than state right-of-way*, (side streets, driveways, and entrances), the final backfill material shall be selected, placed and compacted in accordance with section 7 of the LWC Technical Specifications and Standard Drawing No. 4100 – Louisville and Jefferson County Metro Backfill and Paving Restoration.
28. If septic system / lateral field is encountered, contractor shall put 6 inches of compacted DGA on all sides of pipe for a distance of 5 feet on each side of line encountered.

PLACING WATER MAIN IN SERVICE

29. All new ductile iron and PVC pipe installations longer than 50 feet shall be pig cleaned. Ductile iron and PVC pipe sections shorter than 50 feet in length may

require pig cleaning at the direction of the LWC Construction Inspector. Pigs shall be used one time and discarded.

30. A chlorine injection system shall be used to fill the new main. The LWC Construction Inspector will provide the equipment needed to inject the chlorine-based solution into the main. The Contractor shall assist the LWC Construction Inspector with the connection of hoses and the operation of valves.

CUSTOMER SERVICES

31. The renewal of 5/8" services shall include the upsizing of the service to 3/4".
32. The contractor shall review the proposed private/public service lines as shown on the plans prior to bidding. The contractor is responsible for relocating the customer's service line (the line from the main to the meter and the line from the meter to the right of way or property line. The contractor shall coordinate each relocated service with the property owner and obtain property owners approval prior to any construction outside of the right-of-way. The property shall be restored to the satisfaction of the property owner.
33. Prior to beginning any work that requires a shut-down of the main or individual services, the Contractor shall make a thorough evaluation of each service connection and meter vault within the limits of the shut-down. Discrepancies between the field conditions and the Project Plans shall be discussed with the LWC Construction Inspector.
34. The use of copper couplings under paved areas shall be avoided. In situations where the new main is located on the opposite side of the roadway from the existing main or where the new main is located in the roadway and more than two feet from the existing main, "long" service transfers shall be completed by advancing a new service line from the new main to the meter vault.
35. The type, size and condition of the existing customer service at the property line shall be verified before completing the service reconnection. Where lead is encountered at the property line and an existing property connection is not found, the Contractor shall extend the service excavation up to three (3) feet behind the property line to remove additional lead and to search for an existing property connection. The service reconnection shall then be completed at the three-foot distance, or less, if an existing property connection is encountered.

36. During lead service renewals, meter vault frames and covers that have the old style “1/4-Turn” or “J-Hook” locking mechanisms shall be replaced with new frames and covers. Additionally, where covers are broken or inoperable the covers and frames shall be replaced. The removed frame and cover shall be returned to LWC for proper disposal.

WORK SCHEDULE

37. A ‘Staging ‘Plan’ for how the work is to proceed is to be presented by the contractor at the Preconstruction meeting. Staging of the work should try to minimize the time between installing the new main and working on or removing the existing water main so that the time between the restorations of the two events is minimized.
38. Normal work hours shall be limited to work hours approved by KYTC. All other work hour requests must be submitted by the contractor to the approving agency for approval after standard applications have been made and approved.
39. The Contractor shall anticipate the need to work after-hours and on weekends to accommodate all critical customer needs as directed by the LWC Project Manager. In addition, after-hour or weekend work may be needed to shut down transmission mains or to connect to a tank. All such work will be considered incidental to the project and no additional compensation will be provided. This after-hour work must be pre-approved by the LWC Project Manager.
40. In the case of an emergency, the Contractor shall immediately notify the LWC Construction Inspector. If the contractor can not reach the inspector, then they shall immediately notify the Radio Room or Project Manager. Prior to the actual shut-off, an attempt shall also be made to contact each customer (door-to-door) to alert customers of the emergency situation and the need to shut-off the main.

EROSION CONTROL MEASURES

41. An erosion control plan is required for this project. An erosion control plan shall be prepared by the contractor and submitted to LWC for review. The erosion control plan shall be submitted by the contractor to the respective agencies upon request of LWC. The contractor is responsible for maintaining all erosion control measures within the project limits in accordance with the latest MSD, Louisville Metro and LWC specifications. The contractor is responsible for making all erosion control modifications within the project limits required by MSD, Louisville Metro, LWC, or any other permitting authority at no additional cost to LWC. The contractor is responsible to rectify any disputes that may arise due to inadequate erosion control measures as determined by MSD, Louisville Metro, LWC, or any other permitting authority.

42. As a minimum, erosion control features shall be provided at catch basins, headwalls and in small ditches where associated construction procedures may cause the transport of sediment into the storm drainage system. When soil is disturbed within grassy areas, erosion control protection shall also be provided at yard drains. Care will be required to minimize stockpiling or placing backfill or excavated materials on roadways.

PIPELINE CONSTRUCTION

43. Prior to the start of any work at the site (including saw-cutting), the Contractor and LWC Construction Inspector shall review the proposed pipeline alignment with respect to the utility locations marked by the local utility locate company, trees, and other existing site improvements.
44. Standard burial depth for new water mains is 42 inches, as measured from the top of ground to the top of the newly installed pipe. While the Contractor is expected to adhere to this standard burial depth requirement at all times, it is understood that revisions to the burial depth will be necessary when the installation of mains and large services conflict with existing utilities and other site improvements. Prior approval from the LWC Project Manager is required for these deviations.
45. The type, size and condition of the existing pipe shall be verified prior to completing tie-ins. When the existing pipe is other than indicated on the Project Plans, the LWC Construction Inspector or LWC Project Manager shall be contacted immediately to assess the need for revising the tie-in location. The Contractor shall be compensated in accordance with the supplementary unit prices for any additional pipeline installed to revise the tie-in location.
46. All tree root systems that require boring shall be bored a minimum of 30 feet; 15 feet either side of the tree trunk. The bore shall be located a minimum of 4 feet below the ground surface and a minimum of 5 feet from the center of the tree.

RESTORATION

47. Unless otherwise noted on the Project Plans, surface restoration of grassy areas shall consist of seed and straw. The seed type used shall match the existing grass. Reseeded areas that are located within ditches or on other sloped ground shall be covered with erosion control netting secured with pins or stakes. As an alternative, the Contractor may utilize prefabricated matting containing mulch, seed, and fertilizer.
48. All driveways requiring replacement shall be restored in the following manner: (1) concrete driveways shall be replaced in their entirety to the nearest construction

joint and (2) asphalt driveways shall be restored via a utility cut, as approved by the inspector and property owner.

POST CONSTRUCTION

49. All in-line and service valves installed and/or operated during the completion of this project shall be inspected after construction to verify that all valves used by the Contractor are left in the proper operating position. Unless otherwise noted, or directed, all gates shall be left open.

WARRANTY

50. The Contractor warrants to the Company that materials and equipment furnished by the Contractor under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Company, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.
51. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of the Contractor's obligation to perform the work in accordance with the Contract Documents:
1. Observations by the Project Manager;
 2. Payment by the Company;
 3. Issuance of a certificate of Substantial Completion;
 4. Use or occupancy of any part of the Work by the Company;
 5. Review of Shop Drawings or other Submittals;
 6. Any inspection, test, or approval by others; or
 7. Any correction of defective Work by the Company.
52. Failure on the part of the Company to insist on strict performance by the Contractor of any provision of this Contract is not a waiver of any of the Company's rights and/or remedies, nor shall it relieve the Contractor from performing any subsequent obligations strictly in accordance with the terms of this Contract.
53. The Company may, at its option, waive compliance with any particular Contract requirement. No waiver shall be effective unless in writing and signed by both the Company and the Contractor. Written waivers shall be limited to the specified

provisions of this Contract specifically referred to herein, and shall not be deemed a waiver of any other provision. The written waiver shall not constitute a continuing waiver unless it states otherwise.

54. All work shall be warranted for two (2) years from the date of Final Completion unless specified otherwise. Paved surfaces and restoration of structures will be warranted for five (5) years. Contractor-furnished iron pipe and PVC pipe materials shall be warranted for five (5) years after the iron pipeline is placed in service. Satisfactory performance of the iron and/or PVC water main and appurtenances, as they relate to installation, shall be warranted for two (2) years after the iron/PVC pipeline is placed in service. The Company reserves the right to require Contractor's presence at scheduled Warranty inspections held within the 12-month period following acceptance of the Project.
55. Contractor shall assign to the Company all manufacturers' warranties. All such warranties shall be directly enforceable by the Company. Such assignment shall in no way affect the Contractor's responsibilities and duties during the warranty period.

Standard Sanitary Sewer Bid Item Descriptions

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 is 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/confined space requirements and 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 in 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 bid 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 and 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 Includes all labor, equipment, excavation, concrete, reinforcing

steel, backfill, restoration, and 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 encasement 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 description shall apply to all PVC and 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 boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, backfill, and 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 bid 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, 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 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 locations shown on the plans. This bid item is to be used to relocate 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, 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 specification 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 SLEEVE/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 bid 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.

S FORCE MAIN VALVE This 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, and 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 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, and 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 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 variances. 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 bid item 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 any and all methods and efforts required to locate the lateral for tie-in or relocation of the lateral. Locating methods to be included under this items 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 bid 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 bid item description shall apply to all service lateral installations of every size up to and including 6 inch, 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. Payment shall be made under this item even if the lateral crosses a private residential or commercial entrance; but, not a public roadway. 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 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. 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 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 ABANDON/REMOVE Payment under this item is for the partial removal and/or filling of any sanitary sewer manhole regardless of size or depth that no longer serves any purpose. Payment shall be made regardless of whether the manhole is or is not in conflict with other work. Any manhole requiring partial removal, but not total removal, in order to clear a conflict with other work shall be paid under this item. All manholes partially removed shall be removed to a point at least one foot below final grade, one foot below roadway subgrade, or one foot clear of any other underground infrastructure, whichever is lowest. If partial removal of an abandoned manhole is elected by the contractor, the remaining manhole structure shall be refilled with flowable fill. Payment for disposal of a sanitary sewer manhole will be made under this item only. 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 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 bid items is for furnishing of a new standard traffic baring casting for sanitary manholes meeting 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 bid item is for furnishing of a new watertight traffic baring casting for sanitary manholes meeting 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 RECONSTRUCT INVERT This bid item is to pay for all labor, equipment, and material for rework of the 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 specification, standard drawing or plan. 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 bid 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 bid 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, 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. The 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, 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 each 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 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 new 4 foot interior diameter sanitary sewer manhole with corrosion resistant lining. Payment for 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. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, lining, excavation, backfilling, air testing, restoration, and cleanup in accordance with the 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 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 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 PIPE This description shall apply to all PVC and ductile iron gravity sewer pipe bid items of every size and type 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, restoration, pressure or vacuum testing, temporary testing materials, video inspection, backfill, and 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 lamp holes. 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 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) 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 time 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 restoration complete. 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.

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, and etc. Payment under this time 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 structure 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 restoration complete. 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.

SHEPHERDSVILLE STANDARD SPECIFICATIONS - INDEX

SHEPHERDSVILLE STANDARD SPECIFICATIONS

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SECTION 1

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

GENERAL PROVISIONS

1.1 DESCRIPTION OF WORK

All labor, materials, equipment, tools and services required for the furnishing, installation, construction, video recording, and testing of all sanitary sewer or storm drainage facilities required for this Project shall be furnished, installed, constructed, recorded and tested in accordance with these specifications and all other City of Shepherdsville specifications and standard drawings. These Specifications cover the materials to be utilized in construction, and the installation and construction standards to be required of the Contractor for Capital Improvement Projects and Private Development Projects approved by the City of Shepherdsville.

1.2 VIDEO RECORDING

Prior to the start of construction, the Contractor shall provide one original walking, narrative continuous VHS video, a minimum 2 to 3 minutes per 100 feet of alignment, of the complete Capital Project as directed by the City of Shepherdsville Construction Inspector. The tape counter value should be keyed to each manhole, drainage structure, or building address, labeled accordingly. In the case of private development, the contractor shall video all areas outside the property owned by the developer such as right-of-ways, easements or private property on which the developer as an agreement to be on.

1.3 UNDERGROUND STRUCTURES AND UTILITIES

Every effort will be made to show on the Plans by the City's Engineer or the Developers Engineer known utilities, structures, drains, etc., adjacent to or to be encountered by construction. The locations shown on the Plans are taken from existing records and are believed to be the best information available. However, it is expected that there may be some discrepancies or omissions in the locations and quantities shown. The Contractor shall verify the locations of all underground structures and utilities in critical areas or as directed by the City of Shepherdsville prior to the start of construction. The Contractor shall avoid damaging the existing utilities while verifying their locations. Such information is furnished subject to the limitations set out in the City of Shepherdsville's Information to Bidders.

The Contractor shall notify the Kentucky Underground Utility Protection, Inc. (formerly BUD) at 1-800-752-6007, 48 hours in advance of any construction. The Contractor shall notify the City of Shepherdsville prior to any personnel being allowed to enter into any City of Shepherdsville manhole or sewer.

The Contractor shall be responsible for protection of any structure or utility encountered on the site. The cost of repair, removal, replacement, relocation, etc. of such facilities arising

because of carelessness or negligence on the part of the Contractor shall be the Contractor's responsibility.

The Contractor shall make every reasonable effort to protect private structures and utility service connections whether in right-of-way/easement or on private property, including sewer facilities that may not be shown on the Plans. When these facilities are disturbed or damaged by the Work, the Contractor shall make necessary repairs to the facilities for continuous service prior to the close of the work day, at the Contractor's expense.

Should uncharted or incorrectly charted piping or other utilities be encountered within utility easements or the public rights-of-way, the Contractor shall immediately contact the City of Shepherdsville or should contact the Developer's Engineer for private development projects.

Suitable arrangements will be made with the proper agency by the City of Shepherdsville and the responsibility for the cost will be determined by the City of Shepherdsville. All arrangements with the proper agency for Private Development work shall be the responsibility of the contractor and/or developer. The Contractor shall cooperate and coordinate with the utility companies to keep respective services and facilities in operation. Coordination is the responsibility of the Contractor.

1.4 WORK AROUND LOUISVILLE GAS AND ELECTRIC COMPANY OR SALT RIVER ELECTRIC FACILITIES

1.4.1 General

The Louisville Gas and Electric Company or Salt River Electric Cooperative shall be given 5 working days advance notice before Work is begun. When revamping of facilities will be required, at least 2 weeks advance notice shall be given the Louisville Gas and Electric Company or Salt River Electric Cooperative to allow sufficient time for engineering Work to be completed. On major modifications or relocations, longer notice will be necessary. Coordination is the responsibility of the Contractor. The Contractor shall cooperate and coordinate with the utility companies to keep respective services and facilities in operation.

1.4.2 Electric Facilities

Blasting shall not be done under or near an electric line unless a representative of the Louisville Gas and Electric Company or Salt River Electric is present.

The Contractor shall not utilize utility poles for physical support of any of his operations. Cables, ropes or support systems shall not be attached to utility poles.

If damage to electric lines should occur, the Contractor shall notify the Louisville Gas and Electric Company or Salt River Electric Cooperative immediately.

1.4.3 Gas Facilities

No blasting shall be done within 10 feet of a gas main unless a representative of the Louisville Gas and Electric Company is present.

Special care should be taken not to break or damage gas mains or service lines during construction. If damage does occur to gas mains or service lines the Contractor is responsible for assisting and coordinating all repairs and notifying affected property owners before and after repairs.

Damage to a service line by the Contractor shall immediately be reported to the Louisville Gas and Electric Company and shall be repaired at the expense of the Contractor. Such repairs shall be limited to that portion of the service line which is in the public right-of-way or easement.

Extra precaution shall be taken during construction near high-pressure mains. If it becomes necessary to expose the Louisville Gas and Electric Company's pipelines as a precautionary measure, advise the Company by calling 589-5511, Gas Trouble Clerk (24 hours).

1.5 GEOTECHNICAL INFORMATION

Borings and soundings may or may not be shown on the Plans. If borings and soundings are not shown, and the Contractor desires to have positive soil information, the Contractor shall make such borings and soundings at the Contractor's expense. Prior to making borings or soundings, the Contractor shall receive approval from the property owner, or if within the road rights-of-way, from the appropriate agency and shall notify the City of Shepherdsville. The City of Shepherdsville does not guarantee that the boring information shown in the Bid Documents is accurate or correct. Such information is furnished subject to the limitations set out in the Contract.

1.6 SURVEYING AND STAKING

1.6.1 General

The responsibilities for the surveying and staking necessary for the construction of the Project shall be as defined herein. The City of Shepherdsville will provide all surveying necessary to establish the horizontal and vertical control coordinates, including the setting of monuments meeting the City of Shepherdsville standards, and benchmarks for such control on all the City of Shepherdsville projects.

All surveying control points on Capital Projects will be furnished by the City of Shepherdsville one time only unless otherwise provided in the Contract. The Contractor shall be responsible for protecting and preserving all such surveys provided by the City of Shepherdsville, including monuments, benchmarks, survey stakes, reference points, or other survey markers and shall be required to bear the expense of replacing or resetting same if damaged or destroyed.

The Contractor will provide all construction survey and staking necessary for layout and construction from the control points on Capital Improvement Projects. The

Contractor, through the field inspector, shall give the City of Shepherdsville two weeks advance notice prior to the start of survey. The Contractor shall provide temporary benchmarks within 300 linear feet of all proposed structures.

Where new construction connects to existing facilities, it shall be the Contractor's responsibility to check and determine the exact location of the existing facilities. Whenever field conditions are found to vary from those indicated on the Plans, the Contractor should notify the City of Shepherdsville immediately. The City of Shepherdsville will investigate such conditions and, if warranted, make revisions or adjustments. The Contractor shall not proceed with that portion of the Work until the investigation is complete and redlined Plans have been approved by the City of Shepherdsville.

1.6.2 Construction Staking

Offset hubs and stakes, one short (12 inch) hub and one tall (36 inch) stake at each location, shall be set at all 100-foot stations for gravity flow sanitary and storm drainage facilities, and at 200-foot stations for all force mains. In paved areas, PK nails and paint shall be used. In addition, offset hubs and stakes shall be provided at line intersections, appurtenances, points where the alignment or grade changes and a minimum of two offset hubs shall be provided at rear structure corners.

The stakes shall be strong, sound, straight, and free from knots, dressed on two sides, and pointed. Hubs shall be strong, sound, undressed oak lumber, and pointed. Stakes shall be a minimum of 3/4 inch x 1 1/2 inches when dressed, and hubs shall be a minimum of 2 inches square and 12 inches long. Stake widths and lengths of both stakes and hubs may vary if so ordered by the City of Shepherdsville.

1.6.3 Checking Line and Grade

The Contractor shall provide the City of Shepherdsville with a copy of field book notes and complete cut sheets showing stations, grade stake elevations, required slopes, invert elevations and cut distances for sewer main, structures and pipe stubs. The Contractor shall provide transit, level in good adjustment, grade pole and the necessary equipment, and a competent employee during normal working hours to assist the City of Shepherdsville, so that the checking and measuring may be accomplished with the least interference to the Contractor's operations. All property service connections (PSC) and pipe stubs with lengths in excess of 5 feet shall have elevations and stations referenced by the Contractor's Professional Land Surveyor. All stubs ends shall be referenced before being covered.

If a laser beam is used to maintain the line and grade, the Contractor shall periodically calibrate and check the accuracy of the laser beam with reference to a grade stake per manufacturer's recommendation. Calibration seal shall be kept with the instrument on site for review by the City of Shepherdsville as requested. The Contractor shall use a blower or other acceptable device to vent enclosed conduits as required to prevent refraction.

1.6.4 Final Record Drawings

On City of Shepherdsville projects, the Final Record Drawings will be prepared by the City, or the project design engineer / consultant, based on record information provided to the City by the Contractor. At the completion of the project, the contractor will be responsible for providing the City a set of “Red Line Drawings” and “As-Built Survey Information” as indicated below. The information will be incorporated into the bid plans to become the Final Record Drawings.

Note – On private development projects, the project design engineer / consultant will be responsible for preparing the Final Record Drawings, subject to the same requirements as a City project.

1.6.4.1 Red Line Drawings

The Contractor shall keep a record of all deviations of any installation from that shown on the Plans. Records shall also be kept of any significant changes in installations from shop drawings. The information will be compiled in a red-lined format on the shop drawings and a copy of the initial bid plan set. Plans shall be available to the City at any time upon request during construction. No such deviations from the Plans or approved shop drawings shall be made without prior approval by the City of Shepherdsville. Should the as-built drawings reflect that unapproved deviations during the construction process have taken place, the City of Shepherdsville shall be notified in writing. If it is determined by the City that said deviations compromise the intent of the design, the contractor shall be held responsible for reconstruction. As the completion of the project the as-built information is submitted to the City. The information should be recorded in a clear and concise format, allowing for an easy transfer.

1.6.4.2 As-Built Survey Information

The Contractor’s Licensed Professional Land Surveyor will be responsible for creating as-builts for the items listed below. The survey information will be compiled in an electronic fashion, compatible with the .dwg format, and submitted to the City of Shepherdsville. Location and elevations shall be tied to the project survey control.

The following construction items, at a minimum, should be reviewed and verified to produce the Final Record Drawings:

❖ Alignment Changes:

➤ Changes in Location for:

- Manholes
- Catch Basins or Surface Inlets
- Headwalls
- Retaining Walls
- Slope Protection

- Channel Linings
 - Pump Station Wet Wells
 - Pump Station Valve Vaults
 - Air Release Valves
 - Property Service Cleanouts
- Changes in Elevation for:
 - Nearest Hundredth
 - Inverts
 - Rims
 - Surface Inlet Grates
 - Paved Ditches
 - Nearest Tenth
 - Turf Ditches
 - Miscellaneous Structures
- ❖ Structural Changes:
 - General:
 - Manhole collar sizes
 - All revisions in pipe size, lengths, slopes, and angles
 - Identify pipe material if different from the plans
 - For Pump Stations and Wastewater Treatment Plants:
 - All revisions in pipe sizes
 - All revisions to electrical controls
 - All revisions to exhaust and ventilation systems
 - Pump modifications
 - Changes in elevation for inverts and level controls
 - Equipment layout modifications
 - Building modifications
- ❖ Miscellaneous Changes:
 - For Property Service Connections
 - Size
 - Length
 - Depth at R/W or Property Line
 - Sewer Station
 - End Location, if the PSC is not perpendicular to the sewer
 - For changes in Lot of Unit Designations
 - Lot numbers
 - Tract numbers
 - Apartment unit designations
 - Condominium unit designations
 - Patio home designations

1.6.4.3 Process

Proposed information shall under no circumstances be erased from the original Plans. Plan corrections must be made to ensure a quality image. No red line markings will be accepted for final record drawings. A check mark should be placed beside the original Plan information which has been verified to be correct as constructed. Any unverified data shall show +/- thereby indicating that information has not been verified.

The following stamp will be inserted into each plan sheet after all as-built information has been added.

<p>Final Record Drawing</p> <p>By _____ Date _____</p> <p>Contractor _____</p> <p>Record Drawings have been prepared based on information provided by the Contractor in accordance with the specifications.</p>
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1.7 MAINTENANCE AND CONTROL OF TRAFFIC

1.7.1 Permits and Notification.

The City of Shepherdsville will be responsible for obtaining the necessary County, and/or State encroachment permits for Work in public rights-of-way as applicable on Capital Improvement Projects. The Developer and/or his Engineer or Contractor shall obtain all permits on Private Development Projects. The Contractor is required to abide by all the conditions of the encroachment permit(s) and they shall be made a part of the Capital Improvement Contract or private development work.

The Contractor shall notify the City of Shepherdsville's Engineer or Bullitt County Road Department or the Kentucky Transportation Cabinet, where applicable, in writing and with a copy to the City of Shepherdsville, at least one week prior to beginning any Work in the public rights-of-way. Maintenance of traffic (or traffic control) plan shall be supplied by the Contractor, and approved by the appropriate governing agency. The Contractor shall obtain permits on Private Development Projects, storm water, and non City of Shepherdsville sanitary sewer facilities.

1.7.2 Traffic Control.

At a minimum the Contractor shall provide and maintain traffic control signs, barricades, barriers, warning lights and flaggers as necessary to meet the standards for traffic control, as outlined in the Manual on Uniform Traffic Control Devices, latest revision, or as noted in the permits and the Contract. Additional traffic control measures, including signs, shall be furnished upon the request of the City and at no additional cost to the City of Shepherdsville on Capital Improvement Projects and at the Contractors/Developers cost on Private Development Projects.

1.7.3 Maintenance of Traffic.

The Contractor shall keep all roads and streets, affected by construction, clean from mud or debris and open to all traffic. Where so provided on the Plans or as directed by the City of Shepherdsville, the Contractor may route the traffic over approved detour routes. The Contractor shall keep the portion of the Project being used by public traffic in such condition that traffic will be adequately and safely accommodated.

The Contractor must maintain proper, sufficient, and continuous ingress and egress to private properties and access to buildings unless otherwise shown in the Contract or where temporary interference to access is authorized by the City of Shepherdsville. Provisions shall be made for owners and occupants to reach their premises and for emergency vehicles to have access at all times. The Contractor shall provide access to private properties by bridging, use of steel plates, or other means acceptable to the City of Shepherdsville. Where temporary interference is authorized, it shall be interrupted only for such time as necessary to provide temporary substitutes for surfaces disturbed by the construction and to restore street and sidewalk surfaces after the completion of the Work. The Contractor is to notify each day, all community services, which includes contacting School Districts, U.S. Post Office, Central Dispatch for Bullitt County, Bullitt County EMS and the City of Shepherdsville Police Department by facsimile when performing Work on the pavement that may in any way impede traffic. When fire hydrants are taken out of service, a facsimile of the location of the fire hydrant must be sent and a copy given to the Louisville Water Company for their approval prior to this occurring.

1.8 AIR POLLUTION CONTROL

1.8.1 General

The Contractor shall perform construction activities in such manner so as to prevent air pollution from occurring as the result of drilling, blasting, grading, hauling, or any other construction activities of any kind in conformity with applicable provisions of the Air Pollution Control Regulations.

1.8.2 Open Burning

Open burning will not be permitted on the construction site except as approved by the City of Shepherdsville.

1.8.3 Dust Control

Water or approved chemical additives shall be applied on roadways, stockpiles, graded areas, etc. to prevent and abate fugitive dust resulting from the Contractor's operations. Paved streets and roads shall be kept clean of all earth materials deposited by the Contractor's operations.

1.8.4 Equipment

The Contractor's equipment shall be maintained to prevent excessive fumes, gases, vapors, noise, or fluids from escaping and creating a nuisance to the public.

1.9 STANDARDS AND SPECIFICATIONS

1.9.1 KTC Standard Specifications and Drawings

Reference is made to the Kentucky Transportation Cabinet (KTC) Standard Specifications for Road and Bridge Construction and the KTC Standard Drawings in various sections of these Specifications. The Contractor shall secure the latest Edition of the KTC Standard Specifications and the latest edition of the KTC Standard Drawings when performing Work which is described therein. Copies may be obtained from:

Kentucky Transportation Cabinet
Manager, Policy and Procedures
Development Branch
112 State Office Building
Frankfort, Kentucky 40622

1.9.2 Latest Revisions

Wherever reference is made to any published standards, codes or standard specifications, it shall mean the latest standard code, specification or tentative specification of the technical society, organization or body to which reference is made. Where specified articles, sections, paragraphs or other subdivisions of the referenced publications are not stated, the referenced publication shall apply in full.

1.10 WATER SUPPLY AND SANITARY FACILITIES

1.10.1 Water Supply

The Contractor shall provide, at convenient points, including the City of Shepherdsville's field office, ample fresh supplies of water of proper quality and quantity for all labor, inspection, and operations required under Capital Improvement Contracts. The supply of drinking water shall be contained in a suitable cooler or other approved sanitary container. The Contractor shall also provide paper cups.

1.10.2 Sanitary Facilities

The Contractor shall provide sanitary facilities for the duration of the Capital Improvement Contract for all labor and inspection personnel and will comply with the regulations of the local and state health departments. Inspection and Contractor's facilities shall be separate. The sanitary facilities for the City of Shepherdsville inspector shall be a lockable, portable toilet and shall be located at or near the City of

Shepherdsville's field office when a field office is specified. The Contractor shall clean and maintain these facilities on a weekly basis.

1.11 ENGINEER'S FIELD OFFICE

When specified in the Capital Improvement Contract, the Contractor shall furnish, for the exclusive use of the City of Shepherdsville, an approved weatherproof, lockable building to be utilized as a field office. It shall be located conveniently on or near the Project, and shall be independent of any buildings used by the Contractor. Adjacent to the field office there shall be two graveled parking spaces for the exclusive use of the City of Shepherdsville. The field office shall have approved OSHA steps with handrail. The field office shall have not less than: 200 square feet of usable floor space, 8 feet ceiling heights, 3 windows, a door, and a wooden floor or better. The field office shall be furnished with an instrument locker 2 feet by 3 feet in plan and 5 feet high, with adjustable shelves, a hinged wall table 3 feet by 6 feet, a suitable desk, drafting stool, 2 serviceable swivel office chairs, a coat rack, trash can, fire extinguisher, a fully stocked first aid kit (in accordance with Kentucky Occupational Safety and Health Standards for the Construction Industry Subpart C, Section 1926.50), and a standard 4 drawer lockable file cabinet with key. The building shall be equipped with, electric lighting, adequate heating and air-conditioning, and an integrated telephone answering machine and facsimile, including call waiting and touch-tone service. Facsimile machines shall be either Brother Multi-Function Fax1950 or Sharp Multi-Function Plain Paper Fax - Model UX-1400, or their equivalents.

Contractors, whose main office is outside the Shepherdsville calling area, shall furnish the field office with a toll-free number. All costs of local phone calls, all other utilities and calls to the general Contractor shall be included in that part of the Contract Price attributable to the City of Shepherdsville's field office.

The Contractor shall have the City of Shepherdsville's field office set up and fully operational within two (2) weeks from the date of execution of the Contract and prior to commencing construction. The field office shall remain on the Work site and be cleaned and maintained weekly until formal acceptance of the Project.

No Work shall be performed until the field office is operational.

All items stored in the field office shall be covered by the Contractor's insurance, including all property of the City of Shepherdsville and the City of Shepherdsville's employees located within the field office.

SECTION 2

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

SITE PREPARATION, EROSION PREVENTION AND SEDIMENT CONTROL

2.1 DESCRIPTION OF WORK

2.1.1 Site Preparation

This Work shall consist of the removal and disposal of all rubbish, fences, pavements, structures, all trees, shrubs, brush and herbaceous vegetation not to be protected, and all other obstacles within the rights-of-way/easement limits shown on the Plans. It shall include the protection of trees, shrubs, plants, fences, turfed areas, pavements and structures as identified in the contract documents or on the plans throughout the construction project.

2.1.2 Erosion Prevention

This Work shall consist of the temporary erosion control measures to be performed during the life of the Project to minimize soil erosion from land surfaces and water conveyances. Measures include temporary and permanent soil stabilization, flow diversion, and outlet stabilization.

2.1.2.1 Temporary Soil Stabilization

This Work shall consist of seed bed preparation, furnishing and placing seed, mulch, netting and staples, erosion control blankets, and caring for such areas until acceptance. The Contractor shall remove the netting and staples, 30 to 45 days after installation, or after the grass has become established.

Temporary soil stabilization shall be used in the following circumstances:

- (A) In non-paved areas, rough grading and permanent soil stabilization or temporary soil stabilization shall be maintained within 1,500 linear feet of the active excavation unless more stringent limits are required by the Erosion Prevention and Sediment Control Plan. In no case shall the time between completion of construction activities and the completion of permanent or temporary stabilization exceed 14 calendar days.
- (B) Where construction operations are temporarily suspended for 14 days or longer and permanent soil stabilization is not practical.

- (C) When an immediate cover would be desirable to minimize erosion, siltation, or pollution of any area.

2.1.2.2 Temporary Stabilization of Waterways

This work shall consist of the installation of erosion control blankets as temporary protection for waterways when their construction is completed outside the acceptable work interval for permanent seeding or sodding.

2.1.2.3 Flow Diversion

This Work shall consist of the construction and stabilization of runoff channels and/or berms to divert runoff from undisturbed areas around disturbed areas. The Work may also consist of the diversion of stream flow around active construction areas during Work across a stream.

2.1.2.4 Outlet Stabilization

The Work shall consist of the installation of measures that slow flow velocities to acceptable levels to prevent erosion of water conveyances (ditches, swales and diversions) and land surfaces.

2.1.2.5 Temporary Stream Crossings

This work shall consist of the installation, maintenance and removal of temporary structures to provide construction and equipment access across streams and the diversion of stream flow around construction activities.

2.1.3 Sediment Control.

This Work shall consist of the temporary sediment control measures, such as those included in Section 2.3.3 of these Specifications, to be performed during the life of the Project to control water pollution caused by erosion of exposed soil. Sediment control facilities shall be properly installed and maintained per details, and the Erosion Prevention and Sediment Control Plan. Controls found to be inadequate must be redesigned and modified in accordance with an approved redline drawing.

2.1.4 Erosion Prevention and Sediment Control Plan.

An EPSC Plan is developed for every City of Shepherdsville Project as part of the Project design. The Plan may be revised, with the City of Shepherdsville's approval, to work within constraints imposed by equipment or construction techniques.

2.2. MATERIALS

2.2.1. Topsoil.

Topsoil shall meet the requirements set forth in Section 827 of the KTC Standard Specifications.

2.2.2. Temporary Seed.

Seed used for temporary seeding may be accepted on the basis of purity and germination values shown on the seed bag. The Work of temporary seeding of erosive earth areas shall be done promptly at the locations and times directed. Rye grain, annual rye or winter wheat seed shall be used for temporary seeding. Rye grain shall not be used in areas to be planted with native vegetation.

2.2.3. Straw Mulch.

Refer to Section 9.2.5 of these Specifications.

2.2.4. Wood Cellulose Fiber Mulch.

Refer to Section 9.2.6 of these Specifications.

2.2.5. Mulch Anchoring.

Refer to Section 9.2.7 of these Specifications.

2.2.6. Stone Bags.

Stone bags shall meet the specifications given in the City of Shepherdsville Standard Drawing EF-03.

2.2.7. Sand Bags.

Sand bags shall meet the specifications given in the City of Shepherdsville Standard Drawing ED-01.

2.2.8. Silt Fence.

Silt fence shall meet or exceed the specifications of the City of Shepherdsville Standard Drawing EF-09.

2.2.9. Prefabricated Silt Fence.

Prefabricated silt fence shall meet or exceed the specifications given in the City of Shepherdsville Standard Drawing No. EF-09.

2.2.10. Reinforced Silt Fence.

Reinforced silt fence shall meet or exceed the specifications of the City of Shepherdsville Standard Drawing EF-10.

2.2.11. Prefabricated Reinforced Silt Fence.

Prefabricated reinforced silt fence shall meet or exceed the specifications given in the City of Shepherdsville Standard Drawing No. EF-10.

2.2.12. Geotextile Fabrics for Silt Fences.

Geotextile fabric shall meet or exceed the specifications given in the City of Shepherdsville Standard Drawings No. EF-09 and No. EF-10.

2.2.13. Hardwood Posts.

Hardwood posts shall meet the specifications given in the City of Shepherdsville Standard Drawing No. EF-09.

2.2.14. Steel Posts.

Steel posts shall be “U” shaped or “T” shaped posts that meet the requirements given in the City of Shepherdsville Standard Drawing No. EF-10

2.2.15. Steel Reinforcement Mesh.

Steel reinforcement mesh shall meet or exceed the specifications for reinforcing mesh given in the City of Shepherdsville Standard Drawing No. EF-10.

2.2.16. Synthetic Reinforcement Mesh.

Synthetic reinforcement mesh shall meet or exceed the specifications for reinforcing mesh given in the City of Shepherdsville Standard Drawing No. EF-10.

2.3 EXECUTION OF WORK

2.3.1 Site Preparation.

2.3.1.1 Rights-of-Way and Easements.

The Contractor shall confine his construction activities within the rights-of-way and/or easements shown on the Plans. The Contractor shall be responsible for obtaining written agreements for use of private property outside of his development or the City of Shepherdsville acquired easements

for such purposes as storage of material and equipment and access to the construction site. The private agreement shall be specific to the responsibilities of both parties and shall provide the City of Shepherdsville with indemnification and shall hold the City of Shepherdsville harmless. The Contractor shall provide a copy of all such written agreements to the City of Shepherdsville immediately upon obtaining same. Access shall not be made through areas or obstructions designated as "Do Not Disturb (DND)" or "Do Not Remove (DNR)" without prior approval by the City of Shepherdsville.

2.3.1.2 Temporary Construction Easements.

Temporary construction easement shall be used for access to the construction site and temporary storage of materials and/or equipment. The Contractor shall protect trees within the temporary easement where possible. Where damage to trees is unavoidable, the Contractor will be responsible for compensating property owners, obtaining written agreements with the property owners, and shall indemnify and hold the City of Shepherdsville harmless. The Contractor shall provide the City of Shepherdsville with a copy of all such written agreements prior to performing the Work. No borrow material can be removed from a temporary construction easement, nor can construction material be buried within a temporary construction easement, without the written consent of the City of Shepherdsville and property owner.

2.3.1.3 Limits of Disturbance.

The limits of disturbance define the areas in which construction operations are allowed. Construction activities include, but are not limited to; construction traffic, excavation, earth moving activities, stockpiling and staging activities.

2.3.1.4 Existing Obstructions.

Locations of obstructions shown on the Plans are approximate. They are shown only for information purposes and are not intended as an accurate location of such obstructions. Obstructions not shown on the Plans but encountered by the Contractor shall be removed as necessary and, if directed by the City of Shepherdsville, replaced in their original state or protected by the Contractor at no additional cost to the City of Shepherdsville.

2.3.1.5 Protection of Trees and Shrubs.

No existing trees or shrubs in rights-of-way and/or easements which are marked "Do Not Disturb (DND)" or "Do Not Remove (DNR)" on the Plans, shall be damaged or destroyed. Where branches of such trees or shrubs interfere with the Contractor's operations, they shall be protected by tying

back wherever possible. When possible, put up fencing or other barriers around trees to be protected.

When working around trees, the Contractor shall make every effort to save as many trees as possible by utilizing the following methods of construction .

- Make every effort not to cut or damage any root 2-inches or larger.
- When constructing a trench and roots are encountered, cut 2-inch diameter and larger roots with a clean saw flush with the sides of the trench.
- When roots 2-inches or larger are broken or split, dig out enough of the single trench side to saw through an undamaged portion of the root.
- Use a solution of chlorine bleach and water or a commercial solution to clean the saw before cutting next tree, to reduce the chance of spreading disease.
- In trenches where roots have been cut, backfill as soon as possible or keep all root ends moist with wet burlap, peat moss or similar material.
- Pile excavated soil on the side of the trench opposite the tree. If this procedure is not possible, place the soil on a plastic tarp, a sheet of plywood or a 4-inch thick bed of mulch outside the drip line of the tree to be protected.
- Do not dispose of cable scraps, oil cans, wood scraps, machine fluids, paint, left over concrete or any other debris in the backfill.
- The last 24-inches of backfill shall be compacted to original ground firmness, but no more.
- Water the backfill, until the last 24-inches of backfill is moist.
- Do not scrape or gouge any bark on trunks or lower limbs with equipment. Tie back lower limbs when possible.

Where equipment is working in confined space near trees, wrap the tree trunk in old tires or snow fence, or place 2-inch x 4-inch studs around the tree trunk and rope or band them in place.

- Protect valuable trees or groups of trees by erecting a fence at or just outside the dripline.
- Do not park or operate vehicles and/or equipment within the dripline of a tree unless the Mulch Method or the Bridge Method has been used.

- (A) Mulch Method Root Protection. Place a 12-inch thick layer of wood chips around the base of the tree that extends from the trunk beyond the baseline of the tree.
- (B) Bridge Method Root Protection. Place steel plates on railroad ties to bridge construction traffic over the tree's root zone to prevent soil compaction.
 - When limbs are accidentally broken by equipment, remove the jagged edge by sawing at the broken limb's junction with the trunk or the next larger limb. Cut as close as possible without cutting into the branch collar, and follow other recommended pruning practices as outlined in "Pruning Trees Near Electric Utility Lines" by Dr. Alex L. Shigo. Do not paint the pruning wound. Remember to clean the saw blade before cutting the limb and before cutting on another tree.
 - Do not store materials within the dripline of a tree.
 - Do not add additional soil within the dripline of a tree.
 - Do not remove any soil within the dripline of a tree.

If the Contractor's operations will not permit saving certain trees marked "DND" or "DNR" on the Plans, the Contractor shall be wholly responsible for satisfying all claims for restoration or restitution resulting from their damage or removal. If the Work is within public rights-of-way in the City of Shepherdsville, the Contractor shall contact an arborist/forester before cutting or removing any trees affected by his Work and shall comply with the Forester's requirements. If the Work is within public rights-of-way in Bullitt County, the Contractor shall first contact an Arborist/Forester before cutting or removing any trees affected by his Work and shall comply with the Forester's requirements. Within the easement, the Contractor shall first advise the City of Shepherdsville and then shall replant or replace trees or shrubs with a species and size agreed by the property owners in writing, or the Contractor shall compensate the property owner for the loss. The Contractor shall provide the City of Shepherdsville with a copy of all written Agreements, with specific responsibilities detailed, prior to performing any Work, and shall hold the City of Shepherdsville harmless.

If trees and shrubs are moved or pruned, this Work shall be done in accordance with Home and Garden Bulletin No. 83, U.S. Department of Agriculture, "Pruning Shade Trees and Repairing Their Injuries". However, the Contractor shall obtain in writing and provide to the City of Shepherdsville the property owner's permission to move or prune trees or shrubs on the property. Trees and shrubs damaged by the Contractor's operations shall be repaired in accordance with said Bulletin No. 83. Any trees whose stumps will not be removed shall be ground out 6-inches below

the ground surface. All grindings shall be removed. Backfill with suitable material and revegetate appropriately.

Payment for protecting trees and shrubs shall be the obligation of the Contractor at no additional cost to the City of Shepherdsville.

2.3.1.6 Protection of Obstructions Outside Right-of-Way/Easement Limits.

The Contractor shall protect and avoid damage to all trees, shrubs, plants fences, turfed areas, structures and all other objects outside the right-of-way/easement limits shown on the Plans and right-of-way/easement plats from damage due to construction operations. Damage caused by the Contractor shall be repaired or restored at no additional cost to the City of Shepherdsville. Particular care shall be used to avoid damage to trees, shrubs, bushes, turfed areas, and private property located adjacent to rights-of-way/easements on private property. No trees, plants, turfed areas, or other objects outside such limits shall be disturbed or damaged without the written permission of the property owner. The Contractor shall provide the City of Shepherdsville a copy of all written agreements prior to performing any Work, and shall hold the City of Shepherdsville harmless.

2.3.1.7 Special Protection of Obstructions Inside Easement Limits.

Wherever the installation of sanitary or storm drainage facilities conflicts with other improvements previously made by other agencies, utility companies, governmental bodies, or adjacent property owners, then the Contractor shall be responsible for their protection and preservation, including necessary removal and storage of such improvement, and subsequent replacement to obtain, to the fullest extent possible, the undisturbed condition.

2.3.1.8 Clearing and Grubbing.

Sediment control devices as required by the Erosion Prevention and Sediment Control Plan shall be in place before clearing and grubbing is performed. Those areas contained within the rights-of-way and/or easements shown on the Plans and which will be excavated or used for embankment shall be cleared of trees, stumps, brush, projecting roots, hedges, weeds, logs, and other protruding obstructions, except for trees and shrubs marked "Do Not Disturb". All trees, stumps, roots, brush, hedge, and other protruding obstructions within the rights-of-way/easements that are to be removed shall be cut to within 3 inches of existing ground. The area shall be grubbed to a minimum depth to 6 inches below existing grade to remove grass, roots, and other organic material. This Work shall be done well in advance of earthwork operations in accordance with the Erosion Prevention and Sediment Control Plan.

2.3.1.9 Removal of Obstructions and Pavements.

Existing fence material and posts within the right-of-way/easement limits shown on the Plans and right-of-way/easement plats shall be moved from the construction area and stored in such a manner as to protect them against damage. The Contractor shall be responsible for the condition of the removed fence material and posts. The Contractor shall demolish and remove all structures and structure foundations within the right-of-way/easement limits unless otherwise directed by the City of Shepherdsville. Such structures and foundations shall be removed to 24 inches below grade or as directed by the City of Shepherdsville. The Contractor shall protect and avoid damage to existing structures when they are to be relocated as directed by the City of Shepherdsville. The Contractor shall remove all abandoned vehicles, appliances, and rubbish within the right-of-way/easement limits.

Cuts in all existing pavements shall be made along straight saw cut lines parallel with each edge of the trench or structure. If directed by the City of Shepherdsville, cuts in concrete pavements or sidewalks shall be to the nearest construction joint. Cuts in existing curb and gutter shall be made to straight lines perpendicular to the alignment of the curb.

2.3.1.10 Disposal of Debris.

All trees, brush, logs, leaves, construction debris, and refuse shall be collected and disposed of in accordance with all applicable codes and ordinances. Debris shall be removed from the site as soon as practical. Unless otherwise provided in the Contract, the Contractor shall make his own arrangements for disposing of such material off-site. All disposal plans must be approved by the City of Shepherdsville.

2.3.1.11 Topsoiling.

Unless otherwise directed by the City of Shepherdsville or shown on the Plans, topsoil shall be stripped from Project areas to be graded and stockpiled for later use at no additional cost to the City of Shepherdsville.

- (A) Topsoil Stripping: Strip 4 inches (minimum) of topsoil only from those areas that will be disturbed by excavation, filling, road building, or compaction by equipment. Topsoil stripping is a construction activity. Sediment controls shall be installed prior to the start of topsoil stripping in any area.
- (B) Topsoil Stockpiling: Select stockpile location(s) to avoid slopes, floodplains and natural drainage ways. Do not place stockpiles near bodies of water or traffic routes. Install sediment barriers (silt fence

or straw bale sediment barrier) as necessary to retain sediment from stockpiles. Protect topsoil stockpiles with temporary stabilization when they will not be utilized for thirty (30) days or more. If stockpiles are not to be used within twelve (12) months, they shall be permanently stabilized to control erosion and weed growth.

2.3.1.12 Temporary Fencing used to Contain Livestock/Domestic Animals.

All temporary fencing erected to contain livestock or domestic animals shall be constructed in such a manner as to maintain a level of closure as good as or better than that which existed prior to construction. The Contractor shall examine all such temporary fencing daily to ensure that all livestock or domestic animals are sufficiently contained.

2.3.1.13 Replacement of Fences.

Any fences disturbed within right-of-way/easement limits shall be replaced to the satisfaction of the Engineer at no additional cost to the City of Shepherdsville. Fences in such poor condition that they cannot be removed and replaced shall be replaced with fence material similar in original quality, size, and appearance to the removed fence, or a written release shall be obtained from the property owner and a copy provided to the City of Shepherdsville.

2.3.2 Erosion Prevention

2.3.2.1 Temporary Soil Stabilization

- (A) Preparing the Seed Bed. Areas to be temporarily seeded shall require the preparation of a seed bed only when the soil surface is desiccated, is non-uniform, or contains clods of large stones. Disturbance of the soil surface by whatever means that is practicable, such as disking, to create a 2 inch thick loose and roughened condition capable of retaining the seed and mulch will be required when the soil surface is desiccated or non-uniform. Clods and stones larger than 2 inches shall be removed. The preparation of a seed bed will not be required when the soil surface is in an acceptable condition from the normal grading operations.
- (B) Seeding. Temporary seeding shall be permitted only during the periods indicated in the table below. In order to stabilize erodible areas with vegetation through the winter, temporary seeding must be completed no later than October 31. Working the soil to cover the seed will not be required. Temporary seeding shall be sown at the approximate rate of 3 pounds per 1000 square feet.

<u>Work Item</u>	<u>Accepted Work Interval</u>
Temporary Seeding with Annual Rye	March 1 through November 1
Temporary Seeding with Winter Wheat or Rye Grain	September 1 through November 1

- (C) Protection. All seeded areas shall be promptly protected with straw mulch or wood cellulose fiber mulch. The materials shall be uniformly applied and anchored to the seeded areas in accordance with Section 9.2 of these Specifications.
- (D) Dormant Season Stabilization. Areas requiring temporary stabilization during the period of November through February, when seeding is not permitted, shall receive only an application of straw mulch held in place by crimping or netting. The approximate rate of application of the straw mulch shall be 3 tons per acre.

2.3.2.2 Temporary Stabilization of Waterways.

Erosion control blankets for temporary stabilization of waterways shall be the equivalent of the temporary blanket specified for permanent stabilization of the waterway. In waterways where erosion control blankets are not specified for permanent stabilization, or a permanent erosion control mat is specified for permanent stabilization, the erosion control blanket for temporary stabilization shall be that specified on the Erosion Prevention and Sediment Control Plan or by the City of Shepherdsville. The blankets shall be installed in accordance with Section 9 of these specifications.

2.3.2.3 Flow Diversions.

Temporary diversions for runoff from undisturbed areas shall be constructed in accordance with Erosion Control Plan.

- (A) Installation: Temporary diversions shall be constructed according to the sections and on the alignment and grade shown on the Erosion Prevention and Sediment Control Plan. Install diversions in the sequence specified on the Erosion Prevention and Sediment Control Plan or as directed by the City of Shepherdsville.
- (B) Inspection and Maintenance: Temporary diversions shall be inspected and maintained in strict accordance with the Erosion Control Plan.
- (C) Removal: Remove temporary diversions in accordance with the requirements of the Erosion Prevention and Sediment Control Plan.

2.3.2.4 Outlet Stabilization

- Level Spreader. Level spreaders shall be constructed in accordance with the Erosion Prevention and Sediment Control Plan.
 - A. Installation: Level spreaders shall be constructed according to the sections and on the alignment and grade shown on the Erosion Prevention and Sediment Control Plan.
 - B. Inspection and Maintenance: Level spreaders shall be inspected and maintained in strict accordance with the Erosion Prevention and Sediment Control Plan.
 - C. Removal: Remove level spreaders in accordance with the requirements given in the Erosion Prevention and Sediment Control Plan.
- Culvert Outlet Protection. Culvert aprons and headwalls shall be constructed in accordance with Section 5.3 of these Specifications.

2.3.2.5 Temporary Stream Crossings.

All temporary stream crossings shall be done in accordance with the Kentucky Stream Crossing Permit from the Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water. Stream banks shall be permanently or temporarily stabilized within 14 days of initial streambank disturbance. Copies of all applicable permits shall be kept at the job site. Temporary stream crossings shall be built in accordance with the approved Erosion Prevention and Sediment Control Plan prior to using the crossing.

- (A) Long-Term Stream Crossings: For locations where a crossing will be used for access, a bridge or a pipe system shall be installed in accordance with Standard Drawing No. ER-02 to prevent personnel, equipment and material from disturbing the stream with each crossing. Bridges and culverts shall be constructed to the dimensions given in the Erosion Prevention and Sediment Control Plan. Visible build-up of silt and mud in the creek will be cleaned out on a regular basis and appropriate measures shall be taken to stabilize the crossing and prevent further erosion according to Standard Drawing No. ER-02 and the Erosion Prevention and Sediment Control Plan.

Pump-around flow diversion shall be established prior to any construction activity in the stream in accordance with Standard Drawing No. ED-01. Flow diversion is not required when the stream is dry for the duration of construction activities in the stream.

- (B) Short-Term Stream Crossings: For locations where a crossing is not used for access, streambank disturbance shall be kept to the minimum required to construct the pipeline stream crossing. Pump-around flow diversion in the stream (in accordance with Standard Drawing No. ED-01) shall be established in the stream prior to the start of any construction activities in the stream and shall be maintained until construction and stabilization (permanent or temporary) are complete. Flow diversion is not required when the stream is dry.

2.3.2.6 Surface Roughening

Surface roughening, including tracking, stair-step grading, and slope grooving shall be performed at the locations shown on the Erosion Prevention and Sediment Control Plan in accordance with Standard Drawing Nos. EC-04-01, EC-05-01 and EC-06-01.

2.3.3 Sediment Control

2.3.3.1 General.

The Contractor shall exercise every reasonable precaution at all times to prevent water pollution by the deposition of sediment in streams, lakes, and reservoirs. He shall conduct and schedule his operations so as to avoid or minimize the muddying or siltation of areas adjacent to the construction site including streets, storm sewers, vacant lots, etc. The Contractor shall comply with the applicable provisions of KRS Chapters 220 and 224 of the State Water Pollution Control Laws and other applicable statutes relating to the prevention or abatement of water pollution.

2.3.3.2 Silt/Velocity Ditch Checks.

Silt/velocity ditch checks shall be constructed using stone-filled bags in accordance with Standard Drawing No. EF-12.

- (A) Installation: Silt/velocity checks shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction on areas that drain to the check location.
- (B) Inspection and Maintenance: Silt/velocity checks shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-12.
- (C) Removal: Remove silt/velocity checks in accordance with the requirements given in Standard Drawing No. EF-12. Checks temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.3 Silt Fence.

Where called for on the Erosion Prevention and Sediment Control Plan or the Project Plans and Specifications, silt fence shall be installed, inspected, maintained, and removed in accordance with the requirements given in Standard Drawing No. EF-09.

- (A) Installation: Silt fence shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction on areas that drain to the fence location.
- (B) Inspection and Maintenance: Silt fence shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-09.
- (C) Removal: Remove silt fence in accordance with the requirements given in Standard Drawing No. EF-09. Silt fences temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.4 Reinforced Silt Fence.

Where called for on the Erosion Prevention and Sediment Control Plan or the Project Plans and Specifications, reinforced silt fence shall be installed, inspected, maintained, and removed in accordance with the requirements of Standard Drawing No. EF-10.

- (A) Installation: Reinforced silt fence shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the fence location.
- (B) Inspection and Maintenance: Reinforced silt fence shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-10.
- (C) Removal: Remove reinforced silt fence in accordance with the requirements given in Standard Drawing No. EF-10. Silt fences temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.5 Stabilized Temporary Construction Entrances.

Stabilized temporary construction entrances shall be constructed in accordance with Standard Drawing No. ER-01.

- (A) Installation: Stabilized temporary construction entrances shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to accessing the construction site.
- (B) Inspection and Maintenance: Stabilized temporary construction entrances shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. ER-01.
- (C) Removal: Remove stabilized temporary construction entrances in accordance with the requirements given in Standard Drawing No. ER-01. Stabilized entrances temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.6 Stone Bag Inlet Protection for Drop Inlets.

Stone bag inlet protection for drop inlets shall be constructed in accordance with Standard Drawing No. EF-03.

- (A) Installation: Stone bag inlet protection shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the inlet, or immediately following the time at which a new inlet can receive runoff from a disturbed area. The Contractor shall not use Stone Bag Inlet Protection in areas where traffic could be impacted.
- (B) Inspection and Maintenance: Stone bag inlet protection shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-03.
- (C) Removal: Remove stone bag inlet protection in accordance with the requirements given in Standard Drawing No. EF-03. Inlet protection temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.7 Filter Fabric Inlet Protection for Drop Inlets.

Filter fabric inlet protection for drop inlets shall be constructed in accordance with Standard Drawing No. EF-01.

- (A) Installation: Filter fabric inlet protection shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the inlet, or immediately following the time at which a new inlet can receive runoff from a disturbed area.

- (B) Inspection and Maintenance: Filter fabric inlet protection shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-01.
- (C) Removal: Remove stone bag inlet protection in accordance with the requirements given in Standard Drawing No. EF-01. Inlet protection temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.9 Stone Bag Inlet Protection for Curb Inlets.

Stone bag inlet protection for curb inlets shall be constructed in accordance with Standard Drawing No. EF-04.

- (A) Installation: Stone bag inlet protection for curb inlets shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the inlet, or immediately following the time at which a new inlet can receive runoff from a disturbed area.
- (B) Inspection and Maintenance: Stone bag inlet protection shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EF-04.
- (C) Removal: Remove stone bag inlet protection in accordance with the requirements given in Standard Drawing No. EF-04. Inlet protection temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.11 Stone Bag Inlet Protection at Headwalls.

Stone bag inlet protection at headwalls shall be constructed in accordance with Standard Drawings EF-05, EF-06, and/or EF-07.

- (A) Installation: Stone bag inlet protection at headwalls shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the headwall, or immediately following the time at which a new headwall can receive runoff from a disturbed area.
- (B) Inspection and Maintenance: Stone bag inlet protection shall be inspected and maintained in strict accordance with the requirements given in Standard Drawings EF-05, EF-06, and/or EF-07.

- (C) Removal: Remove stone bag inlet protection in accordance with the requirements given in Standard Drawings EF-05, EF-06, and/or EF-07. Inlet protection temporarily removed to facilitate construction activities shall be replaced immediately following completion of such activity.

2.3.3.12 Temporary Sediment Traps.

Temporary Sediment traps shall be constructed in accordance with Standard Drawing No. EB-01.

- (A) Installation: Temporary Sediment traps shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the trap.
- (B) Inspection and Maintenance: Temporary Sediment traps shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EB-01.
- (C) Removal: Remove temporary sediment traps in accordance with the requirements given in Standard Drawing No. EB-01.

2.3.3.13 Temporary Sediment Basins.

Temporary Sediment basins shall be constructed in accordance with Standard Drawing No. EB-02.

- (A) Installation: Temporary Sediment basins shall be installed at the locations shown on the Erosion Prevention and Sediment Control Plan prior to the start of construction activities on areas that drain to the basin.
- (B) Inspection and Maintenance: Temporary Sediment basins shall be inspected and maintained in strict accordance with the requirements given in Standard Drawing No. EB-02.
- (C) Removal: Remove Temporary sediment basins in accordance with the requirements given in Standard Drawing No. EB-02.

2.3.3.14 Diversions for Sediment-Laden Water.

Temporary diversions shall be constructed in accordance with the Erosion Prevention and Sediment Control Plan.

- (A) Installation: Temporary diversions shall be constructed according to the sections and on the alignment and grade shown on the Erosion Prevention and Sediment Control Plan. Install diversions in the sequence specified on the Erosion Prevention and Sediment Control Plan or as directed by the City of Shepherdsville.
- (B) Inspection and Maintenance: Temporary diversions shall be inspected and maintained in strict accordance with the requirements given in the Erosion Prevention and Sediment Control Plan.
- (C) Removal: Remove temporary diversions in accordance with the requirements given in the Erosion Prevention and Sediment Control Plan.

2.4. EROSION PREVENTION AND SEDIMENT CONTROL PLAN

2.4.1 General.

Construction shall conform to all requirements of the Erosion Prevention and Sediment Control Plan as provided in the specifications or all other applicable specifications and the Contract Documents.

2.4.2 Certification.

For all City of Shepherdsville projects, the Contractor and all Subcontractors shall sign a certification statement, as required by the KPDES General Permit KYR 100000. This statement will be held in the City of Shepherdsville's project file.

2.4.3 Revisions.

Revisions to the Erosion Prevention and Sediment Control Plan must be approved by the City of Shepherdsville. All revisions must be shown on the EPSC Plan.

2.4.4 Spill Prevention, Control, and Countermeasures (SPCC) Plan.

The Contractor and Subcontractors shall be responsible for obtaining and implementing SPCC Plans for petroleum products and hazardous materials stored on the job site as required by National Oil Pollution Prevention (NOPP) Regulations. If petroleum products are stored in containers with capacity in excess of 660 gallons, the storage tanks are regulated by NOPP regulations and an SPCC plan is required.

SECTION 3

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

EARTHWORK

3.1 DESCRIPTION OF WORK

This Work shall consist of excavations, backfilling of excavations, construction of embankments, and grading for all types of sanitary and storm drainage facilities, and all other items as may be necessary to complete the earthwork as shown on the Plans, in the Contract, or as directed by the City of Shepherdsville.

3.2 MATERIALS

3.2.1 Crushed Stone

Crushed stone used to stabilize and backfill excavations shall be coarse aggregate conforming to Size No. 57 as set forth in Section 805 of the KTC Specifications and shall be free from sharp, angular pieces which could, in the judgment of the City of Shepherdsville, cause damage to the pipe.

3.2.2 Sand

Sand for backfill placed in accordance with Section 3.3.4.2 (A) herein referred to as Type 1-A backfilling shall be comprised of sand or sand-gravel mixtures containing less than 30 percent passing a No. 40 sieve and less than 5 percent passing a No. 200 sieve. Sand or sand-gravel mixtures shall classify as SW, SP, or GW, and shall have a uniformity coefficient of 4.5 or more, as set forth in ASTM D 2487, Standard Specification for Classification of Soils for Engineering Purposes. Sands which have a coefficient of uniformity less than 4.5 but greater than or equal to 1.5 will be permitted, but placement and compaction shall be in accordance with Section 3.3.4.2.(B). These sands are referred to as Type 1-B backfill.

The Contractor shall provide a Certification of Compliance stating that the sand fully complies with the requirements stated herein. In addition, the Contractor shall provide the results of the sieve analysis, including a graph depicting the percent finer versus particle size and the uniformity coefficient.

Sand used on the basis of Certificates of Compliance may be sampled and tested by the agency designated by the City of Shepherdsville at any time and, when found not to be in conformity, will be subject to rejection, whether in place or not. Should the test results show the sand to not meet the requirements stated herein, then the Contractor shall assume the full cost of the testing, removal of the undesirable

material, replacement of the materials and other Work resulting from the removal of the undesirable material and replacement by acceptable material.

3.3 Execution of Work

3.3.1 General

Prior to beginning earthwork operations, all necessary clearing, grubbing, removal of obstructions and pavements, and installation of required sediment control facilities shall have been completed in accordance with Section 2 of these Specifications. Rough grading and restoration shall be maintained within a maximum distance of 1,500 L.F. of the active disturbance, with logical limits between structures, unless otherwise approved by the City of Shepherdsville.

The Contractor shall at all times be responsible for the condition of the trenches and filled areas. He shall maintain frequent inspection of same, and if at any time before the final acceptance of the Work by the City of Shepherdsville, the trenches or filled areas settle or sunken areas appear, he shall be required to refill these sunken areas with suitable material as soon as they are discovered. Barricades are to be closely spaced to provide a nearly continuous protection. All trenches shall be barricaded and caution-lighted or covered with steel trench plates at all times for the protection of the public.

3.3.2 Excavation

3.3.2.1 Classification

Without regard to the materials encountered, all excavation shall be unclassified. It shall be distinctly understood that reference to rock, earth, or any other material on the Plans or in the Contract, whether in numbers, words, letters, or lines, is solely for the City of Shepherdsville's information and is not to be taken as an indication of classified excavation or the quantity of either rock, earth, or any other material involved.

The Contractor must draw his own conclusions as to the conditions to be encountered. The City of Shepherdsville does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation when the materials encountered are not in accord with the classification shown. In the event contaminated materials are encountered, the Contractor shall cease Work and immediately contact the appropriate agencies, including the City of Shepherdsville, in accordance with Section 3.3.3.2.

Blasting shall be performed at a safe distance ahead of the installation of the pipes and structures to prevent damage as the shots are fired. Blasting of rock for property service connections, branches, and stubs shall be performed concurrent with the trench blasting. The rock at the ends of all pipes, branches, stubs and property service connections, shall be shattered by continuing the blasting operations approximately 6 feet beyond the end of the

pipe for property service connections provided consent and release has been obtained by the City of Shepherdsville and approximately one full joint of pipe beyond the manhole or the end of the main line sewer. Sufficient explosive shall be used to shatter the rock to allow for future excavation. To prevent damage to installed sewers or structures, concrete for walls, footings, or encasements shall not be poured in direct contact with bedrock unless otherwise shown on the Plans or directed by the City of Shepherdsville.

The blasting of rock under existing paving, prior to uncovering the rock, may be permitted provided the Contractor assumes full responsibility for all damage to the existing paving. The City of Shepherdsville reserves the right to require the uncovering of rock prior to blasting if blasting without uncovering proves unsatisfactory.

If the Contractor chooses to shoot rock under paving without uncovering the rock, the Contractor shall immediately repair humps in the paving that create a traffic hazard. All distortions outside the limits of the trench caused by the blasting shall later be removed and replaced as part of the paving restoration.

After the blast is fired, the Contractor shall thoroughly scale the excavation. All loose, shattered rock or other loose material, which may be dangerous to the workmen, pipe, or structure, shall be removed and the excavation made safe before proceeding with the Work. The fact that the removal of loose, shattered rock or other loose material may enlarge the excavation beyond the required width will not relieve the Contractor from making such removal and filling the extra space. If rock is excavated beyond the trench width indicated on the City of Shepherdsville's Standard Drawings, such unauthorized excavation, or over breakage, shall be refilled with crushed stone in the pipe zone the remaining backfill will be per section 3.3.4 or Class B concrete in ditches and streams, at no additional cost to City of Shepherdsville. Remove all blasting debris to ensure public and Contractor's safety.

3.3.3 Earth Materials

3.3.3.1 Selected Excavated Material

This material shall consist of earth removed from excavations and used for backfill. It shall be free from rubbish, organic matter, frozen soil, muck, and other perishable, compressible debris that prevent compaction of the material to a dense, uniform state. Rock and other hard, durable fragments shall be limited to the particle sizes described in Section 3.3.4., with adequate fines to fill all voids, and shall be uniformly distributed through the material.

3.3.3.2 Unsuitable Contaminated Materials

For City of Shepherdsville Capital Improvement Projects, the City of Shepherdsville-or in some instances the property owner-shall be responsible for any asbestos, PCB's, petroleum, hazardous waste or radioactive material uncovered or revealed at the site, which was not shown or indicated in the City of Shepherdsville Capital Improvement Project Plans or identified in the Contract to be within the scope of the Work and which may represent a substantial danger to persons or property exposed thereto in connection with the Work site. Once a problem is identified, Work shall stop until the course of action can be determined by the City of Shepherdsville. It shall then be up to the City of Shepherdsville to participate in paying additional costs for hauling and disposal at a landfill or appropriate facility or cost of testing as delineated further within these specifications.

City of Shepherdsville is NOT responsible for any such materials brought to the site by the Contractor, sub-Contractor, suppliers, or anyone else for whom the Contractor is responsible.

If unsuitable contaminated materials are encountered, the Contractor shall take the following action:

- (A) The Contractor shall immediately stop all Work in connection with such hazardous condition and notify the City of Shepherdsville inspector (and thereafter confirm in writing such notice to the City of Shepherdsville City Engineer.
- (B) The Contractor shall then be responsible for making notification to "911" (Emergency Response) in the event of discovery of a release of contaminated material.
- (C) The Contractor is responsible for making notification to the Kentucky Department for Environmental Protection at (502) 564-2380 or 1-800-928-2380.
- (D) The Contractor is responsible for securing the Work site to prevent access by unauthorized personnel.

NOTES: The above notices should include the precise location, the suspected material type, and the approximate quantity and concentration if known.

IF MATERIALS ARE HAULED WITHOUT NOTICE, IT SHALL BE THE PROPERTY OF THE CONTRACTOR. THE CITY OF SHEPHERDSDVILLE WILL NOT PAY FOR DISPOSAL OR ASSOCIATED ADDITIONAL COSTS.

The Contractor shall not be required to resume Work in connection with such condition until the City of Shepherdsville and/or the owner of the property has obtained any required permits for disposal of the unsuitable materials. The City of Shepherdsville 's engineer shall promptly determine the means and methods to evaluate such condition or take corrective action on a case-by-case basis. This action could involve realignment or other design changes. The City of Shepherdsville will provide the Contractor special written notice specifying that the condition is rendered safe for the resumption of Work, or specifying any special conditions under which the Work may be resumed. The cost of sampling and lab testing will be the responsibility of the City of Shepherdsville. The City of Shepherdsville will also be responsible for substantiated additional costs for disposal such as receiving fees at the local landfill or additional hauling fees.

The Contractor shall resume such Work based on special conditions or the City of Shepherdsville may order such portion of the Work that is in connection with hazardous condition to be deleted from the Work according to the unit price of the Contract. The City of Shepherdsville may choose to perform the deleted portion of the Work with its own forces or make such provisions as necessary to complete that portion of the Project.

3.3.3.3 Stockpiling Excavated Materials

The Contractor shall be responsible for determining the limits of stockpiles in relation to excavations and maintaining such limits to prevent excessive loads on the sides of excavations or sheeting and bracing systems. In addition, excavated materials to be used for backfill shall be stored no closer than 2 feet from the edge of the excavation to allow free passage of the City of Shepherdsville's Engineer and permit the City of Shepherdsville's Engineer to perform his Work in an expeditious and safe manner. Excavated material shall not obstruct crosswalks, sidewalks, street intersections, nor interfere unreasonably with travel on streets by occupants of adjoining property. Gutters or other surface drainage facilities shall not be obstructed. When clear access to fire hydrants, mail boxes, sewer or conduit manholes, and similar utilities or municipal service facilities is required, the Contractor must provide such access. All Work shall conform to the Kentucky Occupational Safety and Health Program and Section 29 CFR 1926, Subpart P, "Trenching and Shoring."

3.3.3.4 Wasting Excavated Materials

All materials excavated by the Contractor and not to be used for backfilling trenches, channels, or structure excavations or to be used in restoration of the ground surface, shall be removed from the site and disposed of by the Contractor at a pre-approved site, unless otherwise specified in the Contract. The City of Shepherdsville reserves the right to retain excess excavated

materials and direct the Contractor to deliver it to a site specified by the Contract at the Contractor's expense. When the Contractor proposes to waste unsuitable or excess excavated material upon any privately-owned property, written consent from the property owner must be secured in advance and a copy provided to the City of Shepherdsville prior to scheduling the Work. All filling operations must be approved by the City of Shepherdsville. No surplus or unsuitable materials shall be deposited in any stream channel or in any place where pre-construction surface drainage would be changed without written permission from the City of Shepherdsville.

3.3.3.5 Sheeting and Bracing and Trench Boxes

The Contractor shall furnish, place and maintain adequate sheeting and bracing or trench boxes as may be required to support the sides of the excavation and prevent any movements of earth which could, in any way, diminish the width of the excavation to less than that necessary for proper construction, cause damage to the sewer or structure being constructed or to adjacent structures, utilities, pavements or walks, or cause injury to workmen or others through movement of the adjacent earth banks, or to otherwise damage or delay the Work. All Work shall conform to the Kentucky Occupational Safety & Health Program and Section 29 CFR 1926, Subpart P, "Trenching and Shoring."

Sheeting and bracing or trench boxes shall be of wood or steel and shall be of adequate strength for excavation. Wherever possible, the sheeting and bracing shall be driven ahead of the excavation to avoid loss of material from behind the sheeting. If it is necessary to excavate below the sheeting, care shall be taken to avoid trimming behind the face along which the sheeting will be driven. Care shall be taken to prevent voids outside the sheeting, but if voids develop, they shall be immediately filled with sand backfill and densified by flushing and jetting with water. Where drop inlets, stacks or other appurtenances are constructed, the trench excavation shall be offset, as required, without additional compensation.

Sheeting left in place shall be cut off at least 18 inches below the ground surface and the cutoff material shall be removed from the excavation. All voids created by cutting off the sheeting shall be immediately filled with sand backfill and densified by flushing and jetting with water. Sheeting and bracing specified to be left in place as shown on the Plans or as ordered by City of Shepherdsville shall be paid for by City of Shepherdsville. Sheeting and bracing left in place at the Contractor's option, shall be at his expense.

All sheeting, bracing, and shoring which are not left in place under the foregoing provisions shall be removed in a manner which will not endanger the completed Work or other structures, utilities, sewers, or property whether, public or private. The Contractor shall exercise care to prevent the opening

of voids during the extraction process. Any voids created while pulling sheeting and bracing shall be immediately filled with sand backfill and densified by flushing and jetting with water.

3.3.3.6 Trench Dimensions

No more than 300 feet of trench in unpaved areas and 100 feet of trench in paved areas shall be opened at any time in advance of the pipe, nor shall more than 100 feet be left unfilled except by written permission from the City of Shepherdsville. In special cases, the City of Shepherdsville may limit the distance to which the trench may be open by notifying the Contractor in writing. Excavations for pipe in both earth and rock trenches shall display a width between the minimum and maximum allowable width, below a level 1 foot above the outside top of the pipe, as shown on the City of Shepherdsville's Standard Drawings. If the maximum allowable trench width is exceeded, a higher strength classification of pipe may be required, at no additional cost to the City of Shepherdsville.

Trench excavations for cast-in-place concrete sewers and structures shall have the minimum width necessary, as determined by the Contractor, for proper and safe construction. Trenches shall be excavated to a subgrade depth of six inches below the outside of the pipe, unless unsuitable foundation materials are encountered at the subgrade level.

3.3.3.7 Unsuitable Foundation

Unsuitable foundation materials shall consist of soft, spongy earth, mud, unconsolidated fill, organic matter, or any other materials that will not, in the opinion of the City of Shepherdsville, provide suitable support. The City of Shepherdsville may order extra Work performed when the bottom of the excavation is unsuitable. It shall be undercut below the subgrade level, to a depth approved by the City of Shepherdsville, and backfilled with crushed stone or other approved backfill material. Class B concrete shall be used to backfill the undercut zones in ditches and streams. At the City of Shepherdsville's direction, on City of Shepherdsville funded Projects, payment shall be made for removal or replacement of unsuitable material within the first 2 feet below the subgrade level.

If the unsuitable material is mud or muck caused by the activity of the Contractor or by his failure to provide adequate drainage for the excavation, no payment shall be made for the removal or replacement of such material.

3.3.3.8 Drainage of Excavations

The Contractor shall maintain all excavations free of water. He shall provide all dams, flumes, channels, sumps, or other Works necessary to keep the

excavation entirely clear of water and shall provide and operate pumps or other suitable equipment of adequate capacity for dewatering the excavations. He shall avoid producing mud in the trench or channel bottom by his operations. If necessary or so directed by the City of Shepherdsville, the Contractor shall place crushed stone at his own expense to maintain a firm, dry excavation bottom and base. Pipe bedding, laying, jointing, and the placing of concrete shall be done in a water-free trench or excavation. The water shall be disposed of at the Contractor's expense.

Where the excavation extends below the water table, and lowering of the water table is necessary to prevent excessive inflows and maintain stability within the excavation, dewatering shall be performed. The Contractor shall use well points, sump pumps, or any other method of dewatering as required to lower the water table below the bottom of the excavations in a manner that will prevent saturated soil from flowing into open trenches, shafts, structures and tunnels, and render such excavations firm until the structures to be built therein are completed. The Contractor shall obtain the City of Shepherdsville's approval prior to the use of special dewatering equipment other than well points or sump pumps. Dewatering operations are considered incidental to the Work and no additional compensation shall be made to the Contractor. The groundwater shall not be allowed to rise until the backfilling operations are complete. The Contractor shall be responsible for preventing pipe flotation.

Prior to beginning the Work, the Contractor shall obtain, at his expense, a water withdrawal permit from the Commonwealth of Kentucky, Department of Natural Resources and Environmental Protection Cabinet (KNREPC) in accordance with the following criteria:

- (A) Where the average withdrawal rate is more than ten thousand gallons per day (10,000 gal/day), a permit shall be required, except as exempted by KRS 151.140.
- (B) Where the withdrawal of water is made at a relatively constant rate each day and the average withdrawal rate is ten thousand gallons per day (10,000 gal/day), or less, no permit will be required.
- (C) Where withdrawals are made on an irregular basis at an irregular rate, permits may be required where the Division of Water determines that the water withdrawn represents a significant portion of the available water supply or that collection of withdrawal data is necessary for water resource planning purposes.

The Contractor shall assume all responsibility for claims resulting from damage to any land, wells, structures or improvements due to his dewatering operations.

Prior to any point discharge into a blue line stream or intermittent blue line stream, the Contractor shall obtain necessary permits from the Kentucky Division of Water and provide a copy to the City of Shepherdsville.

Point discharge operations are considered incidental to the Work and no additional compensation shall be made to the Contractor.

3.3.3.9 Blasting and Hoe-Ramming

When blasting is required to excavate rock, the Contractor shall comply fully with the provisions of the Laws and Regulations Governing Explosives and Blasting, as issued by the Kentucky Department of Mines and Minerals, and the Kentucky Occupational Safety and Health Standards for the Construction Industry, Subpart U, Blasting, as issued by the Kentucky Labor Cabinet.

Prior to any blasting or hoe-ramming operations, a pre-blast survey of potentially affected homeowners and properties shall be conducted by the Contractor or his agent. The Contractor shall provide the City of Shepherdsville with the name of the agency and person(s) who will be performing the survey. All appointments for surveys shall be made in advance by the Contractor or his agent. The City of Shepherdsville will provide the person(s) performing the pre-blast survey an original letter of introduction to identify them to the residents on Capital Improvement Projects. No copies of the letter shall be permitted.

The property owner(s) will be notified of the above procedure for the pre-blast survey by the Contractor or his agent. The affected property owners will be instructed by the Contractor to only accept an original letter of introduction on the City of Shepherdsville's letterhead. The Contractor shall furnish, upon request, all photographs taken and reports made during the pre-blast and post-blast surveys relating to any private property owner's damage claims, without any additional cost to the City of Shepherdsville.

No blasting or hoe-ramming shall be done unless proper insurance has been secured and is in force. Except with written permission by the City of Shepherdsville, no blasting of rock, or hoe-ramming, will be permitted at nights or on Sundays.

During blasting operations, every precaution shall be used for the protection of persons and private and public property. Each blast shall be well covered with mats and other suitable means to confine the rock fragments. Only the minimum amounts of explosives shall be used to shatter the rock. The Contractor shall monitor the blasts to ensure that excessive charges are not being used. The debris from the blasting operations shall be disposed of properly, in accordance with Department of Mines and Minerals Standards.

3.3.3.10 Borrow Material

Borrow material used as backfill or embankment shall be approved for such use by the City of Shepherdsville. The Contractor shall not use borrow material from the permanent or temporary construction easement without the written consent of the City of Shepherdsville. Prior to its use, the Contractor shall identify the source and provide samples for soil classifications and moisture-density tests. Borrow material shall meet the following requirements:

- (A) Unless otherwise permitted by the City of Shepherdsville, borrow material shall not be comprised of soils represented by the following classifications, as determined in accordance with ASTM D 2487: MH, CH, OL, OH, or Pt.
- (B) The borrow material shall be free from rubbish, organic matter, frozen soil, muck or other perishable, compressible debris, which prevent compaction to a dense, uniform state. Rock and other hard, durable fragments shall be limited to particles displaying a maximum dimension of 4 inches, shall not exceed 10 percent of the total volume, and shall be uniformly distributed throughout the material.
- (C) The maximum dry density of the borrow material shall meet or exceed 98 pounds per cubic foot in accordance with ASTM D 698, Standard Specification for Test Methods for Moisture-Density Relations for Soils and Soil-Aggregate Mixtures, Using a 5.5-lb. Rammer and a 12-in. Drop.

3.3.4 Backfill of Trench Excavations

3.3.4.1 General

Backfilling of trenches and tunnel shaft excavations shall be accomplished as soon as possible after the pipe is placed or the tunnel is completed. The Contractor shall have the option of using flushed and jetted or compacted backfill materials. The Contractor shall notify the City of Shepherdsville 48 hours in advance of all flushing and jetting and/or mechanical compaction operations.

3.3.4.1.1 Compaction

Compaction around structures will be performed by mechanical compactor when flushing and jetting of sand and earth material is not possible or practical, or when required by the Plans.

3.3.4.2 Within Limits of Existing or Proposed Paved Surfaces

At the Contractor's option, with prior approval by the City of Shepherdsville (based on the availability of sand which meets the requirements of Section 3.2.2), backfill within the limits of existing or proposed paved surfaces shall consist of: Type I-A Backfill - sand, flushed and jetted, Type I-B Backfill - sand, combination flushed and jetted and mechanically compacted, or Type III Backfill - selected excavated material and/or approved borrow material - mechanically compacted. In special cases and with the approval of the City of Shepherdsville, the Contractor may utilize Type I-A sand backfill - flushed and jetted in the lower portion of the excavation and Type III backfill selected excavated materials - mechanically compacted in the upper portion of the excavation.

- (A) Sand - Flushed and Jetted (Type I-A). After the trench has been completely backfilled with sand, the backfill shall be densified by thoroughly flushing and jetting with water, beginning at the downstream end of the trench and proceeding upstream. Water to be used for flushing and jetting shall be supplied through hoses and pipes having a minimum diameter of 2 inches. The jet pipe shall have a minimum diameter of 1-1/2 inches. Jet pipes used to penetrate the backfill material shall be equipped with a shut-off valve and be of sufficient length to completely penetrate the sand backfill. The jet pipe shall be inserted into the sand backfill at a maximum spacing along the trench of 6 feet and the spacing shall be staggered along the trench area. The jet pipe shall penetrate the sand backfill to within 12 inches of the crushed stone encasement. Care shall be exercised to prevent the jet pipe from penetrating the crushed stone encasement. When the depth of the trench exceeds the length of the jet pipe the flushing and jetting shall be completed in lifts. The pipe shall remain in place until water is observed rising above the backfill throughout the full width of the trench and over a length of the trench equal to one-half the distance between adjacent jet installations. If this condition is not observed within a reasonable period, the Contractor shall increase the water flow or provide additional jet pipes. If the Contractor fails to flush and jet the sand backfill in accordance with the Specifications, the sand backfill shall be excavated and replaced with properly flushed and jetted sand backfill or material compacted in accordance with Section 3.3.4.2.C., at no additional cost to the City of Shepherdsville.

The Contractor shall provide all piping, fittings, etc., necessary to deliver the water along the site of the Work and shall arrange with the Louisville Water Company, if applicable, for making the necessary taps and metering. All expenses incurred for installing the pipe and hose, together with the cost of the water, shall be borne by the

Contractor. Following flushing and jetting and prior to pavement construction, the surface of the sand subgrade shall be thoroughly compacted following the procedures described in Section 3.3.4.2.(B).

- (B) Sand, Combination Flushed and Jetted, and Mechanically Compacted (Type I-B). The trench shall be completely backfilled with sand, and the backfill shall be densified by thoroughly flushing and jetting with water. Flushing and jetting procedures shall be in accordance with Section 3.3.4.2.(A) above. Next, the sand backfill shall be removed to a depth of 3 feet below the pavement surface and stockpiled for later mechanical compaction. The exposed surface shall then be thoroughly compacted. The remainder of the trench shall be backfilled in two lifts of sand (approximately 12-inches thick) up to the pavement subgrade level with each lift being thoroughly compacted. For compaction, the Contractor shall supply a vibratory plate compactor or smooth drum vibratory roller capable of compacting sands to a minimum effective depth of 16-inches. The Contractor shall submit the manufacturer's equipment specifications for proof of this required effective compaction depth. The required number of passes of the roller or plate shall be established at the beginning of compaction operations for the Project by taking nuclear density tests to monitor the density increase with increased passes of the roller or plate. The required number of passes shall be set when no further increase in sand backfill density is measured.
- (C) Earth Materials - Compacted (Type III-A). Selected excavated materials or approved borrow materials containing no rock fragments with a maximum dimension larger than 4 inches shall be carefully deposited in uniform, horizontal layers, not exceeding 6 inches in compacted depth, in a zone located from the top of the cradle or encasement up to a horizontal plane located 2 feet above the exterior top of the pipe. Prior to compaction, each layer shall be level and evenly distributed on both sides of the pipe so as to not disturb, displace or damage the pipe. Each layer shall be thoroughly compacted to a minimum of 95 percent of the standard Proctor density, at moisture content between plus 2 percent and minus 4 percent of the optimum moisture content, as determined by ASTM D 698, utilizing mechanical compaction. Each layer shall be properly compacted before the next succeeding layer is placed. Any lift of fill which pumps under the weight of the compaction equipment shall be rejected, regardless of the field density test results.

The remainder of the trench from the horizontal plane located 2 feet above the pipe up to the ground surface or top of the existing subgrade shall be backfilled with selected excavated materials containing no rock fragments with a maximum dimension larger than

4 inches, or approved borrow materials. The backfill shall be placed in uniform horizontal layers not exceeding 12 inches in compacted depth. Each layer shall be thoroughly compacted to a minimum of 95 percent of the standard Proctor density and moisture content between plus 2 percent and minus 4 percent of the optimum moisture content, as determined by ASTM D 698, utilizing mechanical compaction methods. Each layer shall be properly compacted before the next succeeding layer is placed. Any lift of fill which pumps under the weight of the compaction equipment shall be rejected, regardless of the field density test results. Follow guidelines set forth in the City of Shepherdsville Specifications Section 3.3.9.3. at no additional cost to the City of Shepherdsville.

- (D) Combination Sand (Type I-A) and Earth Backfill (Type III-A). In trench situations where the lower trench dimensions limit the use of mechanical compaction equipment, the existing site conditions limit the effectiveness of the mechanical compaction methods, or where additional backfill material is required to replace unsuitable excavated materials, the Contractor may utilize flushed and jetted sand backfill in the lower portion of the trench and mechanically compacted earth material in the upper portion of the trench with prior approval of the City of Shepherdsville. The sand backfill operations shall extend from the top of the cradle or encasement up to a point where mechanical compaction can be properly accomplished in accordance with Section 3.3.4.2.C. The mechanical compaction operations shall extend from the top of the sand backfill up to the ground surface or top of the existing subgrade. Follow guidelines set forth in the City of Shepherdsville Specifications Section 3.3.9.3.
- (E) No. 57 Crushed Stone - Compacted. With prior approval from the City of Shepherdsville, No. 57 crushed stone may be used as trench backfill within paved areas. The stone shall be carefully deposited in uniform, horizontal layers not exceeding 12 to 24 inches in compacted depth, depending on the type and size of compaction equipment used. The initial lift(s) of stone immediately above the pipe shall be level and evenly distributed on both sides of the pipe. Each layer shall be thoroughly compacted by making a minimum of two passes using a vibratory plate compactor or smooth drum vibratory roller capable of compacting clean stone to a minimum effective depth of the lift thickness selected. The Contractor shall submit the manufacturer's equipment specifications for proof of this required effective compaction depth.

3.3.4.3 Outside Limits of Existing or Proposed Paved Surfaces

At the Contractor's option, except as otherwise specified in Section 3.3.4.4., trench backfill outside the limits of existing or proposed paved surfaces shall consist of earth materials (selected excavated or approved borrow materials) which are flushed and jetted or compacted. The upper one foot of the earth backfill shall be essentially free from rock, gravel or other hard, durable fragments.

- (A) Earth Materials - Flushed and Jetted (Type II Backfill). The lower portion of the trench backfill extending from the top of the cradle or encasement to a horizontal plane located 2 feet above the exterior top of the pipe shall contain no rock or rock fragments with a maximum dimension larger than 1 inch. The remainder of the trench shall be backfilled with selected excavated materials or approved borrow materials containing no rock fragments larger than 1 cubic foot. After the trench has been completely backfilled with selected excavated material or approved borrow material, the backfill shall be densified by thoroughly flushing and jetting with water, beginning at the downstream end of the trench and proceeding upstream. The backfill shall be thoroughly and uniformly sluiced and flooded by introducing water at the top of the trench and by inserting the jet pipe into the backfill at intervals as specified in Section 3.3.3.2. (A) along the trench. This process shall be continued until the backfill is completely saturated and no further settlement is observed. Hoses, jet pipes and the maximum depth of insertion shall be as specified in Section 3.3.4.2.A. After the backfill in the trench has substantially dried and completed any additional settlement, any settlement below the finish grade shall be refilled with additional earth, and compacted in accordance with (B), below.
- (B) Mechanical Compaction of Earth Materials (Type III-B). Selected excavated materials or approved borrow materials, containing no rock or rock fragments with a maximum dimension larger than 3 inches, shall be carefully deposited in uniform, horizontal layers, not exceeding 6 inches in compacted depth, in a zone located from the top of the cradle or encasement up to a horizontal plane located 2 feet above the exterior top of the pipe. Prior to compaction, each layer shall be leveled and evenly distributed on both sides of the pipe so as not to disturb, displace or damage the pipe. Each layer shall be thoroughly compacted to a minimum of 85 percent of the Standard Proctor density before the next succeeding layer is placed. Any lift of fill which pumps under the weight of the compaction equipment shall be rejected, regardless of the field density test results. Follow guidelines set forth in the City of Shepherdsville Specifications Section 3.3.9.3. The remainder of the trench from the horizontal plane located 2 feet above the top of the pipe up to the ground surface shall be backfilled with selected excavated materials or approved

borrow material containing no rock fragments larger than 1 cubic foot. The material shall be placed in uniform horizontal layers not exceeding 12 inches in compacted depth. Each layer shall be compacted with a dozer or other heavy, earth-moving equipment traveling back and forth over the material until no further settlement is observed.

3.3.4.4 Between Pipe and Drainage Swale or Ditch

The Contractor shall use Type III - A backfill in pipe trenches where a surface ditch or swale is to be constructed above the pipe. This includes all ditches and swales - paved, sodded, rip-rapped or seeded.

3.3.5 Depositing Backfill Material

All backfilling shall be done in a manner to avoid displacing or damaging the pipe or structure. Any pipe or structure damaged or displaced shall be excavated and repaired or replaced at the Contractor's expense.

3.3.6 Backfill Against Structures

3.3.6.1 Backfill Against Retaining Walls and Box Culverts

Unless shown otherwise on the Plans, backfill shall be selected excavated materials or approved borrow materials. The placement of any backfill shall be delayed until representative test samples of the concrete have attained a compressive strength of 3,500 pounds per square inch and the concrete has been in place at least seven days.

When the back slopes bounding the excavation lie within the slope limits of 6:1 to 1/4:1, the planes of the slopes shall be destroyed by stepping or serrating to prevent wedging action during compaction.

Backfill material shall be placed and compacted in uniform horizontal layers not exceeding 6 inches in thickness, loose measurement. Each layer shall be compacted by means of approved manually-directed mechanical tampers or rollers. Successive blows of the tamper shall overlap no less than one-fourth of the width of the tamper head. Successive passes of the roller shall overlap no less than one-fourth the width of the roller. Each layer shall be dampened when necessary to ensure the maximum density obtainable, as directed. The Contractor shall not permit heavy rolling compaction equipment to operate closer to the back of the culvert or retaining walls than a distance equal to the unbalanced height of the fill at any time. Backfill that will be beneath or within a proposed embankment or pavement area shall be thoroughly compacted to a minimum of 95 percent of the standard Proctor density, as determined by ASTM D 698. Each layer shall be properly compacted before

the next succeeding layer is placed. Backfill shall be brought up equally on both sides of the walls to the elevation shown on the drawings to prevent unequal loading.

3.3.6.2 Backfill Against Wet Wells and Deep Structures

Unless otherwise shown on the Plans, backfill shall be selected excavated materials, approved borrow materials, sand, or crushed stone. The backfill shall be brought up evenly on all sides to reduce any unbalanced lateral loading that could cause tilting, or opening of joints between riser sections.

For earth materials, backfill shall be flushed and jetted, or mechanically compacted as set forth in the City of Shepherdsville Specifications Section 3.3.4.3. Section (B) and Section 3.3.9.3. when directed by the City of Shepherdsville or as required by the Plans.

3.3.7 Embankments

Embankments placed in areas over which sanitary or storm drainage facilities will be constructed, pavements will be constructed, which will be subjected to erosive action of water flowing through adjacent channels or streams, or for the purpose of storm water detention basins, shall be constructed of selected excavated materials or approved borrow materials. Embankment material shall be placed and compacted in uniform horizontal layers not exceeding 12 inches in thickness, loose measurement. Each layer shall be thoroughly compacted to a minimum of 95 percent of standard Proctor density at moisture content between plus 2 percent and minus 4 percent, as determined by ASTM D 698. Each layer shall be properly compacted before the next succeeding layer is placed. Any lift of fill which deflects under the weight of compaction equipment shall be rejected, regardless of field density test results.

3.3.8 Final Grading

Final grading around and above sanitary sewer or storm drainage improvements shall be shaped to the slope of adjacent undisturbed ground. Sufficient grading operations shall be performed to prevent ponding and to provide natural surface drainage from adjacent areas into storm water inlets, ditches or swales.

3.3.9 Inspection and Testing

3.3.9.1 Inspection Personnel

All flushing and jetting operations shall be performed in the presence of a City of Shepherdsville Inspector. All backfill operations which involve mechanical compaction and which are required to meet a specified degree of compaction shall be performed in the presence of a City of Shepherdsville inspector or an experienced earthwork inspector who represents an Agency

designated or approved by the City of Shepherdsville to provide earthwork inspection and testing on Projects involving City of Shepherdsville facilities.

3.3.9.2 Laboratory Tests

Selected excavated materials or approved borrow materials shall be sampled and tested for standard Proctor density, optimum moisture content and classification by an Agency approved by the City of Shepherdsville. These tests will be required whenever such materials are proposed for use in compacted backfill or embankment and a specified degree of compaction is required. A minimum of one week should be allowed for the Agency to obtain samples and complete the tests.

3.3.9.3 Field Density Tests

Field density tests shall be performed on compacted backfill or embankment materials. The City of Shepherdsville must be notified 24 hours in advance. Scheduling of field density tests with an approved Agency shall be performed 24 hours in advance of the backfill operations. Acceptable methods of performing field density tests include the following:

- (A) Nuclear Density Test - ASTM D 2922, Standard Specification for Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).
- (B) Sand Cone Test - ASTM D 1556, Standard Specification for Test Method for Density of Soil In-Place by the Sand Cone Method.
- (C) Rubber Balloon Test - ASTM D 2167, Standard Specification for Test Method for Density and Unit Weight of Soil In-Place by the Rubber Balloon Method.
- (D) Drive-Cylinder Method - ASTM D 2937, Standard Specification for Test Method for Density of Soil In-Place by the Universal Cylinder Method.

The frequency that field density tests shall be performed will be in accordance to the following minimum schedule. Additional testing shall be performed when directed by the Inspector or by the City of Shepherdsville.

- (A) A minimum of 1 test per 100 cubic yards of material placed and compacted in trenches or 500 cubic yards of material in embankments.
- (B) A minimum of 1 test per lift per 200 feet of material placed and compacted in trenches.

- (C) A minimum of 1 test per lift of material placed and compacted in embankments.
- (D) A minimum of 1 test per shift (day) of compaction operations.
- (E) A minimum of 1 test whenever there is a suspicion of a change in material, moisture content, or degree of compaction control.

When instructed by the City of Shepherdsville, the Contractor shall excavate previously untested backfill or embankment material to a particular grade for testing. Backfilled areas that do not pass this test shall be excavated and recompacted until they meet the compaction specifications. Areas excavated for testing shall be recompacted in accordance with the Project Specifications. The cost of this Work shall be at the Contractor's expense.

3.3.9.4 Payment for Inspection and Testing

When the Contract requires mechanical compaction on the City of Shepherdsville Capital Improvement Projects, earthwork inspection and testing shall be performed as specified at the City of Shepherdsville's expense. When the Contractor has the option of backfilling by flushing and jetting or by mechanical compaction, and he selects to backfill using mechanical compaction, earthwork inspection and testing shall be performed as specified at the Contractor's expense for any Project. The mechanical compaction option shall be approved by the City of Shepherdsville prior to placement of backfill and the Testing Agent must be designated in writing.

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SECTION 4

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

PIPEWORK

4.1 DESCRIPTION OF WORK

This Work shall consist of the furnishing, bedding, laying, jointing, and testing of all sanitary sewer, force main or drainage pipe shown on the Plans or otherwise required by the Contract. The Contractor shall limit active pipe installation to assure clean up following such Work, in accordance with Section 4.3.1. of these Specifications.

4.2 MATERIALS

4.2.1 General

Sanitary sewer, force main or drainage pipe may be any of the following types, unless shown otherwise in the Contract. Pipe strength classes listed are the minimum acceptable classes for each type of pipe. Conditions of the construction may warrant a stronger pipe than listed herein, and the pipe supplied shall be as required by the Specifications or shown on the Plans, subject to the approval of the City of Shepherdsville. If the contractor requests a method other than the Plans and Specifications, and the method requires a stronger pipe, the contractor will incur the additional cost of the stronger pipe needed. Any pipe found defective, or otherwise not meeting the Specifications shall be rejected and replaced by pipe meeting these Specifications. The City of Shepherdsville reserves the right to randomly test up to 3 sections of pipe for each size furnished, in accordance with ASTM standards. Upon passing the tests, the City of Shepherdsville shall reimburse the Contractor for the cost of the testing. The Contractor shall pay for any failed tests.

The Contractor shall furnish three copies of the supplier's certification stating that pipe materials were manufactured, sampled, tested and inspected in accordance with the standards listed in this Section and have been found to meet those requirements.

4.2.2 Sanitary Sewers

4.2.2.1 Reinforced Concrete Pipe.

Reinforced concrete pipe is not allowed except as approved by the City of Shepherdsville.

4.2.2.2 Ductile Iron Pipe and Fittings.

Ductile iron pipe shall meet the requirements of ANSI/AWWA C151/A21.51, Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or Other Liquids. Unless shown otherwise on the Plans or in the Contract, the thickness class shall be determined based on a working pressure of 150 psi, in accordance with ANSI/ AWWA C150/A21.50, Thickness Design for Ductile Iron Pipe.

Flanged joint ductile iron fittings shall meet the requirements of ANSI/AWWA C110/A21.10, Ductile Iron and Gray Iron Fittings, 3 inch through 48 inch for Water and Other Liquids. Unless shown otherwise on the Plans or in the Contracts, Class 250 fittings with class 53 wall thickness shall be used.

Mechanical, push on and other such joints shall meet the requirements for ductile iron fittings, 3 in. through 16 in., ANSI/AWWA C153/A21.53. Where these short bodied compact fittings are to be fitted to aged existing cast iron pipe of larger diameter than specified in A21 standards, mechanical joint sleeves or bell-and-spigot sleeves shall provide transition.

All pipe and fittings shall be cement-lined in accordance with ANSI/AWWA C104/A21.4, Cement-Mortar Lining for Ductile Iron and Gray Iron Pipe and Fittings, or polyurethane lined over concrete or ductile iron or gray iron pipe and fittings. The polyurethane lining shall be an ASTM Type V, chemical cure, 100% solids, elastomeric and aromatic with no sand fillers or extenders added. It shall be capable of being spray applied to 50 mils nominal thickness in a single application. Minimum lining thickness shall be 40 mils. The polyurethane lining shall be monolithic, flexible membrane that is corrosion, abrasion, and impact resistant; with a Shore "D" hardness of 60 to 65 at 78°F (25.5°C); a tensile strength of 2,878 psi and elongation of 52% per ASTM D-412; shall be resistant to abrasion as measured by a weight loss of no more than 42 mgs. per ASTM D-1044; and shall have a water vapor transmission rate (WVTR) of no more than 0.016 grams per 100 square inches (254 cm²) per 24 hours (75 mils DFT @ 73°F (22.7°C), 100% RH, per ASTM F-1249-90). Unless otherwise noted on the Plans or in the Special Provisions, all pipes shall be cement lined. Lining thickness per ANSI/AWWA C-104/A21.4 shall be 1/16 in. (min.) for 3 through 12 in. pipe, 3/32 in. for 14 in. through 24 in. pipe, and 1/8 in. for 30 through 54 in. pipe.

Joints shall be push-on rubber gasket types which meet the requirements of ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings. When flanged joints are required, they shall meet the requirements of ANSI/AWWA C115/A21.15, Flanged Ductile Iron and Gray Iron Pipe with Threaded Flanges. Mechanical flanged restrained joints may be used when approved by the City of Shepherdsville.

All flanged and mechanical joints for ductile iron pipe and fittings shall be made with stainless steel nuts, bolts, etc.

4.2.2.3 Polyvinyl Chloride (PVC) Pipe and Fittings.

Unless shown otherwise on the Plans, in the Contract, or stipulated by the City of Shepherdsville, the Contractor may, at his option, use any of the following types of PVC pipe:

- (A) PVC pipe meeting the requirements of ASTM D 3034, Standard Specification for Type PSM Poly (Vinyl Chloride)(PVC) Sewer Pipe and Fittings. Unless shown otherwise on the Plans or in the Contract, SDR 35 pipe shall be required.
- (B) PVC pipe meeting the requirements of ASTM F 679, Standard Specification for Poly (Vinyl Chloride)(PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings. Unless shown otherwise on the Plans or in the Contract, SDR 35 (approximate) shall be required.
- (C) PVC pipe meeting the requirements of ASTM F 789, Standard Specification for Type PS-46 Poly (Vinyl Chloride)(PVC) Plastic Gravity Flow Sewer Pipe and Fittings.
- (D) PVC pipe meeting the requirements of ASTM D 1785, Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80 and 120. Unless shown otherwise on the Plans or in the Contract, Schedule 40 pipe shall be required. Fittings shall meet the requirements of ASTM D 2466, Standard 4 Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe Fittings.
- (E) PVC open or closed profile pipe meeting the requirements of ASTM F 794, Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.
- (F) Corrugated PVC pipe meeting the requirements of ASTM F 949, Latest Revision, "Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings".

Polyvinyl Chloride Pipe shall be installed in accordance with these Specifications and ASTM Standards for "Underground Installation of Flexible Thermoplastic Sewer Pipe", D2321 requiring a minimum trench width of not less than the greater of either the pipe outside diameter plus 16 inches or the pipe outside diameter times 1.25 plus 12 inches.

Joints for PVC pipe meeting the requirements of ASTM D 3034, ASTM F 679, ASTM F 789, ASTM F949, and ASTM F 794 shall be gasket, bell and spigot, push-on types which meet the requirements of ASTM D 3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals. Gaskets shall meet the requirements of ASTM F 477,

Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe. For 4 inch diameter pipe meeting the ASTM F 949 requirements, double gaskets shall be used at the Tee/ Wye.

4.2.2.4 Polyethylene Pipe and Fittings.

Polyethylene pipe shall meet the requirements of ASTM F 894, Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe. The pipe shall be manufactured from material which meets the requirements of ASTM D 1248, Standard Specification for Polyethylene Plastics Molding and Extrusion Materials for Type III, Class C, Category 5, Grade P34 High Density Polyethylene. The pipe class shall be as shown on the Plans or in the Contract. Polyethylene pipe shall not be delivered to the site until the City of Shepherdsville has provided approval for the pipe class to be used.

Polyethylene pipe shall be installed in accordance with these Specifications and ASTM Standards for "Underground Installation of Flexible Thermoplastic Sewer Pipe", D2321.

Joints shall be gasket, bell and spigot, push-on types which meet the requirements of ASTM D 3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals. Gaskets shall meet the requirements of ASTM F 477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

4.2.2.5 Vitrified Clay Pipe and Fittings.

Vitrified clay pipe is not allowed unless approved by the City of Shepherdsville.

4.2.2.6 Adapters and Couplings.

Connections of sanitary sewer pipes of dissimilar materials or different sizes shall be made with connectors or adapters of the compression or mechanical seal types, and which have been approved by the City of Shepherdsville. Bitumastic, butyl resin and mastic types of connections will not be acceptable.

4.2.3 Force Mains

4.2.3.1 Polyvinyl Chloride (PVC) Pipe and Fittings.

Unless shown otherwise on the Plans or in the Contract, the Contractor may use any of the following types of PVC pipe.

- (A) PVC pipe meeting the requirements of AWWA C 900, Standard Specification for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch. The minimum pressure class allowance should be class 150 (DR18). PVC pipe meeting the requirements of AWWA C 905, Standard Specification for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14 inch through 36 inch, pressure rated 165 psi (DR25). The minimum pressure class allowed shall be Class 150 (DR18).

Joints shall be gasket, bell and spigot, push-on types which meet the requirements of AWWA C 900. Gaskets shall meet the requirements of ASTM F 477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe. All pipe should be cast iron outside diameter.

- (B) PVC pipe meeting the requirements of ASTM D 1785, Standard Specification for Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, 120. The minimum pressure rating allowed shall be 150 psi.

Joints can be solvent-cement joints on pipes less than 4 inch and shall meet the requirements of ASTM D 2855, Standard Specification for Making Solvent-Cement Joints with Poly (Vinyl Chloride)(PVC) Pipe Fittings. The solvent-cement shall meet the requirements of ASTM D 2564, Standard Specification for Solvent-Cement for Poly (Vinyl Chloride)(PVC) Plastic Pipe and Fittings.

- (C) PVC pipe meeting the requirements of ASTM D 2241, Standard Specification for Poly (Vinyl Chloride)(PVC) Pressure-Rated Pipe (SDR Series). The minimum pressure rating shall be 150 psi.

Joints shall be gasket, bell and spigot, push-on types which meet the requirements of ASTM D 3139, Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals. Gaskets shall meet the requirements of ASTM F 477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

4.2.3.2 Polyethylene Pipe and Fittings.

Polyethylene pipe shall meet the requirements of ASTM F 714, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter. Materials shall meet the requirements of ASTM D 3350, Standard Specification for Polyethylene Plastic Pipe and Fittings Materials, for Polyethylene Cell Classification PE 345434C. Unless shown otherwise on the Plans or in the Contract, the pressure rating to be used shall be 160 psi (SDR 11).

Joints shall be butt fused joints which meet the requirements of ASTM D 3261, Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

4.2.4 Drainage Pipe

4.2.4.1 General.

On a case-by-case basis, thermoplastic or corrugated metal pipe products may be used for storm drainage facilities when shown on the Plans and approved by the City of Shepherdsville. Only the following types of thermoplastic pipe, which are the City of Shepherdsville approved products, will be considered:

- A. High Density Polyethylene Corrugated Pipe
- B. Polyvinyl Chloride Pipe (PVC)

4.2.4.2 Reinforced Concrete Pipe.

Circular reinforced concrete pipe shall meet the requirements of ASTM C 76, Standard Specification for Reinforced Concrete Culvert, Storm Drain and Storm Pipe. Elliptical reinforced concrete pipe shall meet the requirements of ASTM C 507, Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe. Unless shown otherwise on the Plans or in the Contract, Class III pipe shall be used.

Rubber and plastic joints shall meet the requirements of AASHTO M 198, Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets, for Type A (Rubber Gaskets), Type B (Flexible Plastic Gaskets) gaskets, or other City of Shepherdsville approved gaskets. Bituminous mastic joint sealing material shall not be allowed in the construction of reinforced concrete pipe systems.

4.2.4.3 High Density Polyethylene Corrugated Pipe.

Corrugated polyethylene pipe with an integrally formed smooth interior shall meet the requirements of AASHTO M 294, Standard Specification for

Corrugated Polyethylene Pipe, 12 to 36 inch diameter, for Type S pipe. Polyethylene pipe shall not be delivered to the site until the City of Shepherdsville has provided written approval for the pipe to be used.

The pipe shall have a minimum pipe stiffness at 5% deflection as follows when tested in accordance with ASTM D-2412.

<u>Diameter</u>	<u>Pipe Stiffness</u>
12"	45 psi
15"	42 psi
18"	40 psi
24"	34 psi
30"	28 psi
36"	22 psi

Joints shall be made using split-corrugated couplings manufactured by the pipe manufacturer and exceeding the soil tightness requirements of the AASHTO Standard Specifications for Highway Bridges, Section 23 (2.23.3.).

4.2.4.4 Corrugated Steel Pipe.

Corrugated steel pipe and coupling bands shall meet the requirements of AASHTO M 36, Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains. Pipes shall be fabricated from aluminum-coated steel sheet which meets the requirements of AASHTO M 274, Standard Specification for Steel Sheet, Aluminum-Coated (Type 2) for Corrugated Steel Pipe. The gage of the steel sheet used to fabricate the pipe shall be as shown on the Plans.

Joints shall be made using coupling bands and gaskets meeting the requirements of AASHTO M 36 and AASHTO M 274.

4.2.4.5 Polyvinyl Chloride (PVC) Pipe and Fittings.

Polyvinyl chloride pipe shall meet the requirements of Subsection 4.2.2.3. of these Specifications.

4.2.4.6 Vitrified Clay Pipe and Fittings.

Vitrified clay pipe shall meet the requirements of subsection 4.2.2.5. of these Specifications.

4.2.5 Cast-In-Place Pipe.

4.2.5.1 Concrete.

Concrete for all cast-in-place storm sewer pipes and collars shall be Class A concrete as specified in Section 6 of these Specifications.

4.2.5.2 Steel Reinforcement.

Deformed steel reinforcing bars shall be Grade 60 bars of the sizes, dimensions, spacings and locations shown on the Plans. Steel reinforcement and its storage shall be as specified in Section 6 of these Specifications.

4.2.5.3 Waterstops.

Waterstops shall be PVC waterstops of the shape and dimensions as shown on the Plans and meeting the material requirements as specified for waterstops in Section 5 of these Specifications.

4.2.6 Cradles and Encasements

4.2.6.1 Crushed Stone

Crushed stone for cradles and encasements shall be as set forth in Subsection 3.2.1. of these Specifications.

4.2.6.2 Concrete

Concrete for cradles, encasements or caps shall be Class B concrete as set forth in Section 6 of these Specifications.

4.2.7 Marking Tape

Marking tape shall be a composite plastic metallic tape, at least 5 mils in thickness with impervious plastic film on both sides and aluminum foil in center. The minimum tensile strength shall be 185 lbs. The tape shall be at least 3 inches in width, colored green, and shall be permanently printed on both sides "Caution Buried Sewer Below".

4.3. EXECUTION OF WORK

4.3.1 General

Prior to beginning pipe laying operations, the trench shall have been excavated to the subgrade level and unsuitable foundation conditions, when encountered, shall be corrected in accordance with Section 3 of these Specifications. The pipe shall be supported on a crushed stone cradle or a concrete cradle as shown on the Plans, specified herein, or directed by the City of Shepherdsville.

Crushed stone or concrete shall be used to encase the pipe as specified herein or directed by the City of Shepherdsville.

4.3.2 Cradle and Encasement.

Cradle and encasement shall be of crushed stone or concrete and shall be installed as specified and within the limits shown on the Plans or directed by the City of Shepherdsville.

4.3.2.1 Crushed Stone Cradle.

Crushed stone cradle shall mean the placement of crushed stone from the subgrade level (6 inches below the outside of the pipe) up to the springline of the pipe. The crushed stone shall be deposited in the trench to grade, allowing for the thickness of the pipe wall. Bell holes shall be dug to relieve the bells of all concentrated loads and to provide uniform support throughout the pipe section. For larger pipes, the crushed stone shall be shoveled and shovel-sliced beneath the haunches of the pipe to assure uniform support. Unless shown otherwise on the Plans or directed by the City of Shepherdsville, the following types of pipes shall be supported on a crushed stone cradle.

A. Ductile Iron Pipe

4.3.2.2 Crushed Stone Encasement.

Crushed stone encasement shall mean the placement of additional crushed stone above the crushed stone cradle to a level at least 6 inches above the outside top of the pipe. The additional stone shall be placed in such manner to prevent damage to the pipe. Unless shown otherwise on the Plans or directed by the City of Shepherdsville, the following types of pipe shall be encased in crushed stone.

- A. Polyvinyl Chloride Pipe
- B. Polyethylene Pipe
- C. Corrugated Polyethylene Pipe
- D. Corrugated Steel Pipe
- E. Corrugated Polyvinyl Chloride Pipe

4.3.2.3 Concrete Cradle.

Where a concrete cradle is required as additional support for a sanitary sewer or storm drainage pipe, or if a sanitary sewer pipe will have less than 2 feet of vertical clearance above an existing or proposed storm drain or utility conduit, a concrete cradle shall be installed. The length of the concrete cradle shall be as shown on the Plans or 2 feet beyond the outside edge of the

underlying storm drain or utility conduit. The pipe shall be laid to line and grade, and shall be supported on concrete blocks, bricks or saddles set to prevent both vertical and lateral movement of the pipe. The use of wooden blocks will not be permitted. Concrete shall be placed around the pipe up to the springline of the pipe. Proper bracing shall be provided to prevent displacement or flotation of the sewer pipe during placing of concrete.

4.3.2.4 Concrete Cap.

Where shown on the Plans or where a sanitary sewer pipe will have less than 2 feet of vertical clearance below an existing or proposed storm drain or utility conduit, a concrete cap shall be installed unless the pipe itself is proven to the City of Shepherdsville to have adequate strength. The length of the concrete cap shall be as shown on the Plans or 2 feet beyond the outside edge of the storm drain or utility conduit, or 2 feet beyond the point where the sewer pipe attains 30 inches of cover in an easement or 4 feet of cover in a right-of-way, or surfaces subject to vehicular traffic, or as directed by the City of Shepherdsville. The sewer pipe shall be laid and supported on a crushed stone cradle, and concrete shall be placed around the pipe and at least 6 inches above the top of the pipe for the full trench width, as shown on the City of Shepherdsville's Standard Drawings. Proper bracing shall be provided to prevent displacement or flotation of the sewer pipe during placing of the concrete.

4.3.2.5 Concrete Encasement.

Where shown on the Plans or where conditions exist requiring additional pipe protection (stream crossings, ditch crossings, shallow trench or poor soil conditions), pipes shall be encased in concrete, as determined by the City of Shepherdsville. The length of the concrete encasement shall be at least 2 feet beyond the point where additional pipe protection is required, as shown on the Plans, or as directed by the City of Shepherdsville. The sanitary sewer or storm drainage pipe shall be laid and supported as required for a concrete cradle, and concrete shall be placed around the pipe 6 inches either side of it and up to at least 6 inches over the top of the pipe. Proper bracing of the pipe shall be provided to prevent movement or flotation of the sewer pipe during placing of concrete. In rock-bottom streams, the encasement shall extend from 6 inches below the pipe up to the original rock level. Encasement shall be required when crossing a blue line stream and shall extend to 5 feet beyond the top of bank on each side of said stream. Concrete encasement is required for plastic pipe with less than 30 inches of cover in easements and less than 4 feet of cover in street rights-of-way. When a concrete encasement is required for property service connections, payment shall be incidental to the installation of the service connections. Unless otherwise directed by the City of Shepherdsville, a 4-inch PVC drain pipe shall be placed in the trench next to the carrier pipe and shall extend through the concrete encasement and

5 feet into the crushed stone encasement on both sides. The drain pipe shall be open on both ends. This will allow unimpeded flow of any groundwater in the sewer trench.

4.3.2.6 Safeloading.

Safeloading shall consist of completely filling the designated areas with grout in such a manner to make them safe from collapse or at the Contractor's option, safeloading may be done by filling the designated area with free-flowing low strength mortar. Septic tanks shall be cleaned prior to safeloading. Appreciable deposits of debris shall be removed from other structures prior to safeloading. The ends of existing culverts shall be plugged by use of bulkheads containing small openings at the tops through which the grout may be pumped at a minimum pressure of 15 pounds per square inch. All structures to be safeloaded shall be completely filled with grout or low strength mortar.

4.3.3 Pipe Installation

4.3.3.1 Inspection and Handling.

All pipe shall be inspected on delivery and such pipe sections that do not conform to these Specifications and which are not suitable for use shall be rejected and immediately removed from the Work site. Equipment used to handle, lay, and joint pipe shall be so used to prevent damage to the pipe and its jointing materials. All pipe and fittings shall be carefully handled and lowered into the trench. Damaged pipe or jointing material shall not be installed.

4.3.3.2 Pipe Laying and Jointing.

The laying of pipe shall begin at the lowest point and proceed upstream with the bell or groove ends pointing upstream. Prior to making pipe joints, all joint surfaces shall be clean and dry and free from gravel or other extraneous materials. All necessary lubricants or adhesives shall be used as recommended by the pipe manufacturer. Suitable means shall be used to force the spigot or tongue end of the pipe the proper distance into the bell or groove end without damage to the pipe and its jointing materials and without disturbing previously laid pipe sections. Special care shall be taken to ensure that the pipe is solidly and uniformly cradled or encased in accordance with these Specifications. No section of pipe shall be brought into position for jointing until the preceding section has been bedded and secured in place. Joint sealant materials used on storm drain pipe shall be properly sized to fill the pipe gap to prevent any visible infiltration.

4.3.3.3 Line and Grade.

Each section of pipe shall be checked for vertical and horizontal alignment immediately after being laid. A calibrated survey transit shall be on site and in use at all times during pipe laying operations. All adjustments to line and grade must be made by scraping away or filling in under the barrel of the pipe and not by wedging or blocking up any portion of the pipe or striking the pipe in an effort to drive it down. Curved alignments may be allowed on a case-by-case basis, as approved by the City of Shepherdsville, except on gravity sanitary sewers smaller than 48 inches in diameter.

4.3.3.4 Protection of Installed Pipe.

As the Work progresses, the interior of the pipe shall be protected from and cleaned of all dirt, cement, extruded joint materials, debris, and other extraneous materials. Whenever pipe laying is stopped for any significant length of time, such as at the end of a Workday, the unfinished end shall be protected from displacement, floatation, cave-in, and in-wash of soil or debris. A suitable temporary tight-fitting plug, stopper or bulkhead shall be placed in the exposed bell or groove end of the pipe.

Water shall not be allowed to rise in the excavation until the joint materials and/or concrete cradle or encasement has hardened and cannot be damaged by the water. Particular care shall be used to prevent disturbance or damage to the pipe and the joints during backfilling or at any other time. No walking or Working over the pipe, except as necessary for placing and compacting backfill, or operating compaction equipment directly over the pipe shall be allowed until a minimum of 24 inches of cover over the outside top of the pipe has been placed. Mechanical compaction in this zone shall be with manual pneumatic tampers or other hand-operated methods which will not damage the pipe.

4.3.3.5 Property Service Connections.

Property service connections shall be installed at the locations and with the pipe sizes shown on the Plans. Manufactured wye and tee fittings and reducers shall be used for new sewer line installations, unless noted otherwise in the Contract. The property service connection pipe shall be laid on a uniform grade from the sanitary sewer to the property line. Where a stack is required, the pipe shall be laid on a uniform grade from the top of the stack to the property line. The pipe depth at the property line shall be at least 30 inches in easements, and shall be 4 feet below the final street grade, unless shown otherwise on the Plans or directed by the City of Shepherdsville. Where no final street grade has been established, the depth of the connection shall be as directed by the City of Shepherdsville. For existing sewer lines, property service connections shall be made with the City of Shepherdsville approved wye, tee saddles or insert-a-tees only.

Four or six-inch corrugated PVC property service connections will not be allowed.

When necessary, the Contractor shall furnish and install a short length of sewer pipe to allow the T-branch to be positioned at a right angle to the required location of the property service connection pipe.

When required, in accordance with Section 4.3.2.5. of these Specifications, concrete encasement shall be installed on the property service connection. This Work shall be incidental to the installation of the service connection.

At the upstream end of each property service connection, the Contractor shall install a watertight stopper or cap. For any thermoplastic pipe other than SDR-35, an SDR-35 adapter shall be installed at the end of each property service connection. The Contractor shall mark the end of each property service connection with a 2x4 board which extends from the pipe to approximately 3 feet above the ground surface and marked with green paint (Catalog No. 4634 Sewer Green Fluorescent by Rainbow Manufacturing, or approved equal).

4.3.3.6 Stacks.

Stacks shall be constructed at the locations and to the height shown on the Plans or directed by the City of Shepherdsville. Stacks shall be constructed in accordance with the City of Shepherdsville's Standard Drawings.

4.3.3.7 Stoppers and Bulkheads.

When the open ends of pipes or fittings smaller than 18 inches in diameter are to be sealed, the openings shall be sealed with stoppers, cemented into place using a rubber gasket between the stopper and bell or socket. Openings 18 inches in diameter or larger shall be sealed with brick masonry or concrete bulkheads at least 4 inches thick.

All openings into pipes shall be protected from the entrance of earth, water or other extraneous materials. If a temporary bulkhead is constructed to prevent sewage from backing into the excavation or to prevent extraneous material from entering the sewer, the Contractor shall be responsible for reconstructing, repairing or replacing those portions of the existing sewer removed or damaged by this operation.

When an existing bulkhead is to be removed, its removal shall be coordinated with the City of Shepherdsville.

During construction, use a mechanical plug, properly braced and tied off, when tying into an existing sewer. The plug shall remain until the sewer lines are accepted by the City of Shepherdsville. It is the Contractor's responsibility to remove the plug prior to approval of flow being allowed into the system. The Contractor shall assume full responsibility for any damage or claims due to the installation and removal of the plug.

4.3.3.8 Marking Tape for Force Mains and Property Service Connections.

Detectable marking tape shall be as specified in Section 4.2.7 of these specifications, buried approximately 12 inches below the finished grade except under pavement, when it shall be 24 inches into the subgrade over all force mains and property service connections.

4.3.4 Cast-In-Place Pipe

4.3.4.1 General.

Cast-in-place pipe construction shall be performed in accordance with the applicable provisions of Section 6 of these Specifications.

4.3.4.2 Construction Joints.

When shown on the Plans, concrete shall be placed in the invert and the arch sections of the barrel in two separate operations. A keyed construction joint shall be formed between the invert and arch sections. Transverse construction joints shall be constructed with keys and at locations shown on the Plans. PVC waterstops shall be placed at all longitudinal and transverse construction joints in cast-in-place sanitary sewer barrels.

4.3.4.3 Concrete Collar.

Where cast-in-place pipes join precast pipe, a concrete collar shall be constructed around the joint, as shown on the Plans.

4.3.5 Leakage Testing for Sanitary Sewers

4.3.5.1 General.

Testing shall be scheduled 48 hours in advance in order for the City of Shepherdsville to provide an inspector on site. The Contractor shall perform leakage tests on sanitary sewer pipes and force mains to ensure that installed pipes are not subject to excessive infiltration or exfiltration. Sanitary sewer pipes installed in areas where other underground facilities will be constructed subsequent to the sanitary sewer shall be tested twice; at the completion of the sanitary sewer installation, and following the installation of

the other underground facilities. All leakage testing must be performed in the presence of a representative of the City of Shepherdsville. No leakage testing shall be performed prior to jetting.

When conducting any leakage test, the Contractor shall provide all meters, weirs, gages, water, equipment and personnel necessary to perform the test as specified. The City of Shepherdsville shall provide the inspection personnel, stopwatch, recording forms and calculations to demonstrate if the test passed or failed.

If a pipe installation fails to pass the requirements as specified herein, the Contractor shall repair or replace all defective materials or Workmanship, and conduct additional leakage tests necessary to demonstrate that the repaired section meets the leakage requirements. If requested by the City of Shepherdsville the Contractor shall submit in writing a method of repair, and must be approved by the City of Shepherdsville before repair can begin.

4.3.5.2 Low-Pressure Air Tests.

When conducting a low-pressure air test, the Contractor shall securely install and brace all plugs prior to pressurizing the pipe. Personnel shall not be allowed to enter manholes when the sewer pipe is pressurized. Low-pressure air tests shall be conducted in accordance with the following:

- (A) Reinforced Concrete Pipe - ASTM C 924, Recommended Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Test Method.
- (B) Polyvinyl Chloride Pipe (PVC), Corrugated PVC Pipe, Polyethylene Pipe, Corrugated Polyethylene Pipe - UNI-B-6 Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe. The "half-time" testing method will be accepted for these pipes only if the section of pipe being tested has a zero drop in pressure for half the test time specified for the pipe's length to diameter ratio.
- (C) Vitrified Clay Pipe - ASTM C 828, Recommended Practice for Low-Pressure Air Test of Vitrified Clay Pipe Lines.

4.3.5.3 Infiltration/Exfiltration Tests for Concrete Pipe.

Reinforced concrete pipe may be tested for direct infiltration or exfiltration in lieu of performing low-pressure air tests. Tests shall be performed in accordance with ASTM C 969, Standard Practice for Infiltration and Exfiltration

Acceptance Testing of Installed Precast Concrete Pipe Lines, except that the allowable rate of infiltration or exfiltration shall be 150 gallons per 24 hours

per inch diameter per mile of pipe. Regardless of the leakage test results, any spurting or gushing streams of water entering the sewer or manhole shall be sealed.

4.3.5.4 Hydrostatic Tests for Force Mains.

Force mains shall be tested by performing a hydrostatic test. The force main shall be completely filled with water and subjected to an internal pressure of 100 psi or twice the surge plus operating pressure, whichever is greater, not to exceed 125 percent of the maximum pressure rating for the pipe, measured at the downstream end. The pressure shall be held for a period of 2 hours. During the test, leakage from the force main shall be measured. The maximum allowable leakage shall be 1/2 gallon per inch diameter per 1,000 feet of pipe per hour.

4.3.6 Deflection Tests for Storm Sewers and Sanitary Sewers.

The Contractor shall test all thermoplastic main line pipe by use of a calibrated mandrel, or other device approved by the City of Shepherdsville, to ensure that no pipe deflection has occurred greater than 5 percent of the inside diameter of the pipe. Pipe shall be fully backfilled at least 15 days prior to testing. The Contractor shall test the entire length of the sewer installed. Any pipe section exhibiting greater than 5 percent deflection shall be replaced and retested. Should this time frame for testing be waived, and the City of Shepherdsville requires a second deflection test after 30 days, it will be at the Contractor's expense.

Deflection testing shall be performed at the time of the first or final air test. If conditions warrant, the City of Shepherdsville inspector may request additional tests to be performed after final restoration.

NOTE: When failure of the second Air Test requires repair of the main line sewer, an additional deflection test shall be required.

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SECTION 5

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

STRUCTURES

5.1 DESCRIPTION OF WORK

This Work shall consist of the construction of manholes, inlets, catch basins, junction boxes, headwalls, box culverts and other sanitary sewer or storm drainage structures of the kind and dimensions shown on the Plans. The construction shall be accomplished in accordance with these Specifications and in conformity with the lines, grades, cross-sections, and details shown on the Plans or established by the City of Shepherdsville. The Work shall include such labor, material, equipment, removal and abandonment of structures, brick masonry, cast-in-place concrete construction, precast concrete construction, rims and covers, frames and grates, miscellaneous iron castings, and all other items as may be necessary to complete the structures as shown on the Plans.

5.2 MATERIALS

5.2.1 Concrete

Concrete for all cast-in-place sanitary sewer and storm drainage structures shall be Class A concrete as specified in Section 6 of these Specifications.

5.2.2 Steel Reinforcement

Deformed steel reinforcing bars shall be Grade 60 bars of the sizes, dimensions, spacings and locations shown on the Plans. Steel reinforcement and its storage shall be as specified in Section 6 of these Specifications.

5.2.3 Grout

Grout shall consist of a mixture of water and cement or cement with fly ash, or water and one part cement or cement with fly ash to two parts mortar sand as defined in Section 804.05 of the KTC Specifications, by volume. The water may be adjusted to produce a mixture of a consistency suitable for job conditions; however, not over 5 1/2 gallons of water shall be used per sack of cement.

5.2.4 Non-Shrink Grout

Non-shrink grout shall be an approved non-shrink, non-staining grout consisting of either a mixture of hydraulic cement, water, fine aggregate, and an approved non-ferrous expansive admixture, or a packaged commercial product and shall meet the requirements of Section 601.06 of the KTC Standard Specifications.

5.2.5 Precast Structures

Any use of precast structures must be so noted on the Plans, including a typical detail for each type of structure for the Project.

Structures which require specially designed footings, cut-off walls, etc. will not be allowed as precast.

Openings in precast structures for pipes shall be the outside diameter of the pipe plus a maximum of 6 inches. In order to use non-shrink grout, the opening shall be the outside diameter of pipe plus 3 inches. (Outside diameter of pipe plus 4 1/2 inches is permissible when tapered hole forms are utilized).

For precast structures (other than those with knockout panels) the opening around the pipe shall either be filled with non-shrink grout for the wall thickness of the structure or the pipe shall be encased with minimum 6 inch collar of concrete from the inside face of the wall to 1'-0" outside the outer face of the wall. The pipe shall be adequately supported to prevent settling while the grout or the concrete encasement is setting up. The inside faces of the structure walls shall be finished with a trowel and wet brush finish.

For circular structures and rectangular structures (other than those with knockout panels) the minimum vertical distance from the holes for the pipes to the top of the structure wall shall be 4 inches. If this vertical distance is less than 12 inches, then additional reinforcing steel shall be furnished for this section. The top slab must be designed for HS-20 loading.

For precast structures with knockout panels, holes for the pipes shall not be cut into the structural members (i.e., top beams and corner columns) and non-shrink grout shall not be allowed to be placed around the pipes. The pipes shall be encased with concrete a minimum 6 inch collar around the outside of pipe or a minimum of 3 inches beyond the hole knocked in the wall, whichever is greater. Also, the concrete encasement shall extend from the inside face of the wall to 1'- 0" outside the outer face of the wall.

Precast structures with knockout panels shall not be used with more than 2 feet of earth cover unless load calculations are supplied.

For rectangular structures where pipe will be installed in adjacent walls (other than those with knockout panels), at least 6 inches of wall (measured from the interior corner) is required on each side of the pipe beyond the precast opening for the pipe. This rule is not applicable for structures which have pipe installed in opposite walls or where one outlet reinforced concrete pipe is utilized.

A wash is required in the bottom of catch basins to provide positive drainage (sloped toward outlet).

Precast structure in roadways other than installed sanitary manholes and wetwells shall have a minimum of two 4” weepholes. There will be a 2 cubic foot burlap or plastic sack filled with No. 57 stone over the weepholes.

5.2.5.1 Precast Manhole Sections

All precast concrete manhole risers, cones, grade rings, flat slabtops, and bases shall conform to the requirements of ASTM C 478, Standard Specification for Precast Reinforced Concrete Manhole Sections, and the City of Shepherdsville's Standard Drawings. All cone and transition sections shall be eccentric in shape. Base and riser sections shall be custom-made with openings to meet indicated pipe alignment conditions. The following applies as to the maximum inside diameter (or horizontal dimension) of pipe to be used with a given size of manhole.

<u>Diameter of Structure</u>	<u>Maximum Size Pipe*</u>
4'- 0"	24 inches
5'- 0"	36 inches
6'- 0"	48 inches

*Outside diameter may be considered on a case-by-case basis for other pipe materials. The minimum distance allowed between precast holes for the pipes shall be 12 inches, or one-half the outside diameter, whichever is larger.

5.2.5.2 Precast Structures (Except Manholes)

If precast structures are furnished, the following requirements shall apply. The structures furnished shall be products on the list of approved precast structures on file with the City of Shepherdsville. To be considered for addition to the list, five copies of shop drawings shall be submitted for review. The shop drawings shall show details of any variation from the City of Shepherdsville's Standard Drawings and shall include any special installation instructions necessary. Specifications for any special materials for joint construction shall be submitted with the shop drawings, and samples of joint materials shall be submitted when requested.

5.2.6 Watertight Sewer Pipe Connections

Watertight sewer pipe connections shall be elastomeric gaskets or couplings manufactured in accordance with ASTM C 923, Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.

5.2.7 Joint Sealants

Rubber and plastic joints shall meet the requirements of AASHTO M 198, Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets, for Type A (Rubber Gaskets), Type B (Flexible Plastic Gaskets) Gaskets, or Forsheda Rubber Gaskets. Bituminous mastic joint sealing material shall

not be allowed in the construction of manhole joints. Type B (flexible plastic) gaskets may not be used in sanitary sewer installations.

5.2.8 Waterstops

Waterstops shall be extruded from an elastomeric plastic compound, the basic resin of which shall be polyvinylchloride. The compound shall contain any additional resins, plasticizers, stabilizers, or other materials needed to ensure that when the material is compounded it will meet the physical property requirements shown below:

<u>Physical Property</u>	<u>Required Value</u>	<u>Test Method</u>
Tensile Strength (Die "C")		
Sheet Material	2,000 psi	ASTM D 412
Finished Waterstop	1,700 psi	ASTM D 412
Ultimate Elongation (Die "C")		
Sheet Material	350% Min.	ASTM D 412
Finished Waterstop	300% Min.	ASTM D 412
Stiffness in Flexure	750 psi Min.	ASTM D 747
Accelerated Extraction		CRD C 572
Tensile Strength (Die "C")	1,750 psi	ASTM D 412
Elongation (Die "C")	300%	ASTM D 412
Effect of Alkali (After 7 Days)		
Change in Weight	-0.1 to 0.25%	
Change in Hardness, shore Durometer	+ or - 5%	
Low Temperature Brittleness	-35°	ASTM D 746
Specific Gravity	1.3	ASTM D 792

When required, the Contractor shall submit a manufacturer's certificate stating that all of the physical property requirements specified above for the sheet material have been satisfied. Field splices for waterstops shall be performed by heat-sealing the adjacent surfaces in accordance with the manufacturer's recommendations. Waterstops shall be manufactured with an integral cross-section which shall be uniform within plus or minus 1/8 inch in width, and the web thickness or bulb diameter within plus 1/16 inch and minus 1/32 inch.

5.2.9 Manhole Steps

Manhole steps shall be polypropylene plastic-coated steel bar with threads having anti-skid properties for hand and foot grips. Manhole steps shall be cast, epoxy grouted, or attached by mechanical means into the walls of the manholes in such manner as to conform with ASTM C 478. Steps shall be spaced not more than 12 inches vertically on centers and shall be so arranged that the lowest rung is no more than 12 inches above the bench, and the top rung is 18 inches below the structure rim

or frame. The steps shall be arranged out of alignment of the flow channel, and shall be centered on the grate or lid opening.

5.2.10 Castings

Castings shall be of the standard City of Shepherdsville type as detailed on the City of Shepherdsville's Castings Standards. Castings shall be of uniform good quality, free from scale, lumps, blowholes, shrinkage, distortions or other defects. They shall be smooth and thoroughly cleaned by shot-blasting. Castings shall meet the requirements of ASTM A 48, Standard Specification for Gray Iron Castings, for Class No. 35-B, Gray Iron. Manhole rims and covers and inlet frames and grates shall be machined or ground at touching surfaces so as to seat firmly and prevent rocking. Any set not matching perfectly shall be removed and replaced.

5.2.11 Manhole Inverts

Manhole Inverts on 8" size lines may have a constant grade of .4% through the structure unless one of the lines exceeds a 10% grade. All grades exceeding 10% on 8" lines and all other pipe sizes shall continue to have their grade ending at the manhole P.I.

5.3 EXECUTION OF WORK

5.3.1 Modification to Existing and Proposed Structures

5.3.1.1 Removal

Existing structures to be removed shall be indicated on the Plans or as directed by the City of Shepherdsville. The City of Shepherdsville reserves the right to retain or reject salvage of any materials encountered. Unless otherwise directed by the City of Shepherdsville, all castings shall be retained by the City of Shepherdsville. All salvage materials retained by the City of Shepherdsville shall be delivered to the appropriate storage yard as directed by the City of Shepherdsville. All remaining materials shall become the property of the Contractor who will be responsible for disposing of same. The excavation shall be backfilled in accordance with Section 3 of these Specifications.

5.3.1.2 Abandonment

Existing structures to be abandoned in place shall be as shown on the Plans or as identified by the City of Shepherdsville. After removing structure frames, covers, grates, and similar items, all pipes shall be bulkheaded as specified in Section 4 of these Specifications. The walls shall be lowered to 2 feet below final grade if in earth or to 12 inches below subgrade if in pavement. The remaining structures shall be filled with crushed stone or sand. In paved areas or where directed by City of Shepherdsville, a 12 inch thick plain concrete slab shall be installed over the manhole or structure top such that it

extends 12 inches beyond the outside face of the manhole or structure. City of Shepherdsville reserves the right to retain or reject salvage of any materials encountered. All remaining materials shall become the property of the Contractor who will be responsible for disposing of same.

5.3.2 Wastewater Treatment Plant Decommissioning

5.3.2.1 General

The Contractor shall furnish all labor, materials, equipment and incidentals required to eliminate the wastewater facilities, including all demolition and removal Work, for the wastewater treatment plant(s) (WWTP) as specified herein.

The Contractor shall submit to the City of Shepherdsville for review and acceptance a written plan and schedule for the elimination of the WWTP(s) including the demolition, removal and disposal Work. This plan and schedule shall include certain elements and milestones specified for the subject WWTP(s). After the Contract is awarded and prior to commencement of the Work, the Contractor shall meet with the City of Shepherdsville to discuss the transfer of flow to the new sanitary sewer system and demolition, removal, and disposal plan. The plan shall include a schedule for disconnection of existing utility services and procedures for the careful removal and disposal of building materials and existing sewage, bio-solids, grit and mixed liquor which may be in tanks, lagoons, etc. Included in the plan must be a detailed description of the methods and equipment to be used for each operation and the sequence of operations.

Do not proceed with elimination of the facilities until the City of Shepherdsville has given written acceptance of the elimination plan.

Specific guidelines for the removal and disposal of material contained in the various individual treatment units are provided below. These guidelines are intended to provide the Contractor with a method of elimination that will meet the approval of the City of Shepherdsville, the Bullitt County Board of Health and the Kentucky Natural Resources and Environmental Protection Cabinet, Division of Waste Management (DWM) and Division of Water. The Contractor is responsible for obtaining all demolition permits, including any transportation permits required to transport the material to their appropriate disposal site(s), prior to commencement of Work. Two (2) copies of these permits shall be submitted to the City of Shepherdsville prior to commencement of Work.

Modifications to the landfill disposal site's existing permit(s) are required by the Division of Waste Management regarding the disposal of wastewater by-product materials at the landfill. The City of Shepherdsville is responsible for preparing the "Application To Accept An Additional Waste Stream" to be submitted to the Kentucky Division of Waste Management (DWM),

including obtaining the required laboratory test results required by both DWM and the landfill. A copy of the permit modification letter from DWM to the landfill allowing them to accept the additional waste stream will be provided to the Contractor prior to commencement of Work.

5.3.2.2 Existing Facility Elimination

Unless otherwise directed by the City of Shepherdsville, the Contractor shall provide the City of Shepherdsville with written notification as stated in the special provisions prior to removing a facility from service.

The Contractor shall utilize the following steps during the process of removing a facility from service. These steps will generally include, but are not limited to:

- (A) Influent Diversion: Discontinue wastewater flow to the existing facility by permanent influent diversion to the newly constructed and approved City of Shepherdsville sanitary sewer system, in accordance with the Contract.
- (B) Supernatant and Mixed Liquor: Carefully remove and transfer the liquor supernatant and mixed liquor to the newly constructed and approved City of Shepherdsville sanitary sewer system in accordance with the City of Shepherdsville's directions.
- (C) Equipment: Remove grit and bio-solids from the previously submerged equipment to render the equipment salvageable.
- (D) Three to Five Percent Bio-solids: Bio-solids which remain in liquid holding tanks or lagoons after removal of supernatant and mixed liquor that have no greater than 3% - 5% solids concentration with no additional water added, may be removed and hauled to a septage receiving facility approved by the City of Shepherdsville. A waste hauler must be permitted by the Board of Health and registered with the City of Shepherdsville in order to dispose of waste at the SRF. It is the Contractor's option and responsibility to make arrangements for disposal of 3% - 5% solids, by volume, in the manner and pay all associated costs and fees; the Contractor may handle this bio-solids component in the same manner described in Paragraph (E) below.
- (E) All Other Bio-solids and Grit: Bio-solids and grit which remain in liquid holding tanks or lagoons shall be dewatered using portable dewatering equipment located on-site. The liquid by-product from the dewatering process can be returned to the newly constructed and approved City of Shepherdsville sanitary sewer system. The Contractor shall use shovels, brooms and/or other appropriate methods to assure that residual grit and/or bio-solids are removed from corners and hard to reach areas of holding tanks and treatment vessels. For lagoons, the

Contractor shall remove all grit and bio-solids down to residual earth or synthetic liner, and stabilize the earth/liner area with hydrated lime to a pH of 10.0 or greater. The dewatered bio-solids material shall then be transported to an approved landfill site.

The Contractor shall be aware that the landfill receiving the dewatered material may randomly sample the material at the landfill and perform filter laboratory testing. If the dewatered material does not pass this test, the landfill will reject the material and not allow its disposal at the landfill. In addition, any evidence of free water in the material will also result in its rejection by landfill personnel. In either case, additional dewatering of the rejected material will be the Contractor's responsibility prior to acceptance and disposal at the landfill.

The Contractor shall have a maximum of 30 days to dewater and/or remove all bio-solids and grit from the facility beginning at the time of wastewater influent flow diversion. During this 30-day time frame, the Contractor is responsible for controlling odors emanating from the facility.

- (F) Utility Disconnection: Disconnect the existing utility services in accordance with the appropriate utility company's recommendations. Utility disconnection shall not occur until all bio-solids and grit materials have been dewatered and/or removed from the facility.

Once the facility is taken out of service, and the steps outlined in Sections (A) through (F) are complete, the Contractor shall provide written notification to the City of Shepherdsville that the facility is prepared for equipment salvage. Unless otherwise directed by the City of Shepherdsville, the Contractor shall then vacate the facility site for a period of time as specified in the special provisions to allow equipment salvage by the City of Shepherdsville or the Owner.

The Contractor is encouraged to supplement any information about the WWTP site, components and waste constituents provided by the Contract, with his own on-site evaluation.

The Contractor shall be responsible for obtaining all demolition and transportation permits, their attendant costs, and all costs associated with pre-bid investigation, removal and disposal of the sanitary wastewater bio-solids and grit material.

5.3.2.3 Existing Facility Demolition and Closure

At the end of the salvage period, the Contractor shall remobilize at the site, stabilize any remaining residual solids with hydrated lime to a pH of 10.0 or greater and proceed with demolition. For the liquid holding tanks that have been stabilized and are to be left-in-place, the Contractor shall break holes in

the bottom of the below grade structures for groundwater pressure relief and demolish/remove the structure(s) to a minimum of 3 feet below finished grade. The remaining void spaces within the structures shall be backfilled with a sand material to 3 feet below finished grade, and then backfilled with select topsoil fill material to finish grade as shown on the Contract. The above-grade structures located at the WWTP facilities and not identified on the Drawings or in the Specifications as "To Remain" or "Do not Disturb" shall also be demolished/removed to a minimum of 3 feet below finished grade and backfilled as described above. For lagoons, the Contractor shall backfill the entire lagoon area with select fill material, as approved by the City of Shepherdsville, and mechanically compact the material to 90% Standard Proctor maximum dry density in accordance with Section 3 of these Specifications. All disturbed areas shall be graded to provide positive drainage; and shall be seeded, fertilized and mulched in accordance with Section 9 of these Specifications.

5.3.3 Connections.

The Contractor shall verify the exact locations and elevations of existing structures or sewers prior to construction and any differences between actual and plan locations and elevations shall be brought to the attention of the City of Shepherdsville before proceeding with the Work. If a bulkhead opening of adequate size or a stub of proper size, elevation, location and direction exists, the connection shall be made as required for normal pipe laying.

For sanitary sewer pipe greater than 12-inches and all drainage pipe an opening may be saw cut in the structure to permit inserting the pipe at the required elevation, direction, and slope. The circumference of the opening shall be sawed to allow approximately two inches of space between the inserted pipe and the structure. Care shall be used to avoid unnecessary damage to existing concrete or brick masonry. All loose material shall be removed from the cut surfaces and the cut surfaces shall be completely coated with non-shrink grout. Before setting the pipe, a sufficient thickness of grout shall be placed at the bottom and sides of the opening for proper bedding of the pipe. After setting the pipe, all spaces around the pipe shall be solidly packed and filled with non-shrink grout which shall be neatly pointed up on the inside to present a smooth joint, flush with the inner wall. When making connections to existing stubs, approved pipe adapters shall be used. Manholes for sanitary sewer pipe that is 12" and smaller shall be core drilled and provided with approved connectors. Modifications to the existing invert shall be made as needed to provide a smooth plastered channel to accommodate the flow from the new pipe.

When reconstruction of a manhole is required, entry into the manhole shall be at the elevation indicated on the Plans or at the invert of the manhole. Entries shall not be allowed on top of the wash unless otherwise directed.

5.3.4 Manholes and Wetwells

Manholes shall be neatly and accurately built in accordance with the Plans and the City of Shepherdsville's Standard Drawings. Precast manhole and wetwell bases, when used for sanitary sewer manholes and wetwells, shall be supplied with watertight sewer pipe connections. When the manhole base slab will consist of cast-in-place concrete, the sewer pipe and the lower precast barrel section shall be in place and supported by concrete blocks prior to placing concrete for the slab. All rough openings between pipes and precast sections shall be thoroughly and completely filled with non-shrink grout, applied so that there will be no leakage around pipes. The grout shall be finished smooth and flush with the interior and exterior manhole or wetwell wall surfaces. Field modifications will be allowed to precast structures if approved by the City of Shepherdsville Inspection. When core drilling is not possible, saw cutting shall be performed when modifying an existing structure.

Manhole inverts shall consist of Class A concrete, placed to conform to the shapes indicated on the City of Shepherdsville's Standard Drawings. Inverts shall include both channel and wash sections with channels so constructed as to create the least resistance to flow. A smooth, uniform dense finish shall be required. Inverts may be either precast or cast-in-place. Joints between precast manhole sections shall be sealed with approved flexible plastic gaskets (type B), rubber gaskets (type A), or rubber O-rings. Flexible plastic gaskets (type B) will not be allowed for use in sanitary sewer installations. The minimum size of flexible plastic gaskets shall be 1-1/2 inch in diameter. Joint sealant materials shall be of the sizes recommended by the manufacturer to provide watertight seals between precast manhole sections. When requested, the Contractor shall furnish information showing that the sizes of the joint sealants being supplied meet the manufacturer's recommendations. When indicated on the Plans, provisions for future sewers shall be provided at manholes by providing 12 inch long stubs of the sizes, lines and grades shown. The upstream ends shall consist of the bell or spigot ends, and they shall be sealed with removable stoppers or bulkheads. If the specified length of any stub is exceeded, it shall be at no additional cost to City of Shepherdsville, unless the extra length is ordered by the City of Shepherdsville. Drop inlets shall be constructed at manholes where indicated on the Plans as per the City of Shepherdsville standard drawings. Manhole barrel sections shall be supplied with openings for upper and lower inlet pipes. The annular spaces between the inlet pipes and the manhole walls shall be filled with non-shrink grout. Grout shall be finished smooth and flush with the adjoining interior and exterior manhole wall surfaces. Encasement of the outside drop pipe shall be with Class B concrete. In case of precast, concrete encasement shall be doweled with reinforcing steel and shall extend a minimum of 2 L.F., or to the undisturbed soil.

Manhole frames shall be placed in the positions shown on the Standard Drawings and shall be set to the correct elevations or adjusted to match final grade. Frames shall be set concentrically with the precast concrete collars and in beds of grout or Butyl resin (i.e. rubber gaskets, type B) may be used when the remaining annular space is filled with grout so that the spaces between the collars and the bottom flanges of the frames shall be completely filled and made watertight. Bituminous mastic and grout shall extend to the outer edges of the masonry and shall be finished smooth and flush with the tops of the flanges. Frames shall be anchored in the concrete collars and anchors

placed. A frame shall not be disturbed until the grout has hardened to adequate strength.

Chimney seals are required on all manhole frames. Chimney seals should be installed on the inside and shall be installed after paving and restoration procedures. Chimney seals should be designed to prevent leakage of water for a life of 25 years. The chimney seals shall extend from the frame to the manhole, covering all collars. Expansion bands shall have a minimum adjustment range of 2 diameter inches. The one piece expansion bands used to compress the sleeve against the manhole shall be a minimum 16 gauge stainless steel conforming to ASTM A-240, Type 304, with a minimum width of 1.75 inches. The rubber sleeve shall be molded from high grade rubber compound conforming to the applicable requirements of ASTM C-923. The sleeve shall have a minimum 1500 psi tensile strength, maximum 18% compression set and a hardness of 48(+/-)5.

Vacuum testing of the sanitary sewer manholes and wetwells are required prior to acceptance by the City of Shepherdsville. A vacuum of 10" Hg should be placed on the manhole, and the time measured for the vacuum to drop to 9" Hg shall be as follows:

60 seconds for 48"
75 seconds for 60"
90 seconds for 72"

This test will be performed on all manholes by the contractor and witnessed by the City of Shepherdsville's personnel.

In the event of initial failure, manholes must be repaired accordingly to achieve desired results.

Persons wishing to have the City of Shepherdsville's Sewer Department assume responsibility of newly installed manholes can contact City Hall at 502-543-2923.

5.3.5 Small Structures

Inlets, catch basins, drains, junction structures, and other small structures shall be neatly and accurately built in accordance with the Plans and the City of Shepherdsville's Standard Drawings. The structure shall be either of cast-in-place concrete or of precast concrete, provided the precast sections have been approved by City of Shepherdsville. Inlet and outlet pipes shall be cut off flush with the inside surfaces of the wall. Pipe bells shall not be allowed inside the structure wall. The pipes shall intersect at the structure so that the invert channel between the inlet and outlet pipes can be smoothly formed. Invert channels shall be of Class A concrete and shall conform to the shapes indicated on the Plans, City of Shepherdsville's Standard Drawings, or as otherwise directed. The invert channels shall be so constructed as to cause the least possible resistance to flow. The shapes of the invert channels shall conform uniformly to inlet and outlet pipes. Smooth and uniform finishes will be required. All inlets, and junction structures deeper than 4 feet, as

measured from the top of the rim or frame to the invert of the structure, shall be provided with steps unless otherwise shown on the Plans or directed by the City of Shepherdsville.

Steps shall be spaced not more than 12 inches vertically and shall be so arranged that the lowest rung shall not be more than 12 inches above the bench, and the top rung shall be 18 inches below the structure rim or frame. The steps shall be arranged out of alignment of the flow channel, and shall be centered horizontally of the grate or lid opening.

All cast-in-place structures shall be built using Class A concrete. The structures shall be built on prepared foundations and conform to the dimensions and shapes shown on the Plans and the City of Shepherdsville's Standard Drawings. The construction shall conform to the methods, forms, placement, protection, and curing for concrete as specified in Section 6 of these Specifications.

Any required reinforcement shall be of the kind, type, and size and shall be located, spaced, bent, and fastened as shown in the Plans and the City of Shepherdsville's Standard Drawings. Installed concrete reinforcing shall be approved by the City of Shepherdsville before any concrete is placed.

Connections for inlet and outlet pipes shall conform to the sizes, alignments, and elevations shown on the Plans. The sealing around pipes for small sanitary sewer structures shall conform to Subsection 5.3.2. of these Specifications.

Waterstops shall be required at construction joints for cast-in-place sanitary sewer structures. Waterstops shall be installed and securely held in place during concreting, in accordance with the manufacturer's recommendations.

Precast sections may be used in the construction of small structures provided that such sections have been approved by the City of Shepherdsville.

No sledge hammer modifications are allowed to precast structures. Saw cuts should be utilized when modifying an existing structure.

When shown on the Plans, cast iron grates and lids shall be attached to the frames, or to the concrete in the event there are no frames, with chains of sufficient lengths to permit moving for clean out and maintenance purposes.

5.3.6 Concrete Box Culverts, Retaining Walls and Headwalls

5.3.6.1 Footings

Footings shall be constructed to the elevations shown on the Plans, but such depths may be increased when it is determined by the City of Shepherdsville that the increases are necessary to provide sufficient bearing or to prevent undermining. Footing elevations should only be raised when solid rock is encountered at elevations above those shown.

The outside faces of all footings of concrete headwalls for pipe, box, or arch culverts shall be formed to full depths of the footings. Whenever the natural foundation material is insufficiently stable to support the structure or whenever it is anticipated that high water may cause excessive erosion around the footings, the City of Shepherdsville may order extra Work performed as necessary to provide the structure with adequate support or protection.

5.3.6.2 Culvert Inverts, Aprons, Curtain Walls, and Headwalls

All culverts, except those founded on solid rock, shall be constructed with a substantial concrete slab through the invert or stream bed. This slab shall terminate at each end of the culvert in apron walls, curtain walls, or cutoff walls carried to a depth that will eliminate danger of undermining. Inverts for concrete culverts shall be paved with a reinforced concrete slab, unless otherwise directed.

Apron or cutoff walls shall, in general, be carried down at both ends to the depths shown, but may be ordered to additional depths necessary to prevent undermining. The outside faces of inlet and outlet concrete aprons or cutoff walls for single span or multiple span culverts shall be formed for the full depths of the aprons or cutoff walls.

The City of Shepherdsville may direct the space between wings to be paved. In this event, the apron walls will extend in a straight line between the ends of the wings, or at such locations as may afford the best protection.

When headwalls for pipe culverts are located at the shoulder of a road, the tops of the headwalls shall be parallel to the shoulder line for both line and grade. When shown on the Plans, the KTC Standard Drawings for pipe culvert headwalls list dimensions from the face of concrete to steel reinforcement as clear distances and dimensions for bar spacings as center to center of bars.

Otherwise, the City of Shepherdsville's Standard Drawings shall be used for determining the sizes and reinforcing steel requirements. Precast concrete pipe headwalls shall conform to the requirements of Subsection 5.2.5. of these Specifications.

When weep holes are required they shall be PVC lined, in accordance with Sec. 610.07 of the KTC Standard Specifications, and shall be incidental to construction of the structure.

Surfaces shall be finished in accordance with the requirements of Section 601.26 of the KTC Standard Specifications or as directed by the Engineer.

5.3.6.3 Retaining Walls

Gravity type or non-reinforced retaining walls shall be constructed of Class B concrete and shall be constructed as shown on the Plans. Reinforced concrete retaining walls shall be constructed of Class A concrete and shall be constructed as shown on the Plans.

5.3.6.4 Placing Concrete

Concrete shall be placed as specified in Section 6 of these Specifications. The base slab or footing shall be placed and allowed to harden before the remainder of the structure is constructed. When shown on the Plans or directed by the City of Shepherdsville, suitable provisions shall be made for bonding the walls to the base by means of longitudinal keys formed by insertion and subsequent removal of beveled timbers. Base slabs, footings, and apron walls shall be constructed as monolithic units, when practicable. When construction joints are necessary, they shall be placed at right angles to the culvert barrel or retaining wall and suitable provision shall be made for bonding adjacent sections by means of keys formed by beveled timbers.

Before concrete is placed in the walls, the footings shall be thoroughly cleaned of all debris, or other extraneous material and the surface carefully chipped and roughened in accordance with the method of bonding construction joints, as specified under Section 6 of these Specifications.

In the construction of all box culverts having a clear height of 5 feet or more, concrete in the side walls shall be placed and allowed to set before the top slab is placed.

For culverts having a clear height of less than 5 feet, the culvert may be poured monolithic when the Contractor so desires. When this method of construction is used, any necessary construction joints shall be vertical and at right angles to the axis of the culvert.

Each wingwall shall be constructed as a monolithic unit. Construction joints, where unavoidable and when not shown, shall be horizontal.

5.3.6.5 Placing Fill

Surfaces shall be finished in accordance with the requirements of Section 601.26 of the KTC Standard Specifications. Backfill or embankment shall not be placed against culverts, retaining walls, and headwalls until permission is given by the City of Shepherdsville. Backfill and embankment shall be constructed as specified in Section 3 of these Specifications.

5.3.7 Adjusting Manholes and Catch Basins

All frame height and alignment adjustments shall be subject to field inspection by the City of Shepherdsville and be subject to correction as directed by the City of Shepherdsville.

Concrete brick (conforming to ASTM C-55 for Type II Grade 5) may be used when adjusting the casting no more than 4 inches.

Precast concrete riser rings may be used when the casting is raised more than 4 inches or when total combined height of existing and proposed exceeds 4 inches. If the concrete riser ring height will exceed 12 inches, use 1 ft. barrel sections. Use the least number of standard size rings as required for proper grade.

All workmanship shall be first class and in conformity with the City of Shepherdsville Specifications.

No wood shims, wood blocks or shot rock shall be used to adjust or reset the frame height.

In pavement, the excavated area around the manhole or catch basin that is raised shall be backfilled with a minimum of 8 inches Class "A" concrete to a level 2 inches below the new top of grate or lid elevation. The remaining 2 inches shall be paved with Class "I" Bituminous concrete surface.

Prior to raising manhole or catch basin frames, the Contractor, Design Engineer, and the City of Shepherdsville representative shall inspect for damaged frames and grates or lids. Damaged frames, grates or lids shall be replaced by the Contractor at no expense to the City of Shepherdsville unless item was damaged prior to start of construction.

5.3.8 High Density Polyethylene (HDPE) Grade Adjustment Rings

Plastic adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM D 1248 (Standard Specification for Polyethylene Plastic Molding and Extrusion Materials). Material properties shall be tested and qualified for usage per the ASTM Test Methods reference in ASTM D 1248. Recycled material meeting the above requirement may be used.

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SECTION 6

THE CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

CONCRETE

6.1 DESCRIPTION OF WORK

Concrete shall consist of a mixture of Portland cement, fine aggregate, coarse aggregate, and water, with air entertainment as specified, combined in the proportions and mixed to the consistency specified, and shall be formed or cast to dimensions indicated on the Plans or as directed by the City of Shepherdsville. The Contractor shall provide materials, material proportions, equipment, and construction methods that will ensure that concrete produced meets the requirements of these Specifications.

6.2 MATERIALS

6.2.1 Portland Cement Concrete

6.2.1.1 Portland Cement

Portland cement shall meet requirements set forth in ASTM C 150, Standard Specification for Portland Cement, for Type I or Type II cement, and the requirements set forth in ASTM C 595, Standard Specification for Blended Hydraulic Cements, for Type IP cement.

6.2.1.2 Water

Water used in mixing or curing Portland cement concrete shall meet the requirements set forth in Section 803 of the 1998 KTC Standard Specifications.

6.2.1.3 Fine Aggregates

Fine aggregates shall meet the requirements set forth in Section 804 of the 1998 KTC Standard Specifications.

6.2.1.4 Coarse Aggregates

Coarse aggregates shall meet the requirements set forth in Section 805 of the 1998 KTC Standard Specifications.

6.2.1.5 Air-Entraining Admixtures

Air-entraining admixtures shall meet the requirements set forth in ASTM C 260, Standard Specification for Air-Entraining Admixtures for Concrete, except the chloride content shall not exceed one percent by weight.

6.2.1.6. Chemical Admixtures.

Chemical admixtures shall meet the requirements set forth in ASTM C 494; Standard Specification for Chemical Admixtures for Concrete, except the chloride content shall not exceed one percent by weight.

6.2.1.7 Fly-Ash

Fly ash shall meet the requirements set forth in ASTM C 618, Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete, for Class F Fly Ash. The loss on ignition shall not exceed 3.0 percent, except 4.0 percent will be permitted when the uniformity requirements of ASTM C 618 are met.

6.2.2. Concrete Reinforcement

6.2.2.1 Steel Bars

Steel reinforcing bars shall be deformed bars meeting the requirements of ASTM A 615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. All bar reinforcement shall be Grade 60 bars. When epoxy coated steel reinforcing bars are used, epoxy coated tie wire shall be required.

6.2.2.2 Welded Steel Wire Fabric

Welded steel wire fabric shall meet the requirements set forth in ASTM A 185, Standard Specification for Steel Welded Wire Fabric for Concrete Reinforcement.

6.2.2.3 Polypropylene Fibers

Fibers shall be 100 percent polypropylene fibers specifically designed for use as concrete reinforcement and shall contain no reprocessed olefin materials. No textile waste materials or other textile products will be allowed. The polypropylene fibers shall meet the following requirements:

	<u>MIN.</u>		<u>MAX.</u>
Melt Temperature	320 F		
Specific Gravity	0.87	-	0.93
Tensile Strength	70	-	110 ksi.
Fiber Fineness	Less than 100 Denier		
Fiber Length	3/4 inch		
Dosage Rate	2 Lbs/Cy		

6.2.3 Curing and Finishing Materials

6.2.3.1 Concrete Curing Materials

Concrete curing materials shall meet the requirements set forth in Section 823 of the 1998 KTC Standard Specifications, for type 1D Clear, Class B.

6.2.3.2 Masonry Coating Materials

Masonry coating materials shall meet the requirements set forth in Section 828 of the 1998 KTC Standard Specifications.

6.3 EXECUTION OF WORK

6.3.1 Care, Storage, and Handling of Concrete Materials

Aggregates, cement, and fly ash shall be furnished, stocked and handled at the plant in accordance with the requirements set forth in Section 601.03 of the KTC Standard Specifications.

6.3.2 Admixtures

Chemical admixtures to improve workability, retard and/or accelerate the time of set shall be used where specified or directed. When not specified or directed for use, these admixtures may be used only upon written permission. Determination of quantities of water-reducing and retarding admixture required to produce the desired results shall be the responsibility of the Contractor. The Contractor shall also establish the quantity of air-entraining admixture necessary to produce a concrete mixture having a net air content, by volume, of 5.5 plus or minus 1.5 percent.

6.3.3 Proportioning

Proportioning of concrete mixtures shall be in accordance with Section 601.03.03 of the 1998 KTC Standard Specifications. For concrete exposed to sewage, the mixture shall contain the necessary proportions of Type II, Type IP, or Type I cement and fly ash to ensure a maximum Tricalcium Aluminate content of 8 percent of the total weight of cementitious materials.

6.3.4 Class of Concrete

The following classes of concrete shall be as specified in Section 601.03.03 of the 1998 KTC Standard Specifications and shall be used in the types of construction designated, unless shown otherwise on the Plans, in the Contract, or directed by the CITY OF SHEPHERDSVILLE. Concrete of all classes and for all uses above grade shall be air-entrained.

6.3.4.1 Class AA Concrete

Class AA concrete shall be used in structural concrete. It shall have a minimum 28-day compressive strength of 4,000 psi, a minimum slump of 2 inches and a maximum slump of 4 inches. For fiber reinforced concrete, a tolerance of ± 1 inch shall be allowed outside the minimum and maximum specified.

6.3.4.2 Class A Concrete

Class A concrete shall be used in cast-in-place sewers, headwalls, catch basins, manholes, small retaining walls, culverts, sidewalks, curbs, driveways, pavements, paved ditches and paved channel linings. It shall have a minimum 28-day compressive strength of 3,500 psi, a minimum slump of 2 inches and a maximum slump of 4 inches. For fiber reinforced concrete, a tolerance of ± 1 inch shall be allowed outside the minimum and maximum.

6.3.4.3 Class B Concrete

Class B concrete shall be used in concrete encasements, caps, cradles, stacks, gravity retaining walls and for all non-reinforced concrete deposited as fill for cavities or voids and mass footings. It shall have a minimum 28-day compressive strength of 2,500 psi, a minimum slump of 3 inches and a maximum slump of 5 inches. For fiber-reinforced concrete, a minimum slump of 2 inches and a maximum slump of 6 1/2 inches is allowed.

6.3.4.4 Class M Concrete

Class M concrete shall be used for high early strength in driveways and sidewalks, when required by the Special Provisions or the plans. It shall meet the requirements for Class M concrete set forth in Section 601.03.03 of the 1998 KTC Standard Specifications.

6.3.4.5 Flowable Fill

Flowable fill shall be used as required by the Special Provisions or the plans. It shall meet the requirements for flowable fill set forth in Section 601.03.03 of the 1998 KTC Standard Specifications.

6.3.5 Batching and Mixing

6.3.5.1 General

The concrete shall be batched and mixed in the quantities required for immediate use. Unless otherwise specified or directed, all concrete shall be manufactured by ready-mixed methods.

6.3.5.2 Ready-Mixed Concrete

Ready-mixed concrete shall be manufactured and supplied in accordance with ASTM C 94, Standard Specification for Ready-Mixed Concrete, Alternate No. 3. The placement shall commence within 60 minutes of batch to trucks as indicated on ticket. The interval between delivery of separate batches placed continuously in the Work shall not exceed 20 minutes unless otherwise permitted by the City of Shepherdsville. Batch tickets with batch weight shown, shall be provided to the City of Shepherdsville when requested.

6.3.5.3 Hand-Mixed Concrete

Hand mixing will not be permitted, except in case of emergency or in case of isolated small units such as pipe headwalls and then only by permission of the City of Shepherdsville. When hand-mixing is permitted, proportioning by volume will be allowed and mixing shall be done only on water-tight platforms. The sand shall be spread evenly over the platform and then the cement spread upon it. The sand and cement shall then be thoroughly mixed while dry by means of shovels until the mixture is of a uniform color, after which it shall be formed into a crater and water added in an amount necessary to produce mortar of the proper consistency. The total water content shall not exceed that specified in Section 601.03.03, of the 1998 KTC Standard Specifications. The material on the outer portion of the crater ring shall then be shoveled to the center and the entire mass turned and sliced until a uniform consistency is produced.

The coarse aggregate shall then be added to the mortar and the entire mass turned and re-turned at least 6 times and until all coarse aggregate particles are thoroughly coated with mortar and the mixture is of a uniform color. Hand-mixed batches shall not exceed 1/2 cubic yard.

6.3.6 Forms

6.3.6.1 General

All forms shall be mortar-tight, true to the dimensions, lines, and grades of the structure, and of sufficient strength to prevent appreciable deflection during placing concrete. Aluminum or aluminum alloy forms will not be permitted except when provision is made to prevent their direct contact with the concrete, or be detrimental to masonry coating if the surface will be coated.

The inside surfaces of forms shall be cleaned of all dirt, mortar, and foreign material. Forms, which will later be removed, shall be thoroughly coated with form oil, prior to use. The form oil shall be a commercial quality form oil or other equivalent coating which will permit ready release of the forms and will not discolor the concrete, or be detrimental to masonry coating if the surface will be coated.

Concrete shall not be deposited in forms until all Work connected with constructing the forms has been completed, all materials required to be embedded in the concrete have been placed for the unit to be poured, and the City of Shepherdsville has inspected forms and materials. Such Work shall include removal of all dirt, chips, sawdust, water, and other foreign material from the forms.

Forms for all concrete surfaces, which will not be completely enclosed or hidden below the permanent ground surface, shall conform to the requirements herein for forms for exposed surfaces. Interior surfaces of underground sewers and structures will be considered to be completely enclosed surfaces.

Forms for exposed concrete surfaces shall be designed and constructed so the formed surfaces of fasteners, or wales. Plywood forms shall be at least 3/4 inch thick and shall be placed with the face grain perpendicular to the studs or joists, unless the Contractor furnishes calculations showing that excessive deflection or stresses will not occur when the grain is parallel to the studs or joists. The clear span between supporting studs or joists shall be placed no more than 20 times the thickness of the form facing and in no case shall the deflection exceed 1/360 of the clear span. Should any form or forming system, even though previously reviewed prior to use, produce a surface with excessive undulations, its use shall be discontinued until modifications satisfactory to the City of Shepherdsville have been made.

All exposed surfaces of each element in a concrete structure shall be formed with the same forming material or with materials which produce similar surface texture, color, and appearance.

Forms for exposed surfaces shall be faced with form panels. A form panel shall be considered to be the continuous section of form facing material, unbroken by joint marks, against which concrete is placed.

Form panels for exposed surfaces shall be plywood conforming to the requirements of U. S. Product Standard PS-1 for Exterior B-B (Concrete Form) Class I Plywood or any material other than plywood which will produce a smooth uniform concrete surface substantially equal to that which would result from use of such plywood. Only form panels in good condition, free of defects, such as scars, dents, or delaminations, shall be used for exposed surfaces.

Form panels for exposed surfaces, in general, shall be furnished and placed in uniform widths of 3 feet or more and in uniform lengths of 5 feet or more, except where the dimensions of the member formed are less than these dimensions. Panels shall be arranged in symmetrical patterns conforming to the general lines of the structure. Form panels on each side of the panel joint

shall be precisely aligned, by means of supports or fasteners common to both panels, to result in a continuous, unbroken concrete plane surface.

Forms for exposed surfaces shall be constructed with chamfer strips no less than 3/4 inch by 3/4 inch attached to prevent mortar runs and to produce smooth, straight chamfers at all sharp edges of the concrete.

Form fasteners consisting of form bolts, clamps, or other devices shall be used as necessary to prevent spreading of the forms during concrete placement. The use of ties consisting of twisted wire loops to hold forms in position will not be permitted.

Metal ties or anchorages within the form shall be constructed to permit their removal to a depth of at least one inch from the face without injury to the concrete. All fittings or metal ties shall be of such design that upon their removal the cavities, which will remain, will be the smallest possible size. Cavities, regardless of their position in the completed construction, shall be rammed and filled with mortar and the surface shall be sound, smooth, even, and uniform in color.

For narrow walls where access to the bottom of forms is not readily attainable otherwise, the lower form boards shall be left loose so they may be removed for removal of all chips, dirt, sawdust, or other extraneous material immediately prior to placing concrete.

Forms which are intended for re-use shall be maintained in good condition to ensure accuracy of shape, strength, rigidity, water-tightness, and surface smoothness. Forms that are unsatisfactory in any respect in the opinion of the City of Shepherdsville shall not be used and shall be removed immediately from the job site.

6.3.6.2 Removal of Falsework and Forms

In determination of the time for removal of falsework and forms, consideration shall be given to the location and character of the structure, weather, and other conditions influencing hardening of the concrete and materials used in the mixture. Removal of falsework and forms shall be done in accordance with 1998 KTC specifications, Sections 601.03.14 and 601.03.15 unless otherwise directed by the City of Shepherdsville.

Forms shall be removed with care so as not to damage the surface of the concrete structure and shall be the sole responsibility of the Contractor.

6.3.7 Concrete Reinforcing

6.3.7.1 Protection of Steel Reinforcing

Proper care shall be used in handling and storing steel reinforcement or epoxy coated steel reinforcement to prevent bending, excessive rusting, or coating with objectionable substances. Steel reinforcement, when incorporated in the Work shall be reasonably free from dirt, paint, oil, grease, loose/thick rust, and other foreign substances, and when deemed necessary, shall be cleaned to the satisfaction of the City of Shepherdsville.

6.3.7.2 Bending Steel Reinforcing Bars

Steel reinforcing bars shall be bent cold. Bars shall be bent accurately to the dimensions and shapes shown on the Plans and to within tolerances designated in the CRSI Manual of Standard Practice. Bars shall be bent in the shop before shipment and shall not be bent in the field, unless otherwise directed by the City of Shepherdsville.

6.3.7.3 Placing and Fastening

All steel reinforcement shall be accurately placed in positions shown and firmly held in position during placement and hardening of concrete. All steel reinforcement, shall be spaced to within a tolerance of plus or minus 1/2 inch and placed to within a tolerance of plus or minus 1/4 inch of specified clearance from the face of concrete. Dimensions shown from the face of concrete to bars are clear distances. Bar spacings are from center to center of bars. Bars shall be tied at all intersections, except where spacing is less than one foot in both directions, then alternate intersections shall be tied. Epoxy coated steel reinforcement shall be tied with coated tie-wire.

Distances from forms shall be maintained by means of stays, blocks, ties, hangers, or other approved supports. Supports for holding reinforcement from contact with the forms shall be approved precast blocks composed of mortar or approved metal chairs. The tips of metal chair supports, which are in contact with the surface of the concrete, shall be plastic-coated steel. The steel placed in reinforced concrete slabs shall also be securely tied down to prevent any possibility of steel rising above the specified elevation during placing, vibrating, and finishing the concrete.

The top mat and bottom mat of bars shall be separated by precast mortar blocks or by other equally suitable devices. The use of pebbles, pieces of broken stone or brick, metal pipe, and wooden blocks shall not be permitted as separators. Reinforcement in any member shall be securely placed and then inspected and approved before the placing of concrete begins. Concrete placed in violation of this provision may be rejected.

6.3.7.4 Splicing

No splicing of reinforcement will be permitted, except those splices of the types and at the locations shown, without written permission from the City of

Shepherdsville. Acceptable splices may include lapped splices, welded splices, mechanical splices, or other positive connection splices shown on the Plans or directed by the City of Shepherdsville.

Lapped splices, shall have lengths of not less than 40 times the nominal diameters of the reinforcement being spliced, unless otherwise shown on the Plans. Lapped splices in areas not designated on the Plans shall be made at points of low tensile stress, and the bars being spliced shall be rigidly clamped or wired together in an approved manner.

Rolls of welded steel wire mesh shall overlap each other by 2 cells, to maintain a uniform strength, and shall be securely fastened at the ends and edges.

Welded splices shall be in conformance with the AWS Reinforcing Steel Welding Code, current edition. Bars to be welded shall be butted and welded so as to develop, in tension, at least 125 percent of the specified yield strength of the bars. Welded splices will not be permitted unless shown on the Plans or approved by the City of Shepherdsville.

6.3.7.5 Fiber Reinforcing

When fiber reinforcing is required by the Plans or Contract, the polypropylene fibers shall meet article 6.2.2.3 requirements. The fibers shall be added after other ingredients have been placed in the mixer and prior to leaving the batch plant. Each batch delivery ticket shall indicate the amount of fibrous concrete reinforcement material per cubic yard added to each batch of concrete. Wire mesh reinforcement shall not be used in conjunction with fiber reinforcement.

6.3.8 Placing Concrete

6.3.8.1 General

Unless other provisions are agreed upon, the contractor shall give the City of Shepherdsville inspector 48-hour advance notice before concrete placement.

Concrete shall be delivered to its final position of placement within the time required for delivery after mixing in accordance with ASTM C 94 and within the required time interval between delivery of batches as specified in Section 6.3.5.2. Forms and reinforcement shall be moistened with water immediately before placing the concrete.

All equipment used for handling and/or placing concrete shall be such that it will accommodate concrete of the proportions and consistencies as specified. No adjustments in mixture proportions will be made to accommodate equipment, which is not capable of handling concrete of specified proportions

and consistencies. Equipment used to transfer concrete from truck mixers or agitators shall be of adequate design and/or dimensions to deposit concrete of the specified slump.

Water shall be completely removed from all excavations before concrete is deposited. When it is necessary to deposit concrete under water, placement shall be in accordance with the requirements specified under Section 601.03.09, Part B of the 1998 KTC Standard Specifications. The City of Shepherdsville's approval must be obtained prior to placing concrete under water.

In general, concrete shall not be placed unless otherwise shown on the Plans or directed by the City of Shepherdsville.

The method and manner of placing concrete shall be such as to avoid segregation or separation of aggregates or displacement of reinforcement. The use of long chutes, troughs, belts, and pipes for conveying concrete from the point of delivery to the forms will be allowed only upon written permission. When such conveyers are allowed and the quality of concrete or methods of placing or working it therein are not satisfactory, the Contractor shall discontinue their use and equip his plant so that concrete will be placed in a satisfactory manner. Troughs, pipes, or chutes used as aids in placing concrete shall be arranged and used in such a manner that ingredients of the concrete are not separated.

Where steep slopes are required, the chutes shall be equipped with baffle boards or be in short lengths that change the direction of movement. All chutes, troughs, and pipes shall be maintained clean and free from coating of hardened concrete by thoroughly flushing with water after each run or when out of operation for more than 30 minutes. Water used for flushing shall be discharged clear of concrete in place. The troughs, pipes, and chutes shall be either metal or metal-lined and shall extend as nearly as possible to the point of deposit. Aluminum or aluminum alloy troughs, pipes, or chutes will not be permitted.

Dropping concrete in excess of 5 feet without the use of pipe or tremies, or depositing a large quantity at any point and running or working it along the forms will not be permitted. The discharge end of the pipe shall be maintained as close to the point of deposit as is feasible. Concrete placing shall be such to entirely fill but not bulge or distort the forms or to disturb their alignment.

Special care shall be exercised to fill each part of the forms by depositing concrete as near its final position as possible, to work the coarser aggregate back from the face and to force concrete under and around reinforcing bars without displacing them. After concrete has taken its initial set, care shall be

exercised to avoid jarring the forms or placing any strain on ends of projecting reinforcement.

Concrete shall be compacted either by vibration as described herein or with approved spading tools. When vibration or spading is used, it shall be distinctly understood that formation of honeycombs, voids, or air pockets against the forms will not be allowed.

Vibration shall be internal. Vibrators shall be of types and designs capable of transmitting vibration to the concrete at frequencies to adequately consolidate the concrete. Vibration shall be of sufficient intensity and duration to cause flow or settlement of the concrete and complete compaction, but shall not be used to cause concrete to flow over long distances in the forms. The Contractor shall provide and use a sufficient number of mechanical vibrators to ensure that compaction can be started immediately after concrete has been deposited in the forms. The mechanical vibrator shall not be attached to the forms or reinforcing steel or applied to the surface of the concrete. The vibrator shall be applied to the concrete immediately after deposit of the concrete and shall be moved throughout the mass, thoroughly working the concrete around the reinforcement, embedded fixtures, and into angles and corners of the forms.

Vibration shall be of such duration to accomplish thorough compaction and complete embedment of reinforcement and fixtures, but shall not be unduly prolonged to cause segregation or undesirable laitance at the surface of the lift being consolidated. Forms shall be designed to provide for requirements of vibration.

Concrete shall be placed in continuous horizontal layers, the thickness' of which shall not exceed 12 inches, unless otherwise specified for different types of structures. In any given layer, consecutive batches shall be placed and compacted before the preceding batch has taken its initial set. Each layer of concrete shall retain a rough surface in order to secure efficient bonding with the next layer. A succeeding layer placed before the underlying layer has set shall be compacted in a manner that will entirely break up and obliterate the tendency to produce a cold joint between layers.

The operations of depositing and compacting concrete shall be conducted to form a compact, dense, and impervious mass of uniform texture having smooth faces on exposed surfaces. When any section of concrete is defective, it shall be removed and satisfactorily replaced or repaired as directed.

6.3.8.2 Weather Limitations and Protection

Concrete shall be maintained at a minimum temperature of 45°F for three calendar days after placement and at a minimum temperature of 40°F for an

additional four calendar days. When required, the Contractor shall submit a written outline of the method to be used for protecting concrete. The Contractor shall designate one of his employees to be responsible in order that he may be contacted by the City of Shepherdsville in unexpected situations. The City of Shepherdsville reserves the right to discontinue concrete placement when the means of protection and/or method of placement do not produce satisfactory results.

In cold weather, 40°F or below, all water and/or aggregate shall be heated so the temperature of the mixed concrete shall be no less than 50°F or more than 90°F at the time of placement.

When artificial heat is used, means shall be provided to maintain adequate moisture in the air within the enclosure. Surfaces of all concrete shall be maintained in a moist condition. When artificial heat is used, the temperature of concrete near the source of heat shall not exceed 80°F, and the temperature of concrete remote from the source of heat shall not be less than that designated (45°F or 40°F) for the time of curing after placement. When stoves or salamanders are used, adequate provisions shall be made for fire protection.

In hot weather, efforts shall be made to maintain temperature of the mixture below 90°F. The temperature of the concrete mixture immediately before placing shall be between 50°F and 90°F. When the ambient air temperature is above 90°F, the forms, reinforcing steel, and other surfaces which will come in contact with the mixture shall be cooled to below 90°F by means of a water spray or other approved methods. Excess water shall be allowed to drain or shall be removed from the forms before concrete is placed.

The Contractor shall assume all risks connected with placing concrete under these conditions and permission given by the City of Shepherdsville to do the Work will in no way relieve the Contractor of responsibility for proper results. Should concrete placed under such conditions prove unsatisfactory, it shall be removed and replaced with satisfactory concrete and no allowance will be made for removing and replacing the defective concrete.

6.3.9 Curing Concrete

6.3.9.1 General

All surfaces, which are to receive a masonry coating finish, shall be wet-cured. All other concrete, shall either be wet-cured or shall be cured by application of a membrane forming compound.

At any time the City of Shepherdsville determines concrete on the Project is not being properly cured, all or any concreting operations on the Project may be suspended.

At any time during the curing period when the atmospheric temperature is 45°F or less, the concrete shall be protected so as to satisfy the temperature requirements specified in Subsection 6.3.8.2. of these Specifications.

6.3.9.2 Wet Curing

Concrete shall be cured for a period of at least seven calendar days, beginning immediately after placement and finishing, by the frequent application of water to all surfaces so as to keep them continuously damp during the full seven-calendar-day curing period. Exposed concrete surfaces shall be protected from drying by application of a double thickness of wet burlap or similar material and the burlap or other approved material shall be kept continuously wet for a period of seven or more calendar days.

When the structure or any portion thereof is enclosed and artificial heat is provided for protection, the requirement of moisture for curing will not be waived. When steamlines are used for heating, the pipe shall be left loose so as to permit the escape of sufficient steam into the housing in order to maintain a moist atmosphere at all times. When stoves or salamanders are used, vessels containing water shall be maintained on each stove or salamander to maintain a moist atmosphere at all times.

6.3.9.3 Membrane Curing

The membrane forming curing compound shall not be diluted or altered prior to use, but shall be thoroughly agitated immediately prior to use. When the compound is too viscous for application, it shall be warmed in a water bath to approximately 100°F prior to application.

The compound shall be uniformly applied to a surface by use of an approved pressure sprayer. Curing compound may be applied in one application provided uniform and satisfactory coverage is achieved. If the City of Shepherdsville directs that two applications are required because one application is not satisfactory, then each application shall be at the rate of one gallon per 300 or less square feet. The first application shall be started as soon as practicable after the final finish and as directed by the City of Shepherdsville and the second application shall be started as soon as the first application is finished. The total actual application rate shall be at least one gallon per 150 square feet actual coverage.

Curing compound shall not be applied to construction joints, reinforcing steel, or surfaces, which are to receive a masonry coating. When curing compound is applied to surfaces upon which the compound is not permitted for use, it shall be removed by sandblasting.

The curing compound shall be protected and maintained in an acceptable condition for a period of at least seven calendar days. Surfaces upon which the curing compound is damaged before the end of the seven-calendar-day curing period shall be moistened and resprayed with curing compound.

6.3.10 Surface Finish

6.3.10.1 General

Unless otherwise indicated on the Plans, the surface finish that shall be applied to various parts of concrete structures shall be as follows:

Ordinary,
Masonry Coating Finish, or
Floated Surface Finish.

Ordinary Surface Finish shall be applied to all concrete surfaces. Unless otherwise specified in the Contract, and provided requirements here in are satisfactorily met, ordinary surface finish shall be considered as a final finish on all surfaces not required to have a Masonry Coating Finish or a Floated Surface Finish.

6.3.10.2 Ordinary Surface Finish

During concrete placement, care shall be taken that methods of compaction used will result in a smooth surface of even texture free from honeycombs, water, and air pockets, and that the coarse aggregate is forced away from the forms in order to leave a mortar surface.

As soon as the concrete has set sufficiently, the forms shall be carefully removed and all metal ties, anchorages, or tie wires used within the forms to hold them to correct alignment and location shall be removed as specified in Subsection 6.3.6.2. of these Specifications. Immediately following removal of forms, all fins and irregular projections shall be removed from all surfaces, except those not to be exposed in the completed Work. On all surfaces, cavities and depressions resulting from removal of form ties and all other holes, honeycomb spots, broken corners or edges, and other defects shall be thoroughly cleaned, saturated with water, and carefully pointed and trued with a mortar of the same cement and fine aggregates mixed in the same proportions as used in the class of concrete being finished. The mortar used shall not be more than 30 minutes old and the mortar patches shall be cured as specified for the structures.

After the mortar has thoroughly hardened, it shall be finished with a carborundum stone to obtain a uniform and smooth surface the same color and texture as in the surrounding concrete. When required, honeycomb areas shall be chipped out before pointing. All open and filled contraction and

expansion joints in the completed Work shall be carefully tooled and free of all mortar and concrete. The joint filler shall be exposed for its full length with clean true edges.

The objective of these requirements is to obtain smooth and even surfaces of uniform color and texture without unsightly bulges, patched areas, depressions, and other imperfections. The degree of care in building forms and the character of materials used in form work, and the care with which concrete is placed will be factors in determining whether additional finishing of concrete will be required.

6.3.10.3 Masonry Coating Finish

After the concrete surfaces of members designated to have a Masonry Coated Finish have been inspected and accepted as having a satisfactory Ordinary Surface Finish, the concrete surfaces shall be cleaned of all dust, foreign matter, and form oil, and an approved Masonry Coating Finish shall be applied.

All surfaces to receive a masonry coating shall be thoroughly cleaned and free of oil, form oil, grease, dust, dirt, mud, curing compound, release agents, loose patching mortar, or any other substance deleterious to bonding. The ordinary surface finish to which the masonry coating is to be applied shall be approved by the City of Shepherdsville before application of the masonry coating.

All surfaces to receive a masonry coating shall be checked for the presence of dust by wiping a dark cloth across the surface of the concrete. If a white powder can be seen on the dark cloth, the concrete shall be cleaned by wire brushing, grinding, or water blasting and then allowed to thoroughly dry before the masonry coating is applied. The surface will be rechecked for the presence of dust after cleaning.

All surfaces to receive a masonry coating shall be checked for the presence of oily conditions by sprinkling or fogging water on the surface of the concrete. If the water stands in droplets without spreading out immediately, this indicates the surface is contaminated with an oily substance, and cleaning, using a detergent and water followed by thorough rinsing with water, will be required. The surface will be rechecked for the presence of oily conditions after cleaning.

All surfaces to receive a masonry coating shall be thoroughly dry before coating is applied, unless the coating manufacturer specifically recommends the surface to be wet. Surfaces will not be considered dry unless an absorbent paper pressed tightly against the surface does not show any trace of moisture.

Coating application shall be suspended any time the ambient temperature or the temperature of the concrete does not comply with the coating manufacturer's recommendations.

Prior to application of the materials, the Contractor shall furnish the City of Shepherdsville with copies of the coating material manufacturer's brochures or booklets. Masonry coating materials shall be applied in strict conformity with the manufacturer's written instructions, except that in each instance the concrete surface shall be prepared to the satisfaction of the City of Shepherdsville before application of the material is started and the material shall be applied at a uniform rate of 50 plus or minus 10 square feet per gallon.

Any portions of the coating which are not clean, uniform in color, texture, thickness, tightly bonded, or which are damaged prior to final acceptance of the Project shall be satisfactorily repaired or removed and replaced with an acceptable finish and coating.

Care shall be exercised to secure a neat uniform appearance and to prevent the coating from being dripped, sprayed, or otherwise deposited upon concrete or steel surfaces not designated to receive the coating. Any objectionable deposits or material shall be removed and the surfaces repaired to the satisfaction of the City of Shepherdsville.

6.3.10.4 Floated Surface Finish

Horizontal surfaces that do not receive the Masonry Coating Finish shall be finished by placing an excess of materials in the form and removing or striking off such excess with a wooden template, forcing coarse aggregate below the mortar surface. After the concrete has been struck off as described, the surface shall be thoroughly worked and floated by hand with a wooden float leaving a fine grained, smooth-sanded surface.

Sidewalks and driveways shall receive a broom finish, prior to beginning the curing process.

6.3.11 Sampling and Testing

6.3.11.1 Personnel

Structural concrete, such as foundations and any pour larger than 5 cubic yards, shall be sampled and tests will be performed throughout the work at the minimal frequencies indicated or more often as necessary to determine whether concrete supplied is of the quality specified. Tests will be performed by the Agency designated by the City of Shepherdsville to provide concrete testing on Projects involving the City of Shepherdsville facilities, according to procedures outlined below. On private developments and other than the

City of Shepherdsville advertised Projects, the testing company must be designated in writing and be approved by the City of Shepherdsville prior to concrete placement. If the concrete plant is designated, the City of Shepherdsville may elect to pay for samples to be taken from the same mix in order to run tests in parallel.

The technician who samples and tests concrete shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the minimum guidelines for Certification of Concrete Field Testing Technicians, Grade I in accordance with the American Concrete Institute.

6.3.11.2 Sampling Fresh Concrete

Concrete shall be sampled in accordance with the procedures set forth in ASTM C 172, Standard Specification for Sampling Freshly Mixed Concrete.

6.3.11.3 Slump Test

Slump tests shall be performed in accordance with the procedures set forth in ASTM C 143, Standard Test Method for Slump of Portland Cement Concrete.

6.3.11.4 Air Content

The air content shall be determined by the volumetric or pressure methods in accordance with the procedures set forth in ASTM C 173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method, or ASTM C 231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

6.3.11.5 Test Cylinders

Concrete test cylinders shall be made and cured in accordance with the procedures set forth in ASTM C 31, Standard Practice for Making and Curing Concrete Test Specimens in the Field. Unless otherwise specified, four test cylinders shall be molded for each set. Cylinders to be used for determining form removal time shall be stored at the site as near to the concrete being represented as possible.

6.3.11.6 Compressive Strength Tests

The compressive strength of test cylinders shall be determined in accordance with the procedures set forth in ASTM C 39, Standard Test for Compressive Strength of Cylindrical Concrete Specimens.

6.3.11.7 Frequency of Tests

Unless otherwise directed by the City of Shepherdsville, a minimum of one set of test cylinders shall be made daily for each 50 cubic yards or portion thereof placed in each structure. Two cylinders shall be tested at 28 days to check the adequacy of the concrete mix. The remaining cylinders may be tested, as needed, to meet the provisions of Section 601.03.14 of the 1998 KTC Standard Specifications, if early form removal is desired.

Slump and air content tests shall be made at the time of concrete placement as often as is necessary for control checks and acceptance purposes, and always when compressive strength specimens are made. If the measured slump or air content falls outside the specified limits, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed the requirements of these Specifications. The first and last 1/4 cubic yard discharged from the mixer are exempt from the slump and air content requirements of these Specifications.

SECTION 7

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

TUNNELING, BORING AND JACKING

7.1 DESCRIPTION OF WORK

This Work shall consist of the installation of sanitary and storm sewer pipe by tunneling or by boring and jacking in accordance with the provisions of these Specifications and in close conformity to the lines and grades shown on the Plans. All excavation shall be unclassified.

7.2 MATERIALS

7.2.1 Steel Tunnel Liner Plates.

The base metal for steel plates shall conform to the chemical requirements of ASTM A 569, Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip, Commercial Quality. The flat plate (before cold forming) shall conform to the following minimum mechanical properties:

Tensile Strength	42,000 psi
Yield Strength	28,000 psi
Elongation, 2 inches	30%

Nominal plate dimensions shall provide the sectional properties shown in the current edition of the AASHTO Standard Specifications for Highway Bridges. Thickness tolerances shall conform to Paragraph 14 of AASHTO M 167, Standard Specification for Structural Plate for Pipe, Pipe-Arches, and Arches. Steel liner plates shall be of additional thickness or protected by coatings and other means when required in the Contract for resistance to abrasion or corrosion.

7.2.2 Bolts and Nuts

Bolts and nuts used with lapped seams shall be no less than 5/8 inch in diameter. The bolts shall conform to ASTM A 449, Standard Specification for Quenched and Tempered Steel Bolts and Studs, for plate thicknesses equal to or greater than 0.209 inch and A-307, Standard Specification for Carbon Steel Externally Threaded Standard Fasteners, for plate thickness less than 0.209 inch. The nut shall conform to ASTM A 307, Grade A.

Bolts and nuts used for 4-flanged plates shall be no less than 1/2 inch in diameter for plate thicknesses to and including 0.179 inch and no less than 5/8 inch in diameter for plates of greater thickness. The bolts and nuts shall be quick acting coarse thread and shall conform to ASTM A 307, Grade A.

7.2.3 Steel Casing Pipe

Steel casing pipe shall conform to ASTM A 139, Standard Specification for Electric-Fusion (ARC) Welded Steel Pipe. For 30 inch and greater diameter casing pipe, a minimum clearance of 12 inches (total) must be provided between pipe bells and the inside of the casing pipe, except as otherwise stated in these specifications, or as shown on the Plans. On a case-by-case basis a smaller diameter casing will be allowed if the 12-inch minimum clearance and design grade can be achieved. All storm drains, 8 inch or greater gravity sewers and 10 inch or greater force mains shall use a 30 inch minimum diameter casing pipe. A 12 inch diameter casing pipe shall be used for 6 inch or less gravity sewers and 8 inch or less force mains. The minimum wall thickness and grade of the casing pipe shall be as shown on the Plans. Smaller diameter casing pipes will need to be approved prior to construction.

7.2.4 Cement Grout

Cement grout for filling voids outside tunnel liner plates and 30 inch or larger casing pipe, unless shown otherwise on the Plans, shall consist of a mixture of water and one part Type 1 Portland Cement to two parts mortar sand (as specified in Section 804.05 of the 1998 KTC Standard Specifications), by volume, or KTC 1:2 Proprietary Grout Mix #1093. The water shall be adjusted to produce a mixture of consistency suitable for pumping, with a minimum slump of 5 inches and a maximum slump of 9 inches. Provisions shall be made for releasing of air and filling with grout. A pressure of 10 to 15 PSI (23.0 to 35.0 feet of head) shall be used. Cement grout for filling the voids between the carrier and casing pipe shall be a mixture suitable for grouting and shall be approved by CITY OF SHEPHERDSVILLE prior to its use.

Casing pipe may also be filled with blown in sand or pea-gravel. If a casing pipe less than 30-inches in diameter is used, one of these two methods of filling the voids has to be used. If bore is under a state highway, KTC will need to approve the method.

7.3 EXECUTION OF WORK

7.3.1 General

Sewer pipe shall be constructed by tunneling or boring and jacking only at those locations and within limits shown on the Plans or as directed by the CITY OF SHEPHERDSVILLE. Where pipe is required to be installed under railroads, highways, streets, or other facilities by tunneling or boring and jacking, construction shall be made in such a manner that will not interfere with the operation of the railroad, street, highway, or other facility, and shall not weaken or damage any embankment or structure.

If any utility above or adjacent to the tunnel or bore is endangered or has been damaged because of the tunneling or boring and jacking operations or movements of earth caused by such operations, the owner of same shall be notified immediately and shall be given access to the Work to carry out all necessary repairs to such utilities.

If any sewers are damaged, it shall be the responsibility of the Contractor to make the necessary repairs.

The Contractor shall be responsible for protection of utilities, sewers, and drains against damage by his Work. If any public or private property is endangered, or has been damaged as a direct result of the tunneling or boring and jacking operations, it shall be repaired at the Contractor's expense. All cost and expense to the Contractor for carrying out the above requirements shall be at no additional cost to CITY OF SHEPHERDSVILLE.

7.3.2 Dewatering

Prior to commencing, the Contractor shall furnish and operate all necessary pumping equipment of ample capacity and make all necessary provisions to keep tunnels, shafts and pits free of water during construction and to satisfactorily dispose of such water. During placing of concrete, drainage and pumping shall be so arranged that concrete is placed in the dry and that no water will flow over the concrete until it has hardened.

7.3.3 Line and Grade

Line and grade shall be checked frequently by the Contractor's Professional Land Surveyor and not less than once per day. Results from these checks shall be provided to CITY OF SHEPHERDSVILLE. The Contractor also shall assist the CITY OF SHEPHERDSVILLE in checking line and grade as often as the CITY OF SHEPHERDSVILLE deems necessary to ensure that proper tolerances in line and grade are being met.

Tunneled and bored and jacked sections of sewers shall be completely installed prior to construction of adjoining sections. If permitted by the CITY OF SHEPHERDSVILLE, minor adjustments in the line and/or grade of the adjoining sections shall be allowed to compensate for slight deviations from the Plan line and grade of the installed tunneled sections.

7.3.4 Tunneling

7.3.4.1 Submittals and Approvals

Tunnel support systems shall be with steel liner plates, ribs and lagging, steel casing pipe or other systems approved by the CITY OF SHEPHERDSVILLE. The Contractor shall furnish a detailed Tunneling Plan for review by the CITY OF SHEPHERDSVILLE. The Plans shall contain a description of the tunneling method and equipment proposed, tunnel support system, shop drawings, details and cross-sections, a schedule of operations, and the proposed work hours. Tunnel construction shall not commence until the CITY OF SHEPHERDSVILLE has reviewed the submittal and provided approval of the Plan. The CITY OF SHEPHERDSVILLE's approval shall in no way relieve the Contractor of his sole responsibility for the execution of

this Work or any liability. When tunnel construction shall be beneath a Railroad right-of-way, the Tunneling Plan shall also be subject to the approval of the Railroad.

7.3.4.2 Safety

All Work shall conform with applicable Subsections of the Kentucky Occupational Safety and Health Standards for the Construction Industry and 29 CFR, Part 1926, Subpart S, "Tunneling".

7.3.4.3 Working Hours

Work hours must be approved by the CITY OF SHEPHERDSVILLE as part of the construction schedule submittal. Tunnel construction operations may progress for 24 hours a day, except on Sundays. When Work is done at night, the Contractor shall provide adequate safety precautions such as watchmen, barricades, lights, etc., and any mechanical equipment used in the construction operations shall be of a type that produces a minimum amount of noise to avoid creating a nuisance.

7.3.4.4 Tunnel Shafts.

Shafts shall be constructed at the locations shown on the Plans. If not shown on the Plans, shafts shall be constructed at locations selected by the Contractor, subject to approval by the CITY OF SHEPHERDSVILLE. Temporary construction shafts shall be of adequate size and properly constructed and equipped to meet all requirements of safety to personnel and to the Work. All shafts shall be barricaded, lighted, fenced, and properly guarded from the beginning of the excavation until the completion of the construction requiring the shaft. A substantially constructed ladder shall be provided in each shaft and shall be kept in safe, good repair, clean, and clear of debris.

Provisions shall be made at each shaft so that plumb lines suspended on the centerline of the sewer at each end of the shaft will hang freely from the surface.

7.3.4.5 Tunnel Construction.

The Contractor shall carry out the Work of tunneling and supporting the tunnel face, roof, walls, and floor so that there will be no fall, flow, caving, or heaving of earth or other materials into the tunnel excavation. If there should be any fall or movement of earth into the tunnel at any time, the Contractor shall proceed with the Work with all necessary precautions and in such a manner as will ensure the safety of life and of all sewers, utilities and public and private property above and adjacent to the tunnel.

The Contractor shall furnish, place and maintain all sheeting, bracing or lining required to support the tunnel floor, roof, sides, and face until the pipe and its bedding, jointing, encasement and backfilling have been completed.

All liners shall remain in place. Care shall be used in trimming the surfaces of the excavated section and in placing the liners or sheeting and bracing so that the required minimum clearance between the outside of the pipe and the final position of the liners, sheeting and bracing in the tunnel will be attained without any deviation in sewer alignment. Sheeting or lining must be placed and held tightly against the trimmed earth surface of the excavated section so that complete filling of voids may be achieved between the earth and the lining or sheeting placed against it. No part of the lining, bracing, or flanges of steel liner plates shall project closer to the outside top of the pipe than 12 inches, or to the outside bottom of the pipe than 4 inches, unless shown otherwise on the Plans.

7.3.4.6 Prevention of Loss of Earth Materials

Cavities or spaces between the actual surfaces of excavation and the tunnel liner plates or sheeting, shall be completely filled with cement grout. Grout shall be placed under pressure through grout nipples in the steel liner plates or grout holes in sheeting. The grout holes shall be at minimum 10 feet centers and the grout placed in such sequence as to ensure the complete filling of all cavities and spaces and of carrying loads uniformly from the undisturbed material to the tunnel lining or sheeting. Grouting shall be done at frequent intervals simultaneously with the tunnel construction and immediately whenever a loss of material occurs. In no case should the tunnel be left ungrouted if Work is to be stopped or suspended for any extended period of time.

At the end of each working day, or whenever a delay in the tunneling is anticipated, the Contractor shall construct a bulkhead to prevent the caving of soil at the working face. The bulkhead shall be required unless the CITY OF SHEPHERDSVILLE specifically grants permission to omit the bulkhead.

Wherever unstable conditions are encountered and the Contractor is unable to proceed without loosening earth or creating voids outside the tunnel lining, the Contractor shall presolidify the soil around the area to be excavated by freezing the soil or injecting an approved chemical that will permit the tunnel excavation to proceed without any loss of earth material, or other method approved by the CITY OF SHEPHERDSVILLE. Before any stabilization of earth materials is begun, the Contractor shall obtain approvals. Stabilization shall be performed at no additional cost to the CITY OF SHEPHERDSVILLE.

7.3.4.7. Installation of Carrier Pipe

All pipe used in tunnels shall be of the type shown on the Plans or in the Contract and shall be of the size and strength class required.

After the tunnel section is excavated, lined, and braced, the carrier pipe shall be placed on and supported by steel rails, a concrete pad, or other approved supports. The supporting system shall assure line and grade and shall allow sufficient space below the pipe for placing concrete. Care shall be used to

avoid damage to the pipe or to the liner plates. The carrier pipe shall be rigidly braced to prevent its displacement when the annular space is backfilled.

The space between the carrier pipe and sides of the roof of the tunnel shall be completely filled with grout or with pea gravel or No. 9 crushed stone by pneumatic backstowing. The grout or granular material shall be uniformly placed and compacted to fill all spaces between the outside of the pipe and inside surface of the sheeting or lining. If filling with grout is selected, a 6-inch diameter Schedule 40 or SDR35 PVC pipe shall be placed and secured in the tunnel next to the carrier pipe to allow continued flow of any groundwater in the adjacent sewer trench. The drain pipe shall extend beyond the grout and at least 2 feet into the crushed stone encasement on both ends of the tunnel.

Temporary shafts shall be completely abandoned. Unless otherwise specified in the Plans or Contract, all sheeting, bracing, and similar items may be removed unless the Contractor requests and receives authorization from the CITY OF SHEPHERDSVILLE to leave it in place. No payment will be made for such items left in place at the Contractor's option.

7.3.5 Boring and Jacking.

7.3.5.1 Submittals and Approvals

Boring and jacking support systems shall be with steel casing pipe or other systems approved by the CITY OF SHEPHERDSVILLE. The Contractor shall furnish a detailed Boring and Jacking Plan for review by the CITY OF SHEPHERDSVILLE. The Plans shall contain a description of the Boring and Jacking method and equipment proposed, boring and jacking support system, shop drawings, details and cross-sections blocking system, a schedule of operations, and the proposed Work hours. Boring and Jacking construction shall not commence until the CITY OF SHEPHERDSVILLE has reviewed and approved the submittal. The CITY OF SHEPHERDSVILLE's approval shall in no way relieve the Contractor of his sole responsibility for the execution of this Work or any liability. When boring and jacking construction shall be beneath a Railroad right-of-way, the Boring and Jacking Plan shall also be subject to the approval of the Railroad.

7.3.5.2 Boring and Jacking Equipment and Construction

When required by the Plans, sewers shall be constructed within steel casing pipe which have been jacked or pushed into bored holes. The holes shall be bored from the low or downstream end, unless site conditions dictate otherwise and the CITY OF SHEPHERDSVILLE provides approval.

The access pit shall be of sufficient size to provide ample working space for the boring and jacking equipment, guide rails, reaction blocks, bracing, spoil removal, and sections of pipe as required. Provisions shall be made for the erection of guide rails in the bottom of the pit by providing a crushed stone

base where applicable. The Contractor shall be responsible for providing stable foundation and wall supports during boring operations.

The boring and jacking machine to be used shall be in good mechanical condition and capable of advancing the bore hole within the required limits of accuracy. The Contractor shall push the casing pipe as the bore progresses. All cutting heads shall be removable without retracting the casing pipe. Backstops and guide rails shall be of sufficient strength and rigidity to support the thrust of the boring and jacking machine without displacement. Guide rails shall be accurately laid to line and grade and maintained in this position until completion of the boring and jacking operation. A smooth casing pipe of sufficient strength and diameter shall be forced into the bored hole to provide a tight fit against the earth sides of the bore hole. The casing pipe shall be of minimum diameters as specified in Section 7.2.3. of these specifications. Joints between sections of the casing pipe shall be welded with a continuous circumferential weld. Following installation, the casing pipe shall be carefully inspected to ensure that the carrier pipe can be properly placed.

During placement of the carrier pipe in the casing, the carrier pipe shall be blocked or otherwise supported to secure the proper flow line elevations throughout its full length and to ensure that backfilling at the bottom, sides and top of the pipe can be done without any displacement or floating. The carrier pipe shall be placed in the casing pipe only by such method that will keep the pipe joints in compression. Any method tending to unjoint the pipe while being placed will not be permitted. When the casing pipe is 30" or larger, the spaces between the casing and the outside of the casing pipe shall be filled solidly with cement grout placed under pressure, after the entire casing pipe is in place. Grout meeting the requirements of Section 7.2.4. shall be pumped at a pressure between 10 and 15 PSI (23.0 to 35.0 feet of head). Provisions shall be made for the removal of all air and complete filling of the voids with grout mixture. Before placing grout inside the casing pipe, the exterior of the casing pipe shall be grouted on 10 feet centers and the carrier pipe shall be carefully inspected for uniformity of grade along its alignment and any required corrections shall be made. Particular attention shall be given to ensuring that the pipe will be solidly supported by the selected backfill at its bottom and sides. The method of injection of grout under mechanical pressure shall be approved by the CITY OF SHEPHERDSVILLE. Grout shall be placed by filling the casing pipe, through 4 inch diameter holes placed on 10 feet centers, beginning at the downstream end and proceeding upstream.

The space between the carrier pipe and sides of the casing pipe shall be completely filled with grout or with granular material by pneumatic backstowing, in accordance with the methods described in Section 7.3.4.7. If filling with grout is selected, a 6-inch diameter drain pipe shall be placed and secured next to the carrier pipe to provide through drainage of any

groundwater. This drain pipe shall be installed as described in Section 7.3.4.7.

Boring and jacking will be allowed for force main pipe, sanitary sewer, property service connections, and storm drains. In each of these instances, four linear feet of green marking tape, as specified in Section 4.2.7. of these specifications, shall be placed at the edge of pavement on each side.

When unforeseen obstructions or conditions require abandonment of a partially completed bore hole, plug end of pipe by filling with grout. Then the Contractor shall backfill the abandoned bore hole and start a new hole. The Contractor shall receive no compensation for any expenses incurred by any unsuccessful attempt.

SECTION 8

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

ROADWAY CONSTRUCTION AND REHABILITATION

8.1 DESCRIPTION OF WORK

8.1.1 General

This Work shall consist of milling and paving operations necessary to restore all existing pavements which were damaged or removed by the Contractor's operations and construction and paving operations necessary to provide new bituminous concrete pavement. Existing pavements shall be restored to conditions at least equal to their conditions before construction. Complete resurfacing or road construction shall be performed when required in the Special Provisions. The Contractor shall notify the City of Shepherdsville 48 hours prior to placement of binder, base or surface so areas that are to be paved can be approved by the City of Shepherdsville.

8.1.1.1 City, County, and State Paved Surfaces

Streets, alleys, sidewalks, curbs, and gutters originally constructed by ordinance or maintained by the City of Shepherdsville, and highways, roads and walks constructed and/or maintained by the Kentucky Transportation Cabinet (KTC) or the Bullitt County Department of Public Works and Transportation, which are wholly or partially removed, damaged or disturbed by the Contractor's operations, shall be promptly restored to the appropriate Agency's standards or as detailed in the Special Provisions.

8.1.1.2 Other Roadway Surfaces

Other roadway surfaces not constructed or maintained by the City of Shepherdsville, the Kentucky Transportation Cabinet or the Bullitt County Department of Public Works and Transportation, which are wholly or partially removed, damaged, or disturbed by the Contractor's operations, shall be restored with like or better materials to a condition as good as or better than existed prior to the beginning of the Work, so that movement of traffic, both vehicular and pedestrian, through the restored way shall be as free, safe, and unimpeded as before.

8.1.2 Maintenance or Indemnity Bond

The Contractor shall provide a Maintenance or Indemnity Bond to cover the cost of all claims, loss or damage and expenses of reconstruction or additional Work occurring because of settlement of backfill in the trenches under paved surfaces.

This bond will only apply to cuts in existing City of Shepherdsville roadways and the bond amount will be established by the City of Shepherdsville’s Engineer.

8.1.3 CITY OF SHEPHERDSVILLE Road Construction Standards

All new bituminous concrete pavements on City of Shepherdsville owned or maintained facilities and private roadways shall be constructed in accordance with the provisions in these Specifications. Included are the construction activities associated with the preparation of the subgrade, the placement and compaction of the aggregate base material, and the placement and compaction of bituminous concrete pavement materials. Also included are the submittals required prior to the placement of the pavement materials, and the test and inspection procedures required for acceptance of the finished product.

8.2 MATERIALS

8.2.1 Bituminous Concrete Binder and Surface

These materials shall meet the requirements for Class I mixtures as set forth in Sections 403.02 and 403.03.03 of the 1998 KTC Standard Specifications, and as summarized in the following table.

LABORATORY MIX DESIGN CRITERIA (50 BLOW MARSHALL METHOD)
CLASS I MIXTURES

<u>Property</u>	<u>Requirements</u>	
	<u>Binder</u>	<u>Surface</u>
Minimum Stability (pounds)	1,500	1,500
Flow (inches)	0.08 to 0.16	0.08 to 0.16
Air Voids (%)	3.0 to 5.5	3.5 to 6.0
Minimum VMA (%)	12.5	14.5

Prior to construction of the bituminous concrete binder, the Contractor shall submit a job-mix formula for both the bituminous concrete binder and surface courses. As a minimum the job-mix formula shall include the grain-size distribution of the aggregate, the asphalt cement content, the stability, flow and percent air voids as determined by KM 64-411, the percent VMA as determined by KM 64-429, and the percent retained tensile strength as determined by KM 64-628. Additionally, the Contractor shall supply the raw test data used to design the job-mix formula. These test data shall include, as a minimum, graphs of unit weight, stability, flow, air voids, and VMA.

A Job Mix Formula previously approved by the CITY OF SHEPHERDSVILLE will generally be accepted, but must still be submitted for each Project.

8.2.2 Bituminous Tack Coat

This material shall meet the requirements for SS-1h emulsified asphalt as set forth in Section 806.07 of the 1998 KTC Standard Specifications.

8.2.3 Portland Cement Concrete

This material shall meet the requirements for Class A concrete as set forth in Section 6 of these Specifications.

8.2.4 Aggregate Base

This material shall meet the requirements for dense graded aggregate (DGA) as set forth in Section 805.15 of the 1998 KTC Standard Specifications. If not from a previously approved source, prior to construction of the aggregate base, the Contractor shall submit a grain-size distribution for the aggregate base material. The grain-size distribution shall be developed in accordance with KM 64-620. The oven-dry bulk specific gravity, determined in accordance with KM 64-607, shall be submitted with the grain-size distribution. Testing of the aggregate base shall be performed by an Independent Testing Laboratory or by a Certified Aggregate Technician employed by the supplier.

8.2.5 Fill Materials

These materials shall be used in the construction of fill to the specified lines, grades, and cross-sections. The fill shall consist of selected excavated material meeting the requirements of Section 3.3.2.2. or borrow material meeting the requirements of Section 3.2.3. of the current City of Shepherdsville Standard Specifications.

8.3 EXECUTION OF WORK

8.3.1 Pavement Cut Back

Existing pavements shall be saw cut along straight lines running parallel to and on each side of the trench. They shall be cut such that the new pavement surface will be constructed in uniform widths at least 50 feet in length measured along the trench. Pavement material shall be removed and disposed of. An additional saw cut shall be made 12 inches back on each side of the trench, after trenching Work is complete, extending down to the base material or subgrade soil. The exposed base material, if present, or subgrade soil shall be refilled and compacted with manual tampers or rollers to a density equal to 95 percent of standard Proctor density, as determined by ASTM D 698.

For Portland cement concrete pavements, if saw cuts are within 4 feet of a formed joint in the existing pavement, then the existing slab shall be broken and removed to the joint.

8.3.2 Roadway Excavation Protective Covering (Steel Plates)

The objective is to provide optimal drive ability on all streets throughout the year. Avoiding damage to snow removal equipment from objects in the street is a seasonal issue. While the County and the City of Shepherdsville recognize and encourage

placing plates over roadway excavation sites to enable traffic to pass over the site when Work is not proceeding, the desire is also that the plates be minimally disruptive and meet all safety standards.

Requirements for Collector, Arterial Streets, and County through Roads:

November 1 to March 31: Recessed plates at all sites where Project lasts longer than two working days. No flat plates allowed.

April 1 to October 31: Recessed plates or beveled plates pinned to road surface.

Requirements for Residential Streets:

November 15 to March 31: Recessed or pinned beveled plates where Project lasts longer than two working days. No flat plates allowed.

April 1 to November 14: Recessed or beveled plates allowed where construction lasts five days or longer.

8.3.3 Manhole Adjustments

From November 1 to March 31 of the following year, manhole lids shall be adjusted in conjunction with placement of bituminous concrete pavement courses in order to avoid damage to snow removal equipment. Work related to maintaining manhole lids flush with the roadway surface shall be incidental to surfacing.

8.3.4 Pavement Milling

After milling and texturing, the finished surface shall provide a smooth riding surface free from gouges, ridges, oil film, and other imperfections of workmanship, having a uniform texture, and true to the required grade and cross section. The elevation of the longitudinal edges of adjacent cuts shall not differ more than 1/8-inch. When practicable, vertical longitudinal faces shall not be left during non-working hours to expose public traffic. When it is necessary to expose public traffic to longitudinal faces, the faces shall be no more than 1-1/4 inches in height and shall be tapered in a manner approved by the City of Shepherdsville, to avoid creating a hazard for traffic.

Where sound pavement has been gouged, torn, or otherwise damaged during the milling operations, or damage is done to any property of any kind including utility frames, grates, and covers, repairs shall be made by the Contractor at no cost to the City of Shepherdsville.

Lateral limits extend from the inside edge of the integral curb and gutter section a distance of at least 6-feet 6-inches into the existing pavement area. Remove existing pavement material that extends into the gutter portion of the integral curb and gutter section.

8.3.5 Pavement Restoration For Utility Cuts - Milled Streets

The compacted bituminous concrete binder course shall be 4-inches for subdivision streets and 6-inches (2-3 inch thick layers) on County through roads for utility cuts, including cuts for property service connections.

8.3.6 Bituminous Concrete Paving

8.3.6.1 General

Bituminous concrete paving shall be in accordance with Sections 403.01 through 403.03 of the 1998 KTC Standard Specifications.

8.3.6.2 Temperature and Weather Limitations

No paving shall take place between November 15 and April 1 without written permission from the City of Shepherdsville. Bituminous paving shall not be placed on any wet surface or when the ambient air temperature is less than that specified in the following table.

TEMPERATURE LIMITATIONS

<u>Bituminous Mixtures</u>	<u>Minimum Ambient Air Temperature for Placing (Degrees Fahrenheit)</u>
Bituminous Concrete Surface, 1" thick or less	45
Bituminous Concrete Surface, thicker than 1"	40
Bituminous Concrete Binder	35
Leveling and Wedging	45

The bituminous mixture shall be maintained at the following temperatures.

MIXING AND LAYING TEMPERATURES
(Degrees Fahrenheit)

Aggregates	Min 240 - Max 325
Asphalt Cement	Min 225 - Max 325
Mixture at Plant (measured in truck)	Min 240 - Max 325
Mixture When Placed (measured in truck when discharging)	Min 225

8.3.6.3 Dense Graded Aggregate Base Course

Where required in the Project Special Provisions or Plans, dense graded aggregate (DGA), having been thoroughly mixed with water in a twin shaft pugmill-type mixer shall be delivered to the site. The amount of water added shall be an amount which will provide the mixture with satisfactory moisture

content for compaction to the specified in-place density. The plant-mixed material shall be transported in such manner as to deliver the mix to the Project without loss of moisture or segregation. Only the aggregate base material which can be properly placed and compacted shall be transported to the site. DGA should not be stored or stockpiled on the job site without written permission from the City of Shepherdsville. During placement, the base material shall be wetted as directed to maintain the moisture content at the level necessary to ensure proper compaction. Unless otherwise permitted, the compacted depth of each layer shall be no less than 3 inches or more than 6 inches. Each layer shall be compacted to a density of no less than 84 percent of solid volume density throughout the layer. The density determination shall be based on the oven-dry bulk specific gravity as determined by KM 64-607. Manually operated tampers or walk-behind rollers will be required in trenches and other restricted areas inaccessible to paving rollers.

DGA base material in trench areas will be placed as soon as practicable. Trench backfill which was flushed and jetted will have drained and completed its settlement before base material is placed. If paving operations are not to begin immediately, the aggregate base shall be placed even with the existing pavement surface, and the roadway shall be opened to traffic. Any damage which occurs to the exposed base, such as raveling or the formation of potholes, shall be repaired immediately by the Contractor. All edges of the repaired areas shall be sealed.

Immediately prior to paving, the Contractor shall remove aggregate base material from trench areas. The thickness of the material to be removed shall equal the thickness of the bituminous concrete required in the trench area, as stated in the Special Provisions. Aggregate base remaining in the trench, but loosened by this operation, shall be wetted and recompact, as directed by the City of Shepherdsville.

Construction scheduling operations shall be coordinated so that the aggregate base is completely covered with the specified pavement courses before Work is suspended for the winter months, or for any other long delays.

8.3.6.4 Portland Cement Concrete Base

When required on the Plans or in supplemental specifications, Class A concrete, shall be used as base material in trench and cut back areas. The thickness of the concrete base shall be as shown on the Plans or in the supplemental specifications. All concrete Work shall conform to Section 6 of these Specifications. Prior to placing bituminous surface over the concrete base, the concrete shall be thoroughly cleaned, and shall be sprayed with tack coat material as specified in Subsection 8.3.6.6. of these Specifications.

8.3.6.5 Cleaning Existing Pavements

The Contractor shall clean all pavement areas which are to receive tack coat and bituminous surface course. Cleaning shall be with water jets, mechanical sweepers, and hand brooms, as necessary to completely remove all foreign materials from surfaces which are to be paved.

8.3.6.6 Tack Coat

Tack coat shall be applied to the cleaned pavement, prior to the application of wedging, leveling, or surface course. The tack coat material shall be applied uniformly at a rate of 0.40 gallons per square yard. The tack coat shall be allowed to cure to a dark black color before surface course material is applied.

"Fresh Oil" signs shall be placed where they are clearly visible during the period that tack coat material has been applied to a roadway. The signs shall not be removed until the tack coat has been paved over with the bituminous surface.

8.3.6.7 Leveling and Wedging

Leveling and wedging of uneven, irregular areas, including pre-existing conditions and paved shoulders, shall be performed when necessary, to provide a smooth, uniform base upon which the bituminous surface will be placed. The bituminous mixture for leveling and wedging shall be placed with a paving machine. After satisfactory spreading of the mixture has been completed, the mixture shall be thoroughly compacted by a paving roller. Tack coat material shall be applied to areas which have received wedge or leveling course. Cost shall be incidental to surfacing. Areas that are heaved or otherwise deformed due to Contractor's operations, shall be removed and restored to original contours in accordance with section 8.3.6.3.

8.3.6.8 Edge Keys

Edge keys will be required at the paving limits where new bituminous pavements join existing pavements. An edge key shall consist of a cut in the existing pavement 2 feet wide by 1 inch deep, and shall extend across the complete width of the roadway. The Contractor shall use care when making edge key cuts, to ensure that the specified depth is not exceeded by using a milling machine.

8.3.6.9 Driveways and Entrances

Edge keys will not be required at driveways and entrances. The bituminous surface course shall be tapered to allow a smooth transition from the edge of the pavement into the existing driveway. Feathering of the edge will be acceptable. The edge of new paving at driveways and entrances shall be straight and parallel to the curb or centerline of the roadway.

8.3.6.10 Adjustment of Shoulders

When the placement of bituminous surface results in an abrupt vertical transition at the edge of pavement, the Contractor shall place and compact additional material within a 1 to 2-foot distance from the edge of the pavement. For purposes of these Specifications, “abrupt vertical transition” shall mean a 2½-inch vertical drop over a horizontal distance of less than 6 inches. The material placed shall be of the same character as the existing shoulder material. It shall be graded so as to provide a smooth transition from the pavement surface to the original shoulder.

8.3.7 Temporary Paving

8.3.7.1 Temporary Surface

Temporary pavements shall be constructed over trenches as shown on the Plans in areas of heavy traffic or where safety is a concern as directed by the City of Shepherdsville. Temporary paving shall consist of a 6 inch thick compacted aggregate base and a 2 inch compacted bituminous Class I binder. The thicknesses specified are minimums and may be increased by the Contractor, if in his opinion, a thicker base or surface is warranted. The temporary paving shall be maintained by the Contractor and depressions and potholes which develop shall be promptly repaired. Prior to constructing the permanent paving, all temporary binder and base material shall be removed from the trenches and wasted away from the Project.

8.3.7.2 Temporary Roads

All temporary roads shall be constructed of the materials and to the dimensions shown in the Plans.

8.3.7.3 Temporary Trench Surface

Upon completing backfill Work in roadways the Contractor shall immediately place DGA over trench areas to provide a temporary travel surface, at no additional cost to the City of Shepherdsville.

8.3.7.4 Construction Entrances

Construction entrances shall be constructed as shown on the Plans as specified in the Standard Drawings.

8.3.8 Bituminous Road Construction

8.3.8.1 Clearing and Grubbing

This item of Work shall consist of clearing, grubbing, removing and disposing of all vegetation, structures and debris, which are located within the

designated limits of the proposed pavement. All Work shall be performed in accordance with Section 2 of the City of Shepherdsville Standard Specifications.

8.3.8.2 Preparation for Placement of Fill.

Prior to the placement of any fill material or the placement of any pavement materials, the surface of the cleared and grubbed area shall be thoroughly inspected by the City of Shepherdsville Inspector. The entire surface shall be "proof-rolled" using a loaded pan, a loaded tri-axle dump truck, a loaded single-axle dump truck or a heavy flat-drum roller. The City of Shepherdsville Inspector shall observe the behavior of the surface for signs of pumping, rutting or excessive settlement.

Areas which pump, rut, settle, or exhibit other undesirable behavior shall be undercut to firm material and backfilled, stabilized in place using KTC No. 2 crushed aggregate, or aerated and compacted in-place.

8.3.8.3 Placement of Fill Material

This item of Work shall include placing and compacting fill material to the specified lines, grades and cross-sections.

Only acceptable materials shall be used to construct the fill. Fill material shall not be placed on frozen areas, or areas containing snow or ice.

Where required on the Plans, benches with horizontal and vertical faces shall be excavated into the original ground.

The fill material shall be placed and compacted in uniform horizontal layers not exceeding twelve inches in thickness, loose measurement. Each layer shall be thoroughly compacted to a minimum of 95 percent of standard Proctor density at moisture content between plus two percent and minus four percent, as determined by ASTM D 698. Each layer shall be properly compacted before the next succeeding layer is placed.

8.3.8.4 Subgrade

Final grading shall be performed to construct the subgrade to the lines, grades, and cross-sections indicated on the plans. The surface of the subgrade shall be compacted to a uniform slope at a uniform density throughout. High areas shall be removed by scarifying and low areas shall be filled by placing and compacting suitable material.

When a sheepsfoot roller is used, the compaction shall be finished with a steel-wheel roller, a multiple-wheel pneumatic-tire roller, or other suitable equipment having sufficient weight to smooth out and compact the indentations made by the sheepsfoot roller.

Once final grading is complete, the embankment shall be maintained at the specified line, grade, and cross-section and at the specified density and moisture content. If the material subsequently loses its density or moisture content, it shall be recompacted to the proper density at the required moisture content.

The subgrade shall show no deviation greater than one-half inch in 10 feet from the specified section and shall be constructed uniformly so that the base, binder, and surface courses can be constructed within their specified tolerances.

8.3.8.5 Aggregate Base

Dense graded aggregate base shall conform to the requirements of Section 8.3.6.3. of these Specifications. In addition, initial layers of aggregate base shall be maintained to a uniform grade and cross-section during compaction. The final layer shall be shaped to the specified line, grade and cross-section. When the final layer is to be trimmed to the final grade by an automatic grading machine, the final layer shall be constructed approximately one-half to one inch above grade, so that the grading machine cuts constantly. After the final pass of the grading machine, the surface shall be wetted and rolled. The surface of the finished aggregate base shall be smooth and uniform and shall not deviate by more than one-half inch from the specified cross-section. The longitudinal grade shall not deviate more than three-eighths of an inch within ten feet in any direction.

8.3.8.6 Bituminous Tack Coat

Tack coat material shall be applied to the cleaned surface of the underlying bituminous concrete course prior to the application of the surface course. The tack material shall be applied at a rate of 0.40 gallons per square yard.

The tack coat shall be allowed to cure to a dark black color before the surface course is applied.

Upon approval of the City of Shepherdsville, the application of the tack coat may be eliminated when the surface course is placed within 48 hours of the placement and compaction of underlying binder course, provided the binder is not disturbed during curing.

8.3.8.7 Bituminous Concrete

Bituminous concrete pavement shall be in accordance with Section 403.01 through 403.03 of the 1998 KTC Standard Specifications. The in-place density of the pavement shall be a minimum of 98% of the density as determined by the control strip method outlined in KM-432.

8.3.9 Portland Cement Concrete Paving

Portland cement concrete paving shall be performed in accordance with Sections 501.01 through 501.03 of the 1998 KTC Standard Specifications.

8.4 INSPECTION AND TESTING

8.4.1 General

The paving operations, including subgrade preparation, placement and compaction of the base, and the placement and compaction of the bituminous concrete pavement shall be performed in the presence of the City of Shepherdsville inspector. Field and laboratory testing shall be performed by an agency designated or approved by the City of Shepherdsville to provide pavement inspection and materials testing. Acceptable methods of performing field density tests are specified in Section 3.3.8.3. of the City of Shepherdsville Standard Specifications.

8.4.2 Field Inspection

In addition to routine visual inspection, periodic field measurements of the thickness of the granular base shall be performed by the inspector. Areas lacking in thickness shall be noted and reported to the Contractor.

During placement of the bituminous concrete pavement, field measurements of the temperature of the mix in the truck bed shall be performed to ensure compliance with the Project specifications. Measurements of the course thickness shall be performed by the inspector during placement. Discrepancies shall be noted and reported to the Contractor.

8.4.3 Field Density Testing

8.4.3.1 Embankment

As a minimum, one field density test shall be performed on the compacted fill for each 500 cubic yards of material placed, with a minimum of one test performed each lift and one test performed each shift (day). Additional density tests shall be performed when directed by the City of Shepherdsville, or when there is a suspicion of a change in material, moisture content, or degree of compaction control.

8.4.3.2 Granular Base

As a minimum, field density tests shall be performed on the granular base at the rate of one test per 2,000 square feet, with a minimum of one test per shift during which granular base is placed.

8.4.3.3 Bituminous Pavement

As a minimum, one field density test shall be performed on the bituminous pavement for every 200 linear feet of material placed, with a minimum of one test per shift during which bituminous pavement is placed.

8.4.4 Laboratory Testing

8.4.4.1 General

Laboratory tests shall be performed on the materials used for construction of the granular base and the bituminous concrete pavement. Testing shall be performed by an agency designated or approved by the City of Shepherdsville to provide materials testing.

8.4.4.2 Granular Base

Sampling and laboratory testing of the granular base material shall be performed when difficulties are experienced by the Contractor, in obtaining the specified density, or when the inspector suspects that the material used for the granular base does not meet the Project specifications.

As a minimum laboratory testing shall consist of the performance of a moisture content test (ASTM D 2216), a specific gravity test (KM 64-607) and a wet sieve analysis (KM 64-620).

8.4.4.3 Bituminous Concrete Pavement

Sampling and laboratory testing of the bituminous concrete pavement material shall be performed on a regular basis on the City of Shepherdsville Projects. Samples of the bituminous concrete materials shall be tested, both in the morning and in the afternoon on Projects involving the full-time placement of pavement. On smaller Projects, a minimum of one sample shall be obtained per Project.

When requested, the Contractor shall submit to the CITY OF SHEPHERDSVILLE a sample of the asphalt cement being used in the batching of the bituminous paving mix. Samples shall be obtained, identified and delivered to the inspector in accordance with KM 64-404.

Laboratory testing shall consist of the performance of an extraction test (KM 64-405) and a sieve analysis (KM 64-406).

8.5 DRIVEWAYS

8.5.1 Concrete Driveways

Driveways to be reconstructed shall be restored with 6 inches of Class "A" concrete, 4 inches DGA and formed and shaped as designated on the Plans. The concrete shall be reinforced with polypropylene fiber at 2 pounds per C.Y. as specified in Section

6.2.2.3. Contraction joints shall be constructed as required by the City of Shepherdsville. Non-extruding, preformed expansion joint material, 1/2 inch thick, shall be used at back of curb and against any abutting concrete, unless otherwise directed by the City of Shepherdsville.

8.5.2 Asphalt Driveways

Driveways to be reconstructed shall be restored with 4 inches of compacted DGA as a base and 2 inches bituminous concrete surface Class I, shaped as designated on the Plans.

8.5.3 Stone Driveways

Driveways to be constructed shall be restored with 4 inches of crushed stone to match existing stone driveway, shaped as designated on the Plans.

8.6 CLASSIFICATION OF STREETS

Arterial Streets.

Streets designed or utilized primarily for high vehicular speeds or for heavy volumes of traffic.

Collector Streets.

Streets which carry or will carry intermediate volumes of traffic from local streets to arterial streets.

Minor-Local Streets.

Streets used primarily for access to abutting properties and which carry or will carry limited volumes of traffic.

Marginal Access Streets.

Streets parallel to and adjacent to arterial streets and which serve to reduce the number of access points to the arterial streets.

Cul-de-sacs.

A minor street which has only one outlet to other streets; a street which dead-ends.

Alleys.

Streets used primarily for vehicular service access to the backs or to the side of properties which otherwise abut on streets.

8.7 MINIMUM PAVEMENT STANDARDS

Alley	Collectors	
<u>Cul-de-sac</u>	Marginal Access Streets	Commercial
4" #3 Stone	<u>Minor Local Streets</u>	<u>Industrial</u>
4" DGA	4" # 3 Stone	6" #3 Stone
	4" DGA	4" DGA

2" Binder	2" Binder	4" Binder
1" Surface	1" Surface	1.5" Surface

Due to soil conditions, the amount of #3 stone may be omitted if shot rock or slate is used as the base, upon approval from the City Engineer. Upon recommendation from a geotechnical engineer, the minimum pavement standards listed above may be waived upon approval from the City’s Engineer.

8.8 LOT NUMBERS

The subdivision developer shall be responsible for painting lot numbers on the concrete curb directly in front of the property corners for each lot in the subdivision. The lot numbers shall be stenciled using black paint and be a minimum of 2” in height. Lot numbers shall be painted immediately after the property corners have been set.

8.9 MINIMUM WIDTH OF RIGHT-OF-WAY

Arterial	60 feet
Collector	50 feet
Minor	50 feet
Marginal Access	50 feet
Cul-de-Sac	100 feet

8.10 MINIMUM WIDTH OF PAVEMENT

Arterial	32 feet
Collector	20 feet with 2’ curb and gutter
Minor	20 feet with 2’ curb and gutter
Marginal Access	20 feet with 4’ shoulder
Cul-de-Sac	70 feet with 2’ curb and gutter
Private Roadway	18 feet

8.11 MINIMUM GRADE FOR DRAINAGE
Minimum grade for all roadways shall be 0.5%.

8.12 MAXIMUM ALLOWABLE GRADE

Arterial	5%
Collector	7%
Minor	12%
Marginal Access	12%
Cul-de-Sac	12%

8.13 MINIMUM SITE DISTANCE

Arterial	300 feet
Collector	300 feet
Minor	100 feet
Marginal Access	80 feet
Cul-de-Sac	80 feet

8.14 MINIMUM RADIUS OF HORIZONTAL CURVES

Arterial	400 feet
Collector	100 feet except for street intersection corners
Minor	100 feet except for street intersection corners
Marginal Access	-
Cul-de-Sac	-

8.15 MINIMUM LENGTH OF VERTICAL CURVES

Arterial	200 feet but not less than 50 ft for each 1% difference of grade
Collector	100 feet but not less than 25 ft for crest curve and 35 ft for sag curve for each 1% difference in grade.
Minor	100 feet but not less than 25 ft for crest curve and 35 ft for sag curve for each 1% difference in grade
Marginal Access	80 feet
Cul-de-Sac	70 feet

8.16 MINIMUM LENGTH OF TANGENTS BETWEEN REVERSE CURVES

Arterial	300 feet
Collector	100 feet except when excessive grades may be reduced to reasonable grades by shortening tangent.
Minor	100 feet except when excessive grades may be reduced to reasonable grades by shortening tangent.
Marginal Access	50 feet
Cul-de-Sac	50 feet

8.17 STREET LIGHT REQUIREMENTS

The developer shall submit to the City Engineer for approval, the type and location of all street lights to be located within a subdivision prior to installation of the lights.

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SECTION 9

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

CHANNEL AND SLOPE STABILIZATION, SITE RESTORATION AND CLEAN UP

9.1 DESCRIPTION OF WORK

9.1.1 Channel and Slope Stabilization

This work consists of the stabilization of channels, waterways and ditches using grass linings, erosion control blankets, turf reinforcement mats and “hard” linings such as Class II and Class III channel lining, rip rap, mattresses, gabions and concrete paved channels.

9.1.2 Site Restoration

This work shall consist of topsoil replacement, permanent soil stabilization, and sodding to restore or establish vegetative cover on the site.

9.1.3 Clean Up

This Work shall consist of daily and final clean-up of the project site.

9.2 MATERIALS

9.2.1 Agricultural Limestone

Agricultural limestone shall contain not less than 85 percent of calcium carbonate and magnesium carbonate combined and shall be crushed so that at least 85 percent will pass the No. 10 sieve and 100 percent will pass the 3/8 inch sieve.

9.2.2 Dolomitic Limestone

Natural dolomitic limestone containing not less than 85 percent of total carbonates with a minimum of 30 percent magnesium carbonates, ground so that not less than 90 percent passes a No. 10 sieve and not less than 50 percent passes a No. 100 sieve.

9.2.3 Fertilizer

Manufactured fertilizer shall be a standard commercial fertilizer, Grade 10-10-10, or 20-10-10 as specified herein, containing the specified percentages by weight of nitrogen (N), phosphate (P₂O₅) and potash (K₂O). A minimum of 50% of the nitrogen (N) shall be slow release nitrogen or the fertilizer shall be a complete formula. The fertilizer shall be furnished in standard containers with the name,

weight, and guaranteed analysis clearly marked. The containers will ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with the Kentucky Fertilizer Law.

9.2.4 Permanent Seed

The seed shall meet the requirements set forth in Section 827.04 of the 1998 KTC Standard Specifications. If requested, the Contractor shall furnish a certified laboratory report from an accredited commercial seed laboratory showing the analysis of the seed furnished and approving the seed purity and germination. The report shall be signed by a Senior Member of the Society of Commercial Seed Technologists. The seed mixture to be used for permanent seeding shall be as follows and shall be the Turf Quality Tall Fescue mixture unless the Contract stipulates otherwise.

All seeding rates specified in these specifications and in the Contract shall be in terms of the rate of pure live seed to be seeded. The actual seeding rate shall be calculated using the following formula:

$$ASR = \frac{10,000 (PLSR)}{(\%GERM) (PURITY)}$$

where: ASR = Actual Seeding Rate (lbs/1000 sf)
PLSR = Pure Live Seed Seeding Rate (lbs/1000sf)
% GERM = Percent Germination
PURITY = Pure Seed Content (Percent)

Permanent Seed Mixtures

- (A) Turf Quality Tall Fescue - Use blend of three or four of the top ten performing varieties listed in the most current edition of the Kentucky Turfgrass Research (published by the University of Kentucky College of Agriculture), mixed in equal proportions. Seed at a pure live seed rate of 8 lbs./1000 sq. feet.
- (B) Kentucky Bluegrass - Use mixture of 85 percent Bluegrass with 15 percent Perennial Ryegrass. The Bluegrass blend should consist of two or three of the top ten performing varieties listed in the most current edition of the Kentucky Turfgrass Research (published by the University of Kentucky College of Agriculture), mixed in equal proportions. Seed at a pure live seed rate of 2 lbs./1000 sq. feet.
- (C) Kentucky 31 Tall Fescue - For use in channels subjected to sustained, high velocity flows and in general rough turf areas. Use mixture of 70 percent of Kentucky 31 Fescue, 15 percent Creeping Red Fescue, 10 percent Redtop,

and 5 percent Dutch Clover. Seed at a pure live seed rate of 3 lbs./1000 sq. feet.

- (D) Native Grass - For use in riparian and/or wildlife sensitive areas. Use mixture of grasses and forbs as specified below.

The following seed mixture shall be applied at the pure live seed rate of 0.23 lb/1000 sq. feet. (10 lb/acre).

Grasses

Hystrix patula - Bottle brush grass	0.10 lb/1000 sq. ft. (4.5 lb/acre)
Andropogon virginicus - Broomsedge	0.05 lb/1000 sq. ft. (2.25 lb/acre)
Chasmanthium latifolium - River Oats	0.05 lb/1000 sq.ft. (2.25 lb/acre)

Forbs

Oenothera bienis - Evening primrose	0.01 lb/1000 sq.ft. (0.5 lb/acre)
Eupatorium regofum - Black snake root	0.006 lb/1000 sq.ft. (0.2 lb/acre)
Solidago altissima OR Solidago canadensis (Goldenrod)	0.006 lb/1000 sq.ft.(0.25 lb/acre)

9.2.5 Straw Mulch

Straw for mulching shall be baled wheat, oat, barley or rye straw. It shall be reasonably free from weed seeds, foreign matter, or chaff and shall not contain any Johnson Grass, Canada Thistle, or Nodding Thistle. Straw for mulching shall be reasonably bright in color and shall not be musty, moldy, or otherwise of low quality, and shall not contain any chemicals toxic to plant growth.

9.2.6 Wood Cellulose Fiber Mulch

Wood cellulose fiber may be used in place of straw material or as a mulch anchor. Wood cellulose fiber mulch shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state. Wood cellulose fiber mulch shall not contain any germination or growth inhibiting elements. Wood cellulose fiber mulch shall be dyed green or contain a green dye in the tackifier that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. Wood cellulose fiber mulch shall conform to the following parameters: fiber length to approximately 10mm diameter approximately 1 mm., pH range 4.0 to 8.5, maximum ash content of 1.6% and minimum water holding capacity of 90%.

9.2.7 Mulch Anchoring

9.2.7.1 Jute Netting

Undyed jute yarn woven into a uniform, open, plain weave mesh with approximately one inch openings, weighing not less than 90 pounds per 100 square yards, or in rolls.

9.2.7.2 Photodegradable Plastic Netting

Photodegradeable plastic netting for holding down mulch shall consist of extruded, oriented, photodegradable plastic net (colored green) having a minimum width of 45 inches, 5/8 inch to 3/4 inch mesh openings and weighing approximately 3 pounds per 1,000 square feet. Photodegradable plastic netting shall not be used in natural and/or riparian areas.

9.2.7.3 Staples

Staples shall be V-shaped and made from No. 11 gage steel wire, or another approved material, having an effective driving depth of at least 8 inches or a 1 or 2 inch crown. Means other than steel staples shall be used in residential areas.

9.2.7.4 Tackifier

Synthetic/chemical binders, emulsions and slurries used to and or mulch. These products shall be non-toxic and biodegradable. No asphalt emulsions shall be allowed.

9.2.8 Sod

Sod shall be well-rooted Turf Quality Tall Fescue or Kentucky Bluegrass as directed by the City of Shepherdsville or as stipulated by the Contract. The sod shall be completely free from noxious weeds, and reasonably free from other objectionable grasses and weeds and stones or other foreign materials detrimental to the development and future maintenance of the sod. The source of sod shall be covered with grass having a height of no more than 3 inches and shall be available for inspection and approval prior to cutting.

9.2.9 Erosion Control Blankets

Erosion control blankets (straw, coconut fiber, wood fiber, etc.) shall meet the requirements set forth below, shall not be damaged or torn, and shall meet the manufacturer's specifications.

9.2.9.1 Wood (Excelsior) Blankets

Wood blankets shall consist of a machine produced mat of curled wood fibers, 80 percent of which shall be 6 inches or longer in length with consistent thickness and fibers evenly distributed over the entire area.

Blankets designated on the Plans as "High Velocity" shall be covered on both sides with heavy duty plastic netting having a mesh opening of approximately 3/4 inch by 3/4 inch. Other blankets shall be covered on one side with the plastic netting. The blanket shall be supplied in rolls 48 inches wide and shall weigh approximately 1.6 lbs./square yard.

9.2.9.2 Straw Blankets

Straw blankets shall consist of a machine-produced mat of 100% agricultural straw evenly distributed over the entire area of the mat. The top side of the blankets designated for use on mild slopes (3:1 or flatter) and low-flow swales shall be covered with polypropylene netting having an approximate 1/2 inch x 1/2 inch mesh size. The blanket shall be sewn together with cotton thread. Other blankets shall be covered on both sides with the polypropylene netting. The blanket shall be sewn together with cotton thread. It shall be supplied in rolls weighing approximately 0.5 lbs/square yard. When required, accelerated photodegradable netting shall be provided to assure blanket deterioration in 30 to 45 days.

9.2.9.3 Straw/Coconut Fiber Blankets

The blanket shall consist of a machine produced mat of 70% agricultural straw and 30% coconut fiber evenly distributed over the entire area of the mat. The top side of the blanket shall be covered with UV stabilized polypropylene netting having an approximate 5/8 inch x 5/8 inch mesh, and the bottom side shall have a polypropylene netting with an approximate 1/2 inch x 1/2 inch mesh size. The blanket shall be sewn together with cotton thread. It shall be supplied in rolls weighing approximately 0.5 lbs/square yard.

9.2.9.4 Coconut Fiber Blankets

Coconut fiber channel lining shall consist of a machine-produced mat of 100% coconut fiber evenly distributed over the entire area of the mat. The blanket shall be covered on top and bottom with UV stabilized polypropylene netting having an approximate 5/8 inch x 5/8 inch mesh size. The blanket shall be sewn together with black polyester thread. It shall be supplied in rolls weighing approximately 0.5 lbs/square yard.

9.2.9.5 Recycled Nylon Fiber Blanket

The nylon fiber permanent channel liner shall consist of a machine-produced mat of 100% recycled nylon fiber evenly distributed over the entire area of the mat. The top side of the blanket shall be covered with UV stabilized polypropylene netting having an approximate 1/2 inch x 1/2 inch mesh size, and the bottom net shall be UV stabilized polypropylene with a 5/8 inch x 5/8

inch mesh size. The blanket shall be sewn together with black polyester thread. It shall be supplied in rolls weighing approximately 0.8 lbs/square yard.

9.2.9.6 Seed-Incorporated Blankets

The seed-incorporated blanket shall consist of 2-ply 100% recycled, unbleached, cellulose tissue. Unless specified otherwise in the Contract, a standard seed mix of 66% Ky 31 Tall Fescue and 33% Annual Ryegrass at a rate of .05 lbs/sq. yard shall be uniformly distributed upon the bottom ply of cellulose tissue and fully overlaid with a top cellulose ply to provide complete envelopment of the seed layer. The seed-filled cellulose medium shall be sewn to the bottom side of the specified erosion control blanket. The seed filled

9.2.9.7 Biodegradable Blankets

Biodegradable erosion control blankets shall be composed of straw, straw/coconut fiber, or coconut fiber mats meeting the specifications of those given in Subsections 9.2.9.2, 9.2.9.3, and 9.2.9.4 above. The blanket shall be covered on top and bottom with woven natural fiber netting having an approximate 1/2 inch x 1 inch mesh size. The blanket shall be sewn together with biodegradable thread. It shall be supplied in rolls weighing approximately 0.5 lbs/square yard.

9.2.10 Erosion Control Fabrics

Erosion fabrics (coir, jute, etc.) shall meet the requirements set forth below, shall not be damaged or torn, and shall meet the manufacturer's specifications.

9.2.10.1 Coir Fabrics

The coir erosion control fabric shall consist of 100% natural coir drawn from coconut husks. The yarn shall be wheel spun, well cleaned, evenly spun and uniformly twisted. The fabric shall have an open weave construction. The weight of the fabric, allowable water flow velocities, maximum shear stress and its durability shall equal or exceed the fabric(s) specified on the Plans or in the Contract.

9.2.10.2 Jute Fabrics

Jute erosion control fabrics shall be manufactured using woven jute that is undyed and unbleached. The fabric shall have an open weave construction. The weight of the fabric, allowable water flow velocity, maximum shear stress and its durability shall equal or exceed that of the jute fabric(s) specified on the Plans or in the Contract.

9.2.11 Turf Reinforcement Mats

Turf reinforcement mats shall be manufactured using synthetic materials, natural materials, or a combination of both. Turf reinforcement mats shall be those specified on the Plans or in the Contract. No substitutions are allowed unless directed by the City of Shepherdsville and approved by the City of Shepherdsville.

9.2.12 Anchors for Erosion Control Blankets, Erosion Control Fabrics, and Turf Reinforcement Mats

9.2.12.1 Staples

Staples for securing the erosion control blankets shall be U-shaped and made from No. 11 gage (minimum) steel wire or other approved material with an effective driving depth of at least 8 inches on disturbed soil and 6 inches on undisturbed soil. Staples shall have a 1-inch to 2-inch crown. Staples shall meet and be installed according to the blanket manufacturer's specifications. If any conflict exists between the manufacturers and the City of Shepherdsville's specifications, the more stringent requirements shall be met unless otherwise directed by the City of Shepherdsville. The Contractor shall supply a set of specifications for the City of Shepherdsville's use. Means other than steel staples or pins shall be used to anchor blankets, fabrics and mats in residential areas.

9.2.12.2 Pins

Pins may be steel, plastic or wood. They must meet or exceed the requirements or recommendations of the blanket, fabric or mat manufacturer. Means other than steel staples or pins shall be used to anchor blankets, fabrics and mats in residential areas.

9.2.12.3 Dead Stout Stakes

Dead stout stakes shall be constructed using 2-inch x 4-inch (nominal) hardwood lumber, 18 to 24 inches in length, cut diagonally across its length to form two stakes. The length of stakes shall be in accordance with the specifications of the manufacturer of the erosion control product.

9.2.12.4 Wood Stakes for Securing Sod

Wood stakes shall be 1-inch x 1-inch untreated pine with a minimum length of 6 inches.

9.2.13 Concrete

Concrete paved ditches and channels shall be constructed using Class A Concrete as defined in Section 6 of these Specifications.

9.2.14 Concrete Reinforcement

Deformed steel reinforcing bars, welded wire fabric, and polypropylene fibers shall be as defined in Section 6 of these Specifications.

9.2.15 Aggregate for Class II Channel Lining

Aggregate for Class II Channel Lining shall be limestone meeting the general requirements of Section 805 of the 1998 KTC Specifications. This material shall be produced by using a crusher, grizzly, or sieve with openings of 9 inches and by such additional processing as may be necessary so that no more than 20 percent of the finished product will pass through square openings 5 inches by 5 inches.

9.2.16 Aggregate for Class III Channel Lining and Rip-Rap

Material for Class III Channel Lining and Rip-Rap shall meet the general requirements of Section 805 of the 1998 KTC Specifications. No less than 80 percent, by volume, of individual stones shall range in size from 1/4 to 1-1/2 cubic feet. Stones of smaller sizes are permissible for use in filling voids in the upper surface and dressing to proper slope.

9.2.17 Aggregate for Mattresses

Aggregate for mattresses shall be hard, durable, clean limestone meeting the general requirements of Section 805 of the 1998 KTC Specifications. Stone size shall be from three (3) to six (6) inches for nine (9) inch deep units. For units of six (6) inch nominal depth, the stone size shall not exceed four (4) inches unless directed by the CITY OF SHEPHERDSVILLE.

9.2.18 Aggregate Fill for Gabions

Aggregate fill for gabions shall meet the general requirements of Section 805 of the 1998 KTC Specifications except that stones used shall be from four (4) to eight (8) inches in size for units over 12 inches deep. In units 12 inches deep, stone size shall be from four (4) to six (6) inches, unless otherwise directed by the CITY OF SHEPHERDSVILLE.

9.2.19 Mattress Units

Mattress units shall meet the requirements of Section 813.14 of the 1998 KTC Specifications, unless otherwise stated in these Specifications. The nominal diameter, after zinc coating, of the mesh wire and lacing wire shall be 0.0866 inches (U.S. Gage No. 13); and of selvage wire shall be 0.1063 inches (U.S. Gage No. 11).

All wire gages are subject to tolerances in accordance with ASTM A 640-1982 Table 3.

A City of Shepherdsville inspector may sample each shipment of mattresses for testing of the wire size and zinc coating. Any other tests deemed necessary by the City of Shepherdsville shall be performed at the Contractor's expense. Other tests may include load test, elongation test, or test of tensile strength in accordance with the following standards:

- (A) TENSILE STRENGTH of all wire used for manufacturing the gabions and lacing wire shall be in accordance with ASTM A 641, measured before fabrication of netting.
- (B) LOAD TEST shall be conducted in accordance with Federal Specifications (QQ-W-461 H Class 3).
- (C) ELONGATION TEST shall be conducted in accordance with Federal Specifications (QQ-W-461 H Class 3).

Acceptance will be based on laboratory results or visual inspection.

9.2.20 Gabion Baskets

Gabion baskets shall meet the requirements of Section 813.14 of the 1998 KTC Specifications. In addition, gabions shall be manufactured in such a manner that their sides, ends, lid and diaphragm(s) can be assembled to form rectangular units of the specified dimensions. The front, base, back and lid shall be woven into a single unit, with ends and diaphragm(s) factory connected to the base. The nominal diameter, after zinc coating, of the mesh wire shall be 0.1180 inches (U.S. Gage No. 11); of selva ge wire shall be 0.1535 inches (U.S. Gage No. 9); and of lacing and connecting wire shall be 0.0866 inches (U.S. Gage No. 13).

All wire gages are subject to tolerances in accordance with ASTM 641A-71A (1980) Table 3.

A City of Shepherdsville inspector may sample each shipment of gabion baskets for testing of the wire size and zinc coating. Any other tests deemed necessary by the City of Shepherdsville shall be performed at the Contractor's expense. Other tests may include load test, elongation test, or test of tensile strength in accordance with the following standards:

- (A) TENSILE STRENGTH of all wire used for manufacturing the gabions and lacing wire shall be in accordance with ASTM A 641, measured before fabrication of netting.

- (B) LOAD TEST shall be conducted in accordance with Federal Specifications (QQ-W-461 H Class 3).
- (C) ELONGATION TEST shall be conducted in accordance with Federal Specifications (QQ-W-461 H Class 3).

Acceptance will be based on laboratory results or visual inspection.

9.2.21 Anchor Bars

Anchor bars for mattress units shall be Grade 40, or better, steel reinforcing bars of the dimensions shown on KTC Standard Drawing No. RDD-030-04.

9.2.22 Geotextile Fabric

Geotextile fabric for use as a filter beneath aggregate channel linings shall be a woven or non-woven fabric consisting only of long chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamide or poly-vinylidene-chloride formed into a stable network such that the filaments or yarns retain their relative position to each other. The fabric shall be inert to commonly encountered chemicals, and free of defects or flaws which significantly affect its physical and/or filtering properties.

The fabric shall be formed in widths of at least 6 feet. Sheets of fabric may be sewn together to form fabric widths as required. The sheets of fabric shall be sewn together at the point of manufacture or other approved locations.

The geotextile manufacturer is responsible for establishing and maintaining a quality control program so as to assure compliance with the requirements of this Specification.

During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays and temperatures greater than 140°F, mud, dirt, dust, and debris.

The Contractor shall furnish, with each shipment of fabric, a Certificate of Compliance from the manufacturer of the fabric. The Certificate shall attest that the fabric meets the chemical, physical, and manufacturing requirements stated in this Specification. The Certificate also shall include actual test results for each physical requirement of this specification, as shown in the following table.

<u>Property</u>	<u>Minimum Value¹</u>	<u>Test Method</u>
Grab Strength (lbs.)	200	ASTM D 4632

Elongation (%)	15	ASTM D 4632
Sewn Seam Strength ² (lbs.)	180	ASTM D 4632
Puncture Strength (lbs.)	80	ASTM D 3787
Burst Strength (psi)	320	ASTM D 3786
Trapezoid Tear (lbs.)	50	ASTM D 4533
Apparent Opening Size (U.S. Std. Sieve)	Hole Size Equal to or Smaller than a U.S. #40 Sieve (0.425 mm)	Corps of Engineers Standards CW-02215
Permeability (cm/sec)	0.010	AASHTO M 288
Ultraviolet Degradation at 500 hours	70% Strength Retained for all Classes	ASTM D 4355
Flow Rate (gal./min./ft ²)	40	AASHTO M 288

¹Minimum. Use value in weaker principal direction. All numerical values represent minimum average roll value (i.e., test results from any sampled roll in a lot shall meet or exceed the minimum values in the table). Stated values are for non-critical, non-severe applications.

²Values apply to both field and manufactured seams.

9.2.23 Fastener Pins

Fastener pins for use when fabric is installed in underdrain systems shall be formed of No. 9 or heavier steel wire and shall be at least 12 inches long with a 4 inch right angle bend on one end.

Fastener pins shall be installed according to manufacturer's specifications. The Contractor will supply a set of specifications for the City of Shepherdsville's use.

9.3 EXECUTION OF WORK

9.3.1 Channel and Slope Stabilization

9.3.1.1 General

- (A) Site Preparation and Earthwork. Site preparation and earthwork shall be performed in accordance with Sections 2 and 3 of these Specifications. The area to receive channel lining, ditch lining or slope protection shall be graded and shaped to conform to the cross-sections indicated on the Plans, within a tolerance of plus or minus 0.2 foot from the slope lines and grades.
- (B) Geotextile Fabric. When shown on the Plans or in the Contract, geotextile fabric meeting the requirements of Section 9.2.22. shall be used as a filter between subgrade and aggregate channel lining, rip-rap slope protection mattresses and gabions. The fabric shall be placed in the manner and at the locations shown on the Plans. At the time of installation, fabric will be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation or storage. The surface to receive the fabric shall be prepared to a relatively smooth condition free of obstructions, debris or sharp objects that may puncture the fabric. Construction equipment will not be permitted to operate directly on the fabric. The fabric shall be protected at all times during construction from contamination by surface runoff and any fabric so contaminated shall be removed and replaced with uncontaminated fabric. Fabric shall be covered within fourteen (14) calendar days after placement; fabric not covered within the time shall be removed and replaced at the Contractor's expense if damage or deterioration is evident, as determined by the City of Shepherdsville. Fabric not covered within thirty (30) calendar days after placement shall be removed and replaced at no additional cost to the City of Shepherdsville. Field splices at edges or ends of the fabric made by sewing shall be sewn by use of a portable sewing machine which produces a lock stitch. The thread shall be of a material meeting the chemical requirements specified for the plastic yarn. The adjacent sheets of fabric shall be sewn the full length of the boundary between them. The strength across the seam shall be at least 90 percent of the fabric strength in that direction. Geotextile fabric shall be placed with the long dimension parallel to the channel or toe of slope and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. If more than one strip is necessary, the strips shall overlap a minimum of 18 inches. Transverse laps shall be placed so that the upstream strip laps over the downstream strip. Horizontal laps shall be placed so that the lower strip laps over the upper strip. Laps may be eliminated provided the joint is sewn as specified.

Fastener pins shall be installed through both strips of overlapped fabric at no less than 5 foot intervals along a line through the midpoint of the overlap, and at any other locations as necessary, to prevent any slippage of the fabric.

The fabric shall be protected from damage due to the placement of the slope protection or channel lining by limiting the height of drop of the material to no greater than 3 feet or by placing a cushioning layer of sand on top of the fabric before dumping the material, at the Contractor's option. The Contractor shall demonstrate that the placement technique will prevent

damage to the fabric. Placement of material shall begin at the toe and proceed up the slope.

9.3.1.2 Grassed Channel Lining

Grassed channel lining shall be established in accordance with the seeding or sodding procedures outlined above. When shown on the Plans, erosion control blankets shall be utilized for protection in lieu of mulch and netting.

9.3.1.3 Erosion Control Blankets

Installation requirements shall be in accordance with manufacturer's instructions and the Contract Documents. If any conflict exists between these methods, the more stringent requirements shall be met unless otherwise directed by the City of Shepherdsville. Contractor shall submit the manufacturers recommended installation method to the City of Shepherdsville for approval. The area to be covered shall be properly prepared, fertilized and seeded in accordance with these Specifications before the blanket is placed. The blanket shall be unrolled in the direction of the water flow. When using two blankets side by side in the ditch, the seam shall not be in the center of the ditch, but offset by 6 to 12 inches. The blanket shall be butted snugly at their ends and sides and secured.

The blankets shall be secured using staples driven vertically in the ground. Four staples shall be used at the start of each roll. Staples shall be placed in rows on each side and in the middle at intervals of 2 feet. Two rows of staples shall be placed alternately between the side and middle row of staples at 2 feet intervals.

9.3.1.4 Turf Reinforcement Mats

Turf reinforcement mats shall be installed in strict accordance with the Contract Documents and the manufacturer's installation requirements. If any conflict exists between these methods, the more stringent requirements shall be met unless otherwise directed by the City of Shepherdsville. The Contractor shall submit the manufacturers recommended installation method to the City of Shepherdsville for approval. No substitution may be made for the Turf Reinforcement Mat specified in the Contract unless it is directed by the City of Shepherdsville.

9.3.1.5 Class II and III Channel Lining

Channel Lining Class II and III shall be constructed to the dimensions shown on the Plans or directed by the City of Shepherdsville. The stone may be dumped in place, and the placing shall be conducted in a manner to produce a surface of approximate regularity, varying no more than 3 inches from a true

plane. Hand placing will not be required except as necessary to correct any surface irregularities exceeding the specified tolerance.

9.3.1.6 Rip-Rap Slope Protection

Unless otherwise shown on the Plans or unless solid rock is encountered, rip-rap slope protection shall begin in a trench 2 feet below the natural ground. Where solid rock is encountered, the lower terminus of the slope protection shall be keyed into rock.

Rip-rap shall be constructed to a minimum thickness of 2 feet measured perpendicular to the slope unless otherwise specified in the Contract. The stone may be dumped in place and placing shall be conducted in a manner to produce a surface of approximate regularity not varying more than 6 inches from a true plane.

9.3.1.7 Mattresses

Construction requirements shall be in accordance with the manufacturer's instructions and with these Specifications. If any conflict exists between these methods, the more stringent requirements shall be met unless otherwise directed by the City of Shepherdsville. The Contractor shall submit the manufacturer's recommended assembly method to the City of Shepherdsville for approval.

In assembling the mattresses, a single mattress base shall first be removed from the bundle, unfolded flat on the ground, and flattened to remove any kinks and bends. The mattress shall then be assembled individually, by erecting the sides, ends and diaphragm(s), ensuring that all creases are in the correct position and the tops of all sides level. The four corners of the mattress shall be laced first, after overlapping the mesh, followed by lacing the edges of the internal diaphragm(s) to the sides. The recommended lacing procedures consist of cutting a length of lacing wire approximately 1 1/2 times the distance to be laced, not to exceed five (5) feet, securing the wire terminal at the corner by looping and twisting, then proceeding to lace with alternating single and double loops at approximately four (4) to five (5) inch intervals.

The assembled mattresses are carried to the job site and placed in their proper location. For structural integrity, all adjoining empty mattresses must be laced along the perimeter of their contact surfaces in order to obtain a monolithic structure.

Mattresses may be filled by almost any type of earth-handling equipment such as backhoe, gradall, crane, etc. Along all exposed mattress edges, the outer layer of stone shall be carefully placed and packed by hand in order to

ensure proper alignment and a neat, compact, square appearance. The last layer of stone shall be level with or slightly higher than the top of the mattress to allow proper closing of the lid.

The lids shall be stretched tight over the fill, using crowbars or lid closing tools, until the lid meets the perimeter edges of the front and end panels. The lid shall then be tightly laced along the edges, ends and diaphragm(s) in the same manner as described for assembling mattresses per manufacturer's recommendation. Adjacent lids may be wired down simultaneously. All ends of wire shall be turned into mesh on completion of each mattress.

WELL-PACKED FILLING WITHOUT UNDUE BULGING AND WITH SECURE LACING IS ESSENTIAL IN ALL STRUCTURES.

If the mattress unit is placed on a grade, the placing of the stone shall begin at the bottom of the slope and progress upgrade.

When a complete mattress unit cannot be installed on the slope because of space limitations, the unit shall be cut to fit, in the manner indicated on the Plans.

When mattress units are placed on a 5% or greater grade, or when otherwise required, anchor bars shall be driven in place at the locations shown on the KTC Standard Drawing No. RDD-030-04.

9.3.1.8 Gabions

Construction requirements shall be in accordance with the manufacturer's instructions and with these Specifications. If any conflict exists between these two methods, the more stringent requirements shall be met unless otherwise directed by the City of Shepherdsville.

Individual gabion baskets shall be assembled by placing flat on the ground, flattening any kinks or bends, and then erecting the sides, ends and diaphragms. All creases shall be in the correct position and the tops of all sides level. The four corners of the gabions shall be laced together with alternating single and double loops at 5 inch intervals, with both sides of the lacing wire secured by looping and twisting. Internal diaphragms shall be installed, and laced in a similar way. Lacing wire should be cut to a length of approximately 1 1/2 times the distance to be laced-not to exceed five (5) feet. Individual assembled baskets shall be placed in their proper location and all adjoining gabions connected. This connection shall be accomplished using individual tie wires looped and twisted at approximately 3 inch intervals along the entire perimeter of the contact surfaces.

Gabions may be filled by almost any means of earth-handling equipment such as backhoe, gradall, crane, etc. Along all exposed gabion faces, the outer layer of stone shall be carefully placed and packed by hand in order to ensure proper alignment and a neat, compact, square appearance.

Each course of gabions shall be stretched to proper alignment by partially filling the first gabion in line for anchorage, and stretching the connected gabions, in increments not to exceed 100 linear feet, using a come-along or other means of at least one-ton capacity. Gabions shall be kept in tension while being filled. Gabion joints shall be controlled to avoid any unraveling. Gabions shall be carefully filled in one-foot layers, in a manner that will minimize voids. Two connecting wires shall be placed in each direction between each layer in all cells by looping lacing wire around two mesh openings in the front and back face, and in the ends and diaphragms. The ends of the connecting wires shall be securely twisted to prevent their loosening under tension.

Cells in each course of gabions shall be filled in stages, i.e. at no time shall any cell be filled to a depth exceeding one foot more than the adjoining cell. The last layer of stone shall be leveled with the top of the gabion to allow proper closing of the lid and provide an even surface for the next course. Lids shall be stretched tight over the stone fill using crowbars or similar methods, until the lid meets the edges of the front and ends. The lid shall be tightly tied along all edges, ends, and diaphragms in the same manner as required for connecting adjoining gabions.

Succeeding courses of tiers shall be placed and connected as specified for the first course. Baskets for succeeding courses shall be placed so vertical joints are offset at least 18 inches from course to course, unless otherwise shown on the Plans or Standard Drawings. Gabions shall be placed as headers or stretchers in accordance with the Standard Drawings. Each course of gabions shall be tied to the lower course after stretching but before filling, by use of individual tie wires and diaphragms. Vertical edges at each end of the wall that are not connected to an adjoining gabion shall be reinforced by looping and twisting individual tie wires at approximately 3 inch spacing the full length of such edges.

Place backfill behind gabion walls simultaneously with the gabion construction operation in accordance with Section 3.3.5 of these Specifications.

Care shall be exercised during all gabion wall construction to ensure the stone fill is firmly in place, bulging or distortion of the filled baskets is minimal, and all lacing and tying is thoroughly wound, looped and twisted to preclude loosening in service.

9.3.1.9 Concrete Paved Channels and Ditches

- (A) Subgrade Preparation. Soft or yielding materials shall be removed, replaced with suitable earth materials, and compacted to provide a firm foundation. Material type and method of application shall be submitted by the Contractor and approved by the City of Shepherdsville. The subgrade shall be moist when concrete is placed.
- (B) Concrete Work. The requirements for concrete formwork, reinforcement, placing concrete, removal of forms, removal of defective concrete, curing and finishing of concrete as defined in Section 6 of these Specifications shall apply to the construction of concrete channel and ditch lining.
- (C) Drainage. Weep holes, consisting of 4 inch pipe or formed to 4 inches in diameter, covered on the backside with geotextile fabric and stone, shall be placed at horizontal intervals not to exceed 20 feet in concrete paved ditch walls, unless shown otherwise on the Plans. The outlet invert elevations of weep holes in channel walls shall be placed 4 inches above the water surface level of the channel. Adequate provisions shall be made for thorough drainage of backfill as specified in Section 206.03.05 of the 1998 KTC Specifications or as shown on the Plans.
- (D) Joints. Transverse expansion joints shall be provided as shown on the Plans or Standard Drawings in concrete channels and at all existing concrete structures and as instructed by the City of Shepherdsville. Expansion joints shall be constructed at right angles to the centerline of the channel and throughout the channel bottom and sidewalls in conformance with the Plans. The thickness of the preformed expansion joint material shall be as directed by the City of Shepherdsville and shall be to the full depths of the slab and walls. Formed or sawed transverse contraction joints (1/2 the depth of the concrete) will be required at 20 foot maximum intervals along concrete paved ditches. Contraction joints shall be placed or installed as soon as the concrete initial set will allow.
- (E) Reinforcement. Steel reinforcing bars shall be used as reinforcement in vertical sidewalls and slabs for concrete channel lining. Polypropylene fibers shall be used as reinforcement in concrete ditch or sloped channel wall lining unless shown otherwise on the Plans.
- (F) Finish. Sidewalls for concrete paved channels shall be given an ordinary surface finish and the bottom slab shall be given a floated surface finish as defined in Section 6 of these Specifications.

Concrete paved ditches shall be given a floated surface and broom finish. Concrete paved channels shall be tool edged when finishing.

- (G) Concrete Storm Drains. Existing and new storm drains intercepted by the channel shall be formed into sidewalls and cut off flush and smooth with the inside face of the wall so as to not leave obstructions along the wall. Channel sidewalls shall be poured monolithically around pipe sections. Intercepted drains shall be oriented at right angles to the wall or skewed in the direction of the channel flow. The steel reinforcement shall be placed around each pipe end as it intersects the channel wall in accordance with the Plans. Existing pipe intercepted by the channel shall be extended as required for proper connection and pipe extensions will be of the same material as the existing pipe.
- (H) Backfilling. Immediately after the concrete has set sufficiently and the forms have been removed, the spaces on each side of the ditch paving shall be filled with suitable earth material and thoroughly compacted. Full backfill behind vertical channel sidewalls shall not be placed until representative test samples of the concrete used in the channel lining attain a compressive strength of 3,500 pounds per square inch. In addition, the concrete shall have been placed a minimum of seven days. Backfill shall be brought up simultaneously behind the sidewalls to maintain uniform loading. Placement and compaction of the backfill shall be in accordance with Section 3 of these Specifications.

9.3.2 Site Restoration.

9.3.2.1 General

- (A) Planning. The Contractor shall notify the City of Shepherdsville at least 48 hours in advance of the time he intends to begin sowing seed or placing sod and shall not proceed with such Work until permission to do so has been granted by the City of Shepherdsville. Before starting seeding or sodding operations on any area, final dressing and the preparation of the seed bed or sod bed shall have been completed in accordance with these Specifications. All seeding, sodding and related operations shall be continuous operations. The following schedule shall be followed for seeding or sodding operations, unless otherwise permitted or directed by the City of Shepherdsville.

<u>Work Item</u>	<u>Accepted Work Interval</u>
Permanent Seeding	Feb. 15 to May 15 or

August 15 to Nov. 1

Native Seeding March 15 to June 1
 or
 September 1 to October 31
 (with permission)

Sodding See 9.3.2.3.

- (B) Scheduling. By August 1, the Contractor shall provide a plan to restore disturbed areas by October 31; such plan to be implemented upon approval by the City of Shepherdsville.

Likewise, by February 1, a plan to restore disturbed areas by May 30 shall be submitted for implementation upon approval by the City of Shepherdsville.

- (C) Replacement of Vegetation. As soon as backfill operations permit, the Contractor shall replace, to the original location or nearest suitable location, all ornamental or landscape plants designated to be replaced, which were removed during excavation for the sanitary or storm drainage facility. The Contractor shall properly water and maintain the transplanted vegetation immediately upon replanting and at suitable intervals thereafter. If shrubs, plants, or trees die after transplanting and before the expiration of the guarantee period, the Contractor shall, at his expense, replace same with equal shrubbery, plants or trees.

- (D) Replacement of Fences. Any fences disturbed within the right-of-way/easement limits shall be replaced to the satisfaction of the City of Shepherdsville at no additional cost to the City of Shepherdsville. Fences in such poor condition that they cannot be removed and replaced shall be replaced with fence material similar in original quality, size, and appearance to the removed fence, or a written release shall be obtained from the property owner and a copy provided to the City of Shepherdsville.

- (E) Restoration of Turfed Areas. After final restoration of settled trench and/or graded surfaces, all areas within the right-of-way or easement limits which were established turfed areas prior to construction will be restored in accordance with these Specifications unless otherwise provided in the Contract.

- (F) Restoration of Curb, Curb & Gutter & Sidewalk. The Contractor shall replace, to the original location, all curb, curb and gutter, and sidewalk sections disturbed within the right-of-way/easement limits.

9.3.2.2 Topsoiling

Topsoil Replacement

Topsoil shall be replaced at no additional cost to the City of Shepherdsville.

Site Preparation

Maintain grades on the areas to be topsoiled according to the Plans. Adjust grades and elevations for receipt of topsoil.

Subsoil Roughening

Immediately prior to spreading topsoil, loosen the subgrade by disking or scarifying to a depth of at least 4 inches to ensure bonding of the topsoil and subsoil. If no amendments have been incorporated, loosen the soil to a depth of at least 6 inches before spreading topsoil.

Spreading Topsoil

Uniformly distribute topsoil to a minimum compact depth of 2 inches on 3:1 slopes and 4 inches on flatter slopes. Do not spread topsoil while it is frozen or muddy or when the subgrade is wet or frozen.

Correct any irregularities in the surface that result from topsoiling or other operations to prevent the formation of depressions or water pockets.

Compact the topsoil enough to ensure good contact with the underlying soil, but avoid excessive compaction as it increases runoff and inhibits seed germination. Light packing with a roller is required where high-maintenance turf is to be established.

9.3.2.3 Permanent Seeding.

- (A) Preparing the Seed Bed for Turf and Natural Areas. Each area to be seeded shall be scarified, disked, harrowed, raked, or otherwise worked until it has been loosened and pulverized to a depth of not less than three inches. Stones and other foreign materials shall be removed. This operation shall be performed only when the soil is in a tillable and workable condition. Grade 10-10-10 fertilizer, at the rate of not less than 25 pounds per 1,000 square feet, and agricultural limestone, at the rate of not less than 100 pounds per 1,000 square feet, shall be distributed evenly over the seed bed, unless other requirements are shown on the Plans or in the Contract. The limestone and fertilizer shall be lightly harrowed, raked, or otherwise

incorporated into the soil for a depth of approximately one-half inch. Fertilizer need not be incorporated in the soil as specified above when mixed with seed in water and applied with hydraulic equipment. The Contractor shall apply the seed, fertilizer and mulch within 24 hours of preparing the seed bed.

The lime/fertilizer rates shall not relieve the Contractor of his responsibility to provide the proper amounts of these materials. The Contractor is encouraged to have soil analyses performed (at the Contractor's expense) to establish proper lime/fertilizer rates so that satisfactory turf growth is promoted.

- (B) Seeding for Turf. Permanent seed shall be sown as soon as preparation of the seed bed has been completed and thoroughly watered after seeding. Care shall be exercised not to wash seeding by overwatering. Seed shall be sown uniformly by means of a rotary seeder, wheelbarrow seeders, hydraulic equipment, or other satisfactory means, and unless otherwise shown on the Plans or in the Contract, at the rates indicated in Section 9.2.4. Permanent seeding shall be performed only when the soil is in a tillable and workable condition, and only during the acceptable work intervals given in Section 9.3.2.1 (A) of these specifications, unless otherwise permitted or directed by City of Shepherdsville.
- (C) Seeding for Natural Areas. Seeding shall be done, weather permitting, within seven days of all topsoiling. Do not seed if soil is excessively dry or is saturated. Seed during favorable weather conditions. Mix seed with two-thirds of a bushel of moist vermiculite or one-half rate of seed oats per acre prior to sowing. No covering of seed with soil is required. Seeding shall be performed by one of these methods:
- (D) Hand Broadcasting. Hand broadcast seed over open area by walking and sowing seed first in one direction, then walking perpendicular to the first direction while sowing the remaining seed for that area. Rake lightly or drag area to cover seed no deeper than ¼ inch. Roll seeded areas with a water filled roller upon completion of seeding.
- (E) Mechanical Power Drawn Seeder. Sowing shall be performed by a mix mechanical power drawn broadcast seeder capable of uniformly mixing and broadcasting all seed sizes listed in the seed mix. Seed to be planted not deeper than ¼ inch. Seeding operation shall be kept as close as possible to the contours and not up and down slopes. After seeding, cover seed using drag mat. Then compact with land roller, such as a cultipacker or equivalent. With proper equipment, drag matting and cultipacking in one operation is satisfactory.

- (F) Protection for Turf. Placing of materials for protection shall follow seeding as soon as possible, and no later than 48 hours after seeding. In no instance shall the mulch be placed on crusted seeded areas, and any eroded areas shall be repaired and reseeded before protection is applied. The materials shall be placed uniformly, all clumps loosened and scattered, and care shall be taken to avoid thicker applications than those specified.

After the seeding has been satisfactorily completed, the following methods of protection shall be used:

- (G) Straw Mulch Crimping. Straw mulch may be crimped or punched into the soil to a depth of 2 inches to 4 inches using a mulch anchoring tool or a dull, serrated farm disk that is set straight. Crimping shall not cut the mulch. This method shall be used in flat areas and on slopes no steeper than 3H:1V and only where equipment can be operated safely. Machinery shall be operated on the contour. Straw mulch material shall be applied at a rate of 90 lbs per 1,000 square feet.
- (H) Straw Mulch and Netting. This method shall be used on slopes 3H:1V or steeper. Installation of the netting shall be in accordance with the KTC Standard Drawing No. RRE-002-03. Straw mulch material used under netting shall be plain straw and shall be applied at the rate of 90 lbs per 1,000 square feet.
- (I) Tackifier. When approved by the City of Shepherdsville, synthetic/chemical binders and tackifiers may be used in lieu of the above methods for protecting seeded areas. No asphalt emulsions shall be allowed.
- (J) Hydromulch. When approved by the City of Shepherdsville, hydromulch may be used in lieu of the above methods for protecting seeded areas. Wood cellulose fiber mulch shall be applied at the rate of 40 pounds per 1,000 square feet.
- (K) Erosion Control Blankets. Manufactured erosion control blankets (straw, coconut fiber, wood fiber, etc.) shall be utilized when shown on the Plans, as directed by the City of Shepherdsville, or at the Contractor's option in lieu of straw mulch or hydromulch. The areas to be covered shall be properly prepared, fertilized and seeded in accordance with these Specifications before the blanket is placed. The blankets shall be installed according to the manufacturer's specifications. In general, however, the blankets shall be unrolled in the direction of surface water flow. When using two blankets side by

side in a ditch, the seam shall not be in the center of the ditch, but offset by 6 to 12 inches. Individual blanket rolls shall be butted snugly at their ends and sides, and properly secured. The blankets shall be secured using staples driven vertically in the ground. Staple patterns should be in accordance with the manufacturer's specifications. Loose blanket edges shall be stapled and buried in trenches according to the manufacturer's specifications.

Use only the specified erosion control blankets or blankets that meet or exceed their specifications when they are specified on the Plans or in the Contract. When the Contractor elects or is directed to use erosion control blankets to achieve improved protection over conventional mulching and netting or hydromulch, the following guidelines shall be used to select the appropriate blanket type:

<u>Blanket Type</u>	<u>Comments</u>
Straw/Netting Matrix	Generally provides effective protection for 2H:1V to 4H:1V slopes, or low flow swales. Usually degrades in 30 to 90 days, depending on product.
Straw/Coconut/Netting Matrix	Generally provides effective protection for 2H:1V to 1H:1V slopes of medium flow channels. Can provide protection for 6 months to more than one growing season, depending on the product.
Coconut/Netting Matrix	Generally provides long lasting protection (up to 2 years) for slopes of 1H:1V or steeper, or for high discharge channels, depending on the product.
Wood Fiber/Netting Matrix	Light to heavy duty wood fiber blankets are available with short to long term protection capabilities, similar to coconut/straw blankets.
(L) <u>Seed-Incorporated Erosion Control Blankets.</u>	Seed-incorporated erosion control blankets (straw, coconut fiber, wood fiber, etc.) shall

be utilized when shown on the Plans, as directed by the City of Shepherdsville. The areas to be covered shall be properly prepared and fertilized in accordance with these Specifications before the blanket is placed. The blankets shall be installed according to the manufacturer's specifications and the requirements given under Item 9.3.2.3(D) of these specifications.

- (M) Stage II Topdressing. A second application of slow release fertilizer (Grade 20-10-10) shall be applied to seeded areas no sooner than 6 weeks after seeding, but not until a satisfactory stand of vegetation exists. For spring seedings, the fertilizer shall not be applied after May 1, and for fall seedings, the fertilizer shall not be applied after December 1. For spring seedings performed during the period of March 15 to May 15, the Stage II fertilizer shall not be applied until after September 1. The fertilizer shall be distributed evenly over the new grass area at a rate of 12 pounds per 1,000 square feet.
- (N) Maintenance and Repair. For turf areas, all seeded areas shall be cared for and maintained properly to the City of Shepherdsville's satisfaction until final acceptance of the Work and for the duration of the guarantee period. Such care shall include, but not be limited to, watering as necessary, fertilizing, reseeding and repairing of mulch materials as required, and mowing the seeded areas when required by the City of Shepherdsville. When mowing is required, mower blades shall be set at 3 inches for sufficient height to protect the vitality of the growth. Areas which have been previously seeded and mulched in accordance with this Section, but which have been eroded, damaged or failed to successfully establish a stand of grass, shall be repaired as directed by the City of Shepherdsville. All material and labor required to maintain and repair seeded areas shall be furnished by the Contractor at no cost to the City of Shepherdsville. If the City of Shepherdsville directs the Contractor to place additional fertilizer on the area to be reseeded, an additional 4 pounds of agricultural limestone will be required for each additional pound of fertilizer. Natural (native grasses and forbs) areas shall not be mowed.

9.3.2.4 Sodding

- (A) Cutting Sod. Prior to cutting sod, the grass shall be mowed to a height of no more than 3 inches and the mowed area shall be raked to eliminate all clippings, cuts and trash. The sod shall be cut in rectangular sections as required. Sections may vary in length not exceeding 8 feet, but shall be of uniform width of 10 inches or more, and shall be cut to a depth of at least 1 inch and no more than 2 inches. The sod shall be cut to such thickness that practically all of the dense root system will be retained but exposed in the sod strip,

and to such width and length so that it can be handled without undue tearing and breaking. When cut in strips, the sod shall be rolled without damage with the grass folded inside.

The sod shall be cut by means of an approved mechanical sod cutter. During dry weather, the sod shall be watered before cutting to prevent loss of soil while handling. The sod shall not be cut when in a sufficiently wet condition which could interfere with proper handling. All sod must be delivered to the Project and placed within 18 hours after being cut.

- (B) Preparation of Sod Bed. The sod bed shall be loosened to a minimum depth of one inch and shaped to a smooth even surface and shall be graded to such elevation so the sod, when in place, shall be flush with any adjacent seeded or turfed area, pavement, curb, or other structures, except when otherwise directed.

Prior to placing the sod, the fertilizer (Grade 10-10-10) and limestone shall be applied uniformly at the rate specified in Subsection 9.3.2.3; and shall be harrowed, raked, or otherwise incorporated into the soil. The sod bed, when dry, shall be moistened to the loosened depth.

- (C) Placing Sod. Sod shall be placed within 18 hours of being cut and it shall not be placed when the atmospheric temperature is below 32°F, or when the sod or sod bed is frozen, or during other weather or soil conditions detrimental to the Work.

The sod shall be carefully placed by hand so that each section closely joins the adjacent section without overlapping. All open spaces or gaps shall be plugged with sod cut to the appropriate size and shape. When placed on slopes, the sod shall be laid with the long edges of the strips parallel to the contour starting at the bottom of the slope. Successive strips shall be neatly matched and all joints staggered or broken. The sodding shall be carried at least 18 inches beyond the top of the slope to prevent surface water from undermining the sod.

When placed on slopes 2H:1V or steeper and 6 feet or more in height, and in all sodded ditches, each strip or section of sod shall be staked securely with at least 2 wood stakes or wire staples no more than 2 feet apart and driven flush with the surface. Wire staples shall not be used in residential areas.

The sod, after it is placed, shall be wetted thoroughly and tamped or rolled sufficiently to incorporate the roots into the sod bed and to ensure tight joints between the sections or strips.

- (D) Maintenance and Repair. The sod shall be watered as frequently as necessary to maintain and assure it in a moist and living state. After a period of two weeks, or as otherwise directed by the City of Shepherdsville, but not during June, July or August, 20-10-10 fertilizer shall be applied at the rate of 6.0 pounds per 1,000 square feet, and the sod given an additional watering to enhance growth. The Contractor shall not allow any equipment or material to be placed on any sodded area and shall erect suitable barricades and guards to prevent his equipment, labor, or the public from traveling on or over any area planted with sod. Care shall include periodic watering, fertilizing and mowing as necessary to maintain the vitality and appearance of the sod. When mowing is required, mower blades shall be set at 3 inches for sufficient height to protect the vitality of the growth. Sodded areas that become eroded, damaged or failed to successfully establish a stand of grass, shall be repaired and/or replaced as directed by the City of Shepherdsville. All material and labor required to maintain and repair sodded areas shall be furnished by the Contractor at no cost to the City of Shepherdsville. Sod must be living at the time of final acceptance of the Project and through the duration of the warranty period.

9.3.3 CLEAN UP

9.3.3.1 Daily Clean Up

During the progress of the Work, the Contractor shall daily maintain all areas within the limits of his operations from accumulations of waste materials, rubbish and other debris resulting from the Work.

9.3.3.2 Final Clean Up

Before final acceptance of the Work, all rights-of-way, easements, and access roads used by the Contractor, all streams in and over which he has worked, and all ground occupied by the Contractor in connection with the Work shall be cleaned of all debris, construction plant, and materials. Right-of-way and easement areas not designated for alteration by the Contract shall be restored to their original condition in accordance with the Plans and Specifications. Areas which have been sodded or seeded and mulched in accordance with this Section, but which have been eroded, damaged or failed to successfully establish a stand of grass, shall be repaired as directed by the City of Shepherdsville. Waste and debris shall be disposed of in areas approved by the City of Shepherdsville and provided by the Contractor outside of the rights-of-way and easements.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
600 DR. MARTIN LUTHER KING JR PL
LOUISVILLE, KY 40202

June 22, 2022

Regulatory Division
South Branch
ID No. LRL-2022-383-ncc

RES Kentucky, LLC
c/o Mr. Seth Bishop
2307 Greene Way, Suite B
Louisville, Kentucky 40220

Dear Mr. Bishop:

This is in response to your request, on behalf of the Kentucky Transportation Cabinet (KYTC), for authorization to reconstruct the existing I-65 and KY 480 interchange (Exit 116) (KYTC Item No. 5-391.3). The project would include construction of a double crossover diamond at the interchange, as well as the reconstruction of portions of the north and southbound I-65 ramps and widening of KY 480 east of I-65. A side wall and shared use path would also be added along the north and south side of KY 480, respectively. Additionally, Stevens Drive would be extended to Sparrow Drive, and the existing Sparrow Drive connection to KY 480 would be removed. The proposed project would impact approximately 114 linear feet of two intermittent streams (0.005 acre), and 0.1 acre of two emergent wetlands, respectively, in Cedar Grove, Bullitt County, Kentucky. The information supplied by you was reviewed to determine whether a Department of the Army (DA) permit will be required under the provisions of Section 404 of the Clean Water Act.

Your project is considered a discharge of backfill or bedding material for a road crossing. The project is authorized under the provisions of 33 CFR 330 Nationwide Permit (NWP) No. 14, Linear Transportation Projects, as published in the Federal Register December 27, 2021. Under the provisions of this authorization, you must comply with the enclosed Terms and General Conditions for NWP No. 14, and the following Special Condition(s):

- a. All work authorized by this permit shall be performed in strict compliance with the attached plans dated March 28, 2022, which are a part of this permit. Any modification to these plans affecting the authorized work shall be approved by the U.S. Army Corps of Engineers, Louisville District (USACE) prior to implementation.
- b. The Permittee shall require its contractors and/or agents to comply with the terms and

conditions of this permit in the construction and maintenance of this project and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, drawings and attachments shall be available at the project site during the construction phase of this project. A description of the authorized work, as provided in the DA permit shall be displayed at the project site during construction.

- c. The Permittee shall comply with all conditions of the Kentucky General Certification of the Nationwide Permit 14 for Linear Transportation Projects, issued by the Kentucky Division of Water (KDOW) on December 18, 2020, which are incorporated herein by reference.
- d. The permittee shall have a qualified biologist examine the KY 480 bridge immediately prior to and during construction activities to determine if bats are utilizing the bridge as roosts. If federally listed bats or an undetermined species of bat are found using the bridge prior to or during construction, then construction shall be delayed until KYTC's Division of Environmental Analysis and the U.S. Fish and Wildlife Service (USFWS) - Kentucky Field Office are contacted in order to develop a plan to ensure potential adverse effects on listed bats are minimized during construction activities.
- e. The permittee shall comply with the sediment and erosion control measures on pages 27-28 of the project's biological assessment to minimize potential impacts to the gray bat.
- f. The Permittee shall implement the processes identified in the 2015 Interim Programmatic Agreement for Forest Dwelling bats between the Federal Highway Administration (FHWA), KYTC, and the USFWS Kentucky Field Office to minimize impacts to the Indiana bat and northern long-eared bat (NLEB).
- g. You must agree to comply with the enclosed General Conditions.

NWP No. 14 will be modified, reissued, or revoked on **March 14, 2026**. It is incumbent upon KYTC to remain informed of changes to the NWPs. If KYTC commences or is under contract to commence this activity before the date that the relevant NWP is modified or revoked, KYTC will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP. The enclosed Compliance Certification must be submitted to the District Engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later. Please note that we also perform periodic inspections to ensure compliance with our permit conditions and applicable Federal laws. A copy of this letter will be forwarded to KYTC and KDOW.

The enclosed Compliance Certification must be submitted to the District Engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

Based on the information provided to this office, the site contains one perennial stream (Perennial 1 – Buffalo Run), two intermittent streams (Intermittent Streams 1 and 2), and three wetlands (Wetlands 1, 2 and 3) that may be considered jurisdictional “waters of the U.S.,” in accordance with the Regulatory Guidance Letter for Jurisdictional Determinations issued by the U.S. Army Corps of Engineers on October 31, 2016 (RGL No. 16-01).

As indicated in the guidance, the attached Preliminary Jurisdictional Determination (PJD) is non-binding and cannot be appealed and only provides a written indication that “waters of the U.S.,” including wetlands, may be present on-site. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a PJD will treat all waters and wetlands on the site as if they are jurisdictional “waters of the U.S.”

Attached to this letter are a preliminary jurisdictional determination (JD), a Notification of Appeal Process (NAP) fact sheet, and Request for Appeal (RFA) form. However, a preliminary JD is not appealable and impacting “waters of the U.S.” identified in the preliminary JD will result in you waiving the right to request an approved JD at a later date. An approved JD may be requested (which may be appealed), by contacting me for further instruction.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center prior to starting work.

If you have any questions, please contact us by writing to the District Regulatory Office at the above address, ATTN: CELRL-RDS, or contact Norma Condra directly at (502) 315-6680 or norma.c.condra@usace.army.mil. Any correspondence on this matter should refer to our ID Number LRL-2022-383-ncc.

Sincerely,

David Baldrige
Chief, South Branch
Regulatory Division

Enclosures

Copies furnished:
KYTC
KDOW

892011

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Kentucky Transportation Cabinet		File Number: LRL-2022-383	Date: 20220622
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
	APPROVED JURISDICTIONAL DETERMINATION	D	
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:


If you have questions regarding this decision and/or the appeal process you may contact:

Norma C. Condra
U.S. Army Corps of Engineers—Louisville District
P.O. Box 59, Rm 752
Attn: CELRL-RDS
Louisville, Kentucky 40201-0059
(502) 315-6680
Email: norma.c.condra@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Katherine A. McCafferty
Regulatory Administrative Appeals Officer
U.S. Army Corps of Engineers,
Great Lakes and Ohio River Division
550 Main Street, Room 10780
Cincinnati, Ohio 45202-3222
Office Phone: 513-684-2699, FAX: 513-684-2460
e-mail: katherine.a.mccafferty@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.



Signature of appellant or agent.

Date: 6-24-22

Telephone number:

[illegible]

- 1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
- 2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "*may be*" waters of the U.S. and/or that there "*may be*" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- ☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Water/Wetland Location and Station Maps (Figures 3 and 4)
- ☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report. Rationale: _____
- ☐ Data sheets prepared by the Corps: _____
- ☐ Corps navigable waters' study: _____
- ☐ U.S. Geological Survey Hydrologic Atlas: _____
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 Shepherdsville, KY Quad
- ☐ Natural Resources Conservation Service Soil Survey. Citation: _____
- ☐ National wetlands inventory map(s). Cite name: _____
- ☐ State/local wetland inventory map(s): _____
- ☐ FEMA/FIRM maps: _____
- ☐ 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): NAIP-FSA from kygisserver.ky.gov ArcGIS services (2020)
or ☒ Other (Name & Date): Site photographs: March 15, 2022
- ☐ Previous determination(s). File no. and date of response letter: _____
- ☐ Other information (please specify): _____

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Norma C. Condra

Signature and date of
Regulatory staff member
completing PJD

DocuSigned by:

Adam Michels

Signature and date of 4/7/2022 | 5:43 AM CDT
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)¹

¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

Table of Aquatic Resources in Review Area Which "May Be" Subject to Regulatory Jurisdiction
Interstate 65/Kentucky Highway 480 Interchange Improvements Project
Bullitt County, Kentucky
KYTC Item No.: 5-391.3

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non- wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Perennial 1 (Buffalo Run)	37.97852°	-85.69107°	120 linear feet (0.041 acre)	non-wetland	Section 404
Intermittent 1	37.97843°	-85.69370°	65 linear feet (0.003 acre)	non-wetland	Section 404
Intermittent 2	37.97739°	-85.69920°	50 linear feet (0.002 acre)	non-wetland	Section 404
Wetland 1	37.97834°	-85.69413°	0.112 acre	wetland	Section 404
Wetland 2	37.97892°	-85.69169°	0.009 acre	wetland	Section 404
Wetland 3	37.98045°	-85.69722°	0.014 acre	wetland	Section 404



2021 Nationwide Permit Summary

US Army Corps
of Engineers
Louisville District ®

Issued: February 25, 2022
Expires: March 14, 2026

No. 14. Linear Transportation Projects

(NWP Final Rule, 86 FR 73522)

Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, driveways, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge of dredged or fill material cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize

non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge of dredged or fill material in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404).

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges of dredged or fill material for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The

district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United

States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other

fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct

management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate

documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7

consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district

engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The

district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential

to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must

include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands

adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more

than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district

engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure

timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in

the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not

authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an

NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

- (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
- (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the

permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed activity;
- (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
- (4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any

other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many

wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) *Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the

NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not

practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no

work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Nationwide Permit Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of

water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not

a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWP, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For

the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of

the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal

interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United

States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).



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General Certification--Nationwide Permit # 14 Linear Transportation Projects

This General Certification is issued **December 18, 2020**, in conformity with the requirements of Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C. §1341), as well as Kentucky Statute KRS 224.16-050.

For this General Certification and all General Certifications of Nationwide Permits (NWP), the term 'surface water' is defined pursuant to 401 KAR Chapter 10, Section 1(72): Surface Waters means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the Commonwealth.

As required by 40 CFR Part 121 – State Certification of Activities Requiring a Federal License or Permit, all conditions include a statement explaining why the condition is necessary to assure that any discharge authorized under the general permit will comply with water quality requirements and a citation to federal, state, or tribal law that authorizes the condition. The statements and citations are included with each condition. The statements are written entirely at the end of the certification under the section *Statements of Necessity*.

Agricultural operations, as defined by KRS 224.71-100(1) conducting activities pursuant to KRS 224.71-100 (3), (4), (5), (6), or 10 are deemed to have certification if they are implementing an Agriculture Water Quality Plan pursuant to KRS 224.71-145.

For all other operations, the Commonwealth of Kentucky hereby certifies under Section 401 of the Clean Water Act (CWA) that it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 303, 306 and 307 of the CWA, will not be violated for the activity covered under NATIONWIDE PERMIT 14, namely Linear Transportation Projects, provided that the conditions in this certification are met. Activities that do not meet the conditions of this General Certification require an Individual Section 401 Water Quality Certification.

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1. Activities occurring within surface waters assessed by the Kentucky Division of Water as designated Outstanding State Resource Waters, National Resource Waters, Cold Water Aquatic Habitat, Exceptional Waters, or identified as candidate Outstanding State Resource Waters or candidate Exceptional Waters are not authorized under this General Certification and require an Individual Certification. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(1), Section 1(2), & Section 1(3); and 401 KAR 10:031, Section 4(2) & Section 8]
2. Activities impacting surface waters assessed by the Kentucky Division of Water as impaired for warm water or cold water aquatic habitat where the parameter or source is related to habitat* are not authorized under this General Certification and require an Individual Certification. [Statement B and citations KRS 224.70-110 and 401 KAR 10:031, Section 2 & Section 4]

*These include waters impaired by the parameter 'habitat assessment', 'combined biota/habitat bioassessment' or any parameter from the parameter group 'habitat alterations, and/or waters where the parameter identified as a cause of impairment has a source from the source group 'habitat impacts'.
3. Activities impacting surface waters assessed by the Kentucky Division of Water as full support for warm water or cold water aquatic habitat are not authorized under this General Certification and require an Individual Certification. [Statements A and B and citations KRS 224.70-110 and 401 KAR 10:031, Section 2 & Section 4]
4. The activity will not occur within surface waters identified as perpetually-protected mitigation sites (e.g., deed restriction or conservation easement). [Statement C and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3); and 40 C.F.R. 230.97]
5. Activities with cumulative temporary and permanent impacts greater than 1/2 acre of wetland or 300 linear feet of surface waters are not authorized under this General Certification and require an Individual Certification. This General Certification shall not apply to projects where multiple Nationwide Permits are issued for individual crossings which are part of a single, larger transportation projects. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
6. For complete linear transportation projects, all impacts shall not exceed a cumulative length of 500 linear feet within each Hydrologic Unit Code (HUC) 14. [401 KAR 10:030 and 401 KAR 10:031]
7. Stream realignment greater than 100 feet is not authorized under this General Certification and require and Individual Certification. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]

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8. Surface water impacts covered under this General Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KAWQP). [Statements A and F and citations KRS 224.71-145(1), 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
9. Any crossings must be constructed in a manner that does not impede natural water flow. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
10. The use of creek rock for bank stabilization; grouted rip-rap; unformed, poured grout; unformed, poured concrete; poured asphalt; or asphalt pieces is not authorized under this General Certification and requires an Individual Certification. Poured concrete or grout will be authorized under this General Certification when contained by tightly sealed forms or cells. Equipment shall not discharge waste washwater into surface waters at any time without adequate wastewater treatments. [Statement A and citations 401 KAR 10:030, Section 1(3)(b) & 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
11. New stormwater detention/ retention basins constructed in surface waters or modifications to stormwater detention/ retention basins resulting in the reduction in reach or that cause impairment of flow of surface waters are not authorized under this General Certification and require an Individual Certification. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
12. Erosion and sedimentation pollution control plans and Best Management Practices (BMPs) must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
13. Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control devices shall be removed and the natural grade restored within the completion timeline of the activities. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]

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14. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering surface waters. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
15. Removal of riparian vegetation shall be limited to that necessary for equipment access. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
16. To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
17. Heavy equipment (e.g., bulldozers, backhoes, and draglines), if required for this project, should not be used or operated within the stream channel. In those instances in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
18. Any fill shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
19. If domestic water supply intakes are located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when such work will be done prior to construction. [Statement E and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
20. Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling (800) 928-2380. [Statement A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
21. The Kentucky Division of Water requires submission of a formal application for any federal applicant that is not required to submit a Preconstruction Notification that would typically be required of any non-federal applicant. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]

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22. The Kentucky Division of Water may require submission of a formal application for an Individual Certification for any project that has been determined to likely have a significant adverse effect upon water quality or degrade surface waters so that existing uses of the water body or downstream waters are precluded. [Statement A and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]
23. If the final issued General Permit for Nationwide Permit 14 Linear Transportation Projects changes significantly, the Division of Water may opt to deny certification for this permit. [Statements A and D and citations KRS 224.70-110, 401 KAR 10:030, Section 1(3)(b) & Section 1(4)(b); and 401 KAR 10:031, Section 2 & Section 4]

Statements of Necessity:

- A. This condition is necessary to protect waters categorized under the anti-degradation policy to protect the designated and existing uses and to maintain the associated water quality criteria necessary to protect these water resources.
- B. This condition is necessary to protect existing uses and the level of water quality necessary to protect those existing uses shall be assured in impaired water.
- C. This condition is necessary for long-term protection of compensatory mitigation sites.
- D. This condition is necessary to provide for the prevention, abatement, and control of all water pollution and to conserve water resources for legitimate uses, safeguard from pollution the uncontaminated waters, prevent the creation of any new pollution, and abate any existing pollution.
- E. This condition is necessary to protect domestic water supply use.
- F. This condition is necessary to evaluate, develop, and improve best-management practices in conservation plans, compliance plans, and forest stewardship management plans; establish statewide and regional agriculture water quality plans; and otherwise promote soil and water conservation activities that protect surface waters from the adverse impacts of agriculture operations within the Commonwealth.

Violation of Kentucky state water quality standards may result in civil penalties and remediation actions.

For assistance contact the Kentucky Division of Water, Water Quality Certification Section by email (401WQC@ky.gov) or by phone (502)-564-3410.

KyTC BMP Plan for Project CID ## - #####



Kentucky Transportation Cabinet

Highway District 5 (1)

And

_____ (2), Construction

Kentucky Pollutant Discharge Elimination System

Permit KYR10

Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

I-65 @ KY 480 Interchange Reconstruction

Item No. 5-391.30

Project: CID ## - #####

KyTC BMP Plan for Project CID ## -

Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District 5 (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 480 @ I-65
6. Latitude/Longitude (project mid-point) – 37-58-16 N, 85-42-36 W
7. County (project mid-point) - Bullitt
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) – Reconstruction of KY 480 interchange at I-65
2. Order of major soil disturbing activities (2) and (3)
3. Projected volume of material to be moved – 29,417 Cu. Yd.
4. Estimate of total project area (acres) – 60.04 Ac.
5. Estimate of area to be disturbed (acres) – 24.41 Ac.
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 – Refer to Geotechnical Notes in the plan set and Geotechnical Report. (1) & (2)
8. Data describing existing discharge water quality (if any) – Refer to Geotechnical Notes in the plan set and Geotechnical Report. Note: The water quality will not be worsened by the project. Drainage construction will consist of expansion of the storm sewer system to handle existing drainage pattern. (1) & (2)
9. Receiving water name – Buffalo Run(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.

KyTC BMP Plan for Project CID ## -

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. All DDA's will have adequate BMP's in place before being disturbed.
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.

KyTC BMP Plan for Project CID ## -

- 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

KyTC BMP Plan for Project CID ## -

- 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 : Areas of New Albany Shale uncovered during construction are to be capped with clay soil (classification CL or CH).(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.

KyTC BMP Plan for Project CID ## -

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:**

KyTC BMP Plan for Project CID ## -

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:

KyTC BMP Plan for Project CID ## -

- 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 contact 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. (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

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the purpose of post construction storm water management with specific guidance for any non-routine maintenance. (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.

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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;

KyTC BMP Plan for Project CID ## - #####

_____ 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 name² signature

(3) Signed _____ title _____, _____
Typed or printed name¹ 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

Revised 3/4/2016



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

June 13, 2022

Charles Berger
KYTC District 5
8310 Westport Rd
Louisville, KY 40242

Re: KYR10 Coverage Acknowledgment
KPDES No.: KYR10Q415
I-65 @ KY 480 Interchange Reconstruction
Permit Type: Construction
AI ID: 81900
Bullitt County, Kentucky

Dear Charles Berger :

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, and will automatically terminate 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: 37.971111, -85.71
Receiving Water: City of Shepherdsville

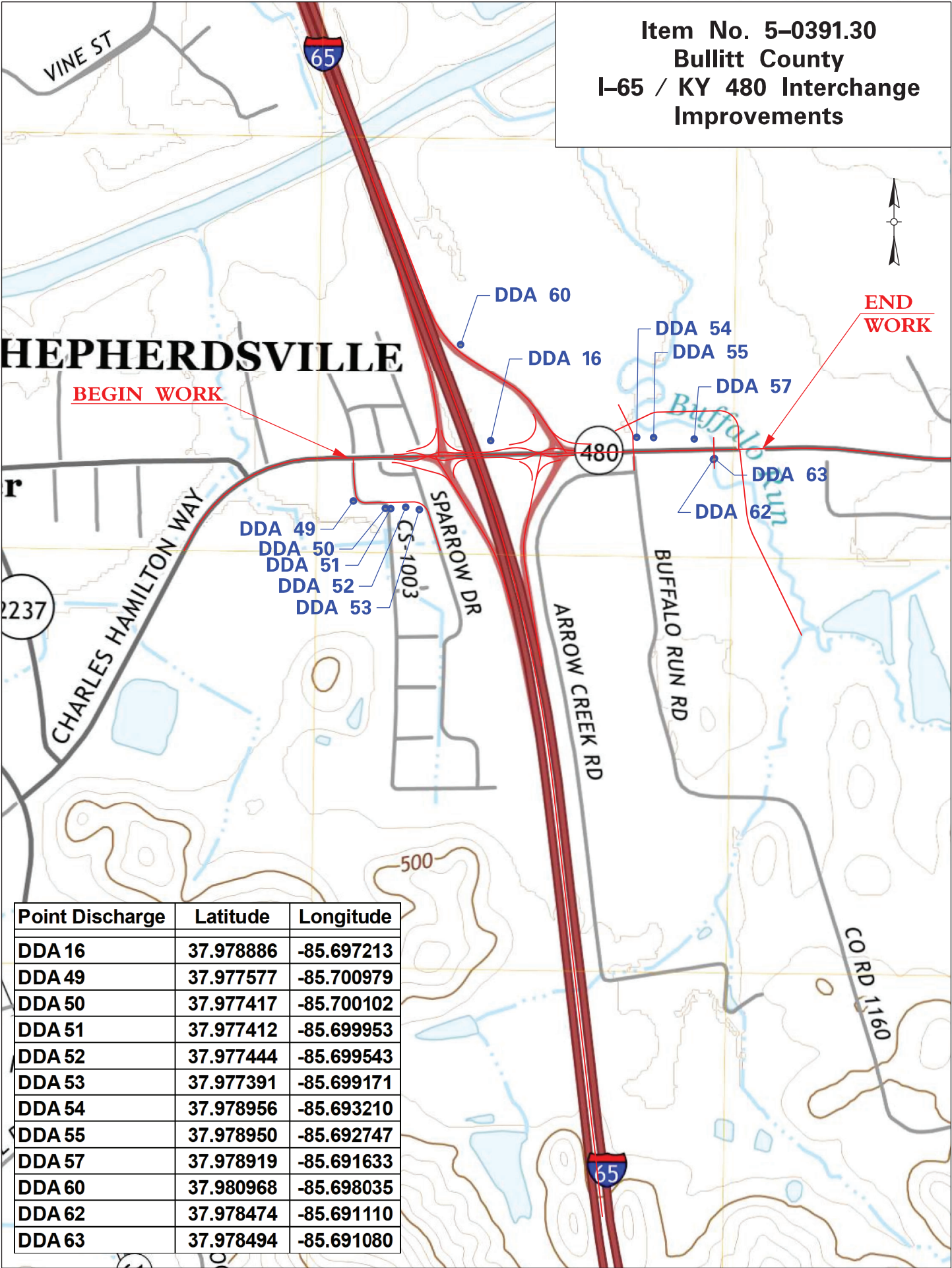
Sincerely,

A handwritten signature in black ink, appearing to read "Karina Villanueva".

Karina Villanueva
Surface Water Permits Branch
Division of Water

cc: Charles Berger, eNOI Preparer
Todd Giles, Louisville Regional Office
Shawn Hokanson, Division of Water
Scott Fleming, City of Shepherdsville





PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

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>

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/⇒⇒⇒/	/MIN/SPEED/**MPH/
/KEEP/LEFT/⇐⇐⇐/	/ICY/BRIDGE/AHEAD/ /ONE
/LOOSE/GRAVEL/AHEAD/	LANE/BRIDGE/AHEAD/
/RD WORK/NEXT/**MILES/	/ROUGH/ROAD/AHEAD/
/TWO WAY/TRAFFIC/AHEAD/	/MERGING/TRAFFIC/AHEAD/
/PAINT/CREW/AHEAD/	/NEXT/***/MILES/
/REDUCE/SPEED/**MPH/	/HEAVY/TRAFFIC/AHEAD/
/BRIDGE/WORK/***() FT/	/SPEED/LIMIT/**MPH/
/MAX/SPEED/**MPH/	/BUMP/AHEAD/
/SURVEY/PARTY/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:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs. Section references herein are to the Department's current Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS.

2.1 Turf Reinforcement Mat (TRM). Use a Turf Reinforcement Mat defined as permanent rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh and/or other elements, processed into a three-dimensional matrix of sufficient thickness and from the Department's List of Approved Materials. Mats must be 100% UV stabilized materials. For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting exclusively. Ensure product labels clearly show the manufacturer or supplier name, style name, and roll number. Ensure labeling, shipment and storage follows ASTM D-4873. The Department will require manufacturer to provide TRMs that are machine constructed web of mechanically or melt bonded nondegradable fibers entangled to form a three dimensional matrix. The Department will require all long term performance property values in table below to be based on non degradable portion of the matting alone. Approved methods include polymer welding, thermal or polymer fusion, or placement of fibers between two high strength biaxially oriented nets mechanically bound by parallel stitching with polyolefin thread. Ensure that mats designated in the plans as Type 4 mats, are not to be manufactured from discontinuous or loosely held together by stitching or glued netting or composites. Type 4 mats shall be composed of geosynthetic matrix that exhibits a very high interlock and reinforcement capacities with both soil and root systems and with high tensile modulus. The Department will require manufacturer to use materials chemically and biologically inert to the natural soil environments conditions. Ensure the blanket is smolder resistant without the use of chemical additives. When stored, maintain the protective wrapping and elevate the mats off the ground to protect them from damage. The Department will not specify these materials for use in heavily acidic coal seam areas or other areas with soil problems that would severely limit vegetation growth.

- A) Dimensions. Ensure TRMs are furnished in strips with a minimum width of 4 feet and length of 50 feet.
- B) Weight. Ensure that all mat types have a minimum mass per unit area of 7 ounces per square yard according to ASTM D 6566.
- C) Performance Testing: The Department will require AASHTO's NTPEP index testing. The Department will also require the manufacturer to perform internal MARV testing at a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory for tensile strength, tensile elongation, mass per unit area, and thickness once every 24,000 yds of production or whatever rate is required to ensure 97.7% confidence under ASTM D4439 & 4354. The Department will require Full scale testing for slope and channel applications shear stress shall be done under ASTM D 6459, ASTM D 6460-07 procedures.

2.2 Classifications

The basis for selection of the type of mat required will be based on the long term shear stress level of the mat of the channel in question or the degree of slope to protect and will be designated in the contract. The Type 4 mats are to be used at structural backfills protecting critical

structures, utility cuts, areas where vehicles may be expected to traverse the mat, channels with large heavy drift, and where higher factors of safety, very steep slopes and/or durability concerns are needed as determined by project team and designer and will be specified in the plans by designer.

Turf Reinforcement Matting					
Properties ¹	Type 1	Type 2	Type 3	Type 4	Test Method
Minimum tensile Strength lbs/ft	125	150	175	3000 by 1500	ASTM D6818 ²
UV stability (minimum % tensile retention)	80	80	80	90	ASTM D4355 ³ (1000-hr exposure)
Minimum thickness (inches)	0.25	0.25	0.25	0.40	ASTM D6525
Slopes applications	2H:1V or flatter	1.5H:1V or flatter	1H:1V or flatter	1 H: 1V or greater	
Shear stress lbs/ft ² Channel applications	6.0 ⁴	8.0 ⁴	10.0 ⁴	12.0 ⁴	ASTM D6459 ASTM D6460-07

¹ For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting alone.

²Minimum Average Roll Values for tensile strength of sample material machine direction.

³Tensile Strength percentage retained after stated 1000 hr duration of exposure under ASTM D4355 testing. Based on nondegradable components exclusively.

⁴Maximum permissible shear design values based on short-term (0.5 hr) vegetated data obtained by full scale flume testing ASTM D6459, D6460-07. Based on nondegradable components exclusively. Testing will be done at Independent Hydraulics Facility such as Colorado State University hydraulics laboratory, Utah State University hydraulics laboratory, Texas Transportation Institute (TTI) hydraulics and erosion control laboratory.

2.3 Quality Assurance Sampling, Testing, and Acceptance

- A) Provide TRM listed on the Department's List of Approved Materials. Prior to inclusion on the LAM, the manufacturer of TRM must meet the physical and performance criteria as outlined in the specification and submit a Letter Certifying compliance of the product under the above ASTM testing procedures and including a copy of report from Full Scale Independent Hydraulics Facility that Fully Vegetated Shear Stress meets shear stress requirements tested under D6459 and D6460-07.
- B) Contractors will provide a Letter of Certification from Manufacturer stating the product name, manufacturer, and that the product MARV product unit testing results meets Department criteria. Provide Letters once per project and for each product.
- C) Acceptance shall be in accordance with ASTM D-4759 based on testing performed by a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory using Procedure A of ASTM D-4354.

Current mats meeting the above criteria are shown on the Department’s List of Approved Materials.

2.4 Fasteners. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils as directed by Engineer or Manufacturer’s Representative. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. When requested by the Engineer, provide a Manufacturer’s Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from the Manufacturer approving the installation. When there is a conflict between the Department’s criteria and the Manufacturer’s criteria, construct using the more restrictive. The Engineer and Manufacturer’s Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer’s recommendations and the following as minimum installation technique:

3.1 Site Preparation. Grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, roots, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil.

3.2 Installation. Install mats according to Standard Drawing Sepias “Turf Mat Channel Installation” and “Turf Mat Slope Installation.” Install mats at the specified elevation and alignment. Anchor the mats with staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils as directed by the Engineer or Manufacturer’s Representative. The mat should be in direct contact with the soil surface.

4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed, providing a Manufacturer’s Representative, topsoil, or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat. Seeding and protection will be an incidental item.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
23274EN11F	Turf Reinforcement Mat 1	Square Yard
23275EN11F	Turf Reinforcement Mat 2	Square Yard
23276EN11F	Turf Reinforcement Mat 3	Square Yard
23277EN11F	Turf Reinforcement Mat 4	Square Yard

September 1, 2022

SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

1.0 DESCRIPTION. Install barcode label on sheeting signs. Section references herein are to the Department’s Standard Specifications for Road and Bridge Construction, current edition.

2.0 MATERIALS. The Department will provide the Contractor with a 2 inch x 1 inch foil barcode label for each permanent sheeting sign. A unique number will be assigned to each barcode label.

The Contractor shall contact the Operations and Pavement Management Branch in the Division of Maintenance at (502) 564-4556 to obtain the barcode labels.

3.0 CONSTRUCTION. Apply foil barcode label in the lower right quadrant of the sign back. Signs where the bottom edge is not parallel to the ground, the lowest corner of the sign shall serve as the location to place the barcode label. The barcode label shall be placed no less than one-inch and no more than three inches from any edge of the sign. The barcode must be placed so that the sign post does not cover the barcode label.

Barcodes shall be applied in an indoor setting with a minimum air temperature of 50°F or higher. Prior to application of the barcode label, the back of the sign must be clean and free of dust, oil, etc. If the sign is not clean, an alcohol swab shall be used to clean the area. The area must be allowed to dry prior to placement of the barcode label.

Data for each sign shall include the barcode number, MUTCD reference number, sheeting manufacturer, sheeting type, manufacture date, color of primary reflective surface, installation date, latitude and longitude using the North American Datum of 1983 (NAD83) or the State Plane Coordinates using an x and y ordinate of the installed location.

Data should be provided electronically on the TC 71-229 Sign Details Information and TC 71-230 Sign Assembly Information forms. The Contractor may choose to present the data in a different format provided that the information submitted to the Department is equivalent to the information required on the Department TC forms. The forms must be submitted in electronic format regardless of which type of form is used. The Department will not accept PDF or handwritten forms. These completed forms must be submitted to the Department prior to final inspection of the signs. The Department will not issue formal acceptance for the project until the TC 71-229 and TC-230 electronic forms are completed for all signs and sign assemblies on the project.

4.0 MEASUREMENT. The Department will measure all work required for the installation of the barcode label and all work associated with completion and submission of the sign inventory data (TC 71-229 and TC 71-230).

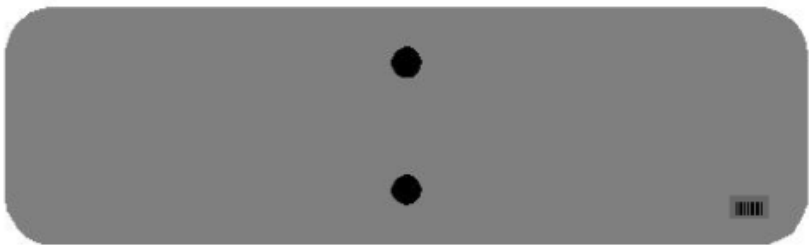
The installation of the permanent sign will be measured in accordance to Section 715.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

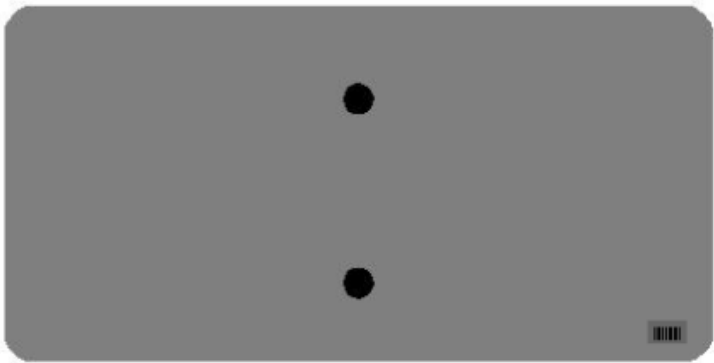
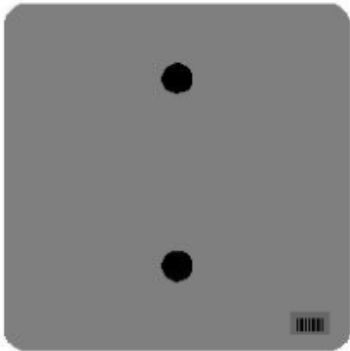
<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24631EC	Barcode Sign Inventory	Each

The Department will not make payment for this item until all barcodes are installed and sign inventory is complete on every permanent sign installed on the project. The Department will make payment for installation of the permanent sign in accordance to Section 715. The Department will consider payment as full compensation for all work required under this special note.

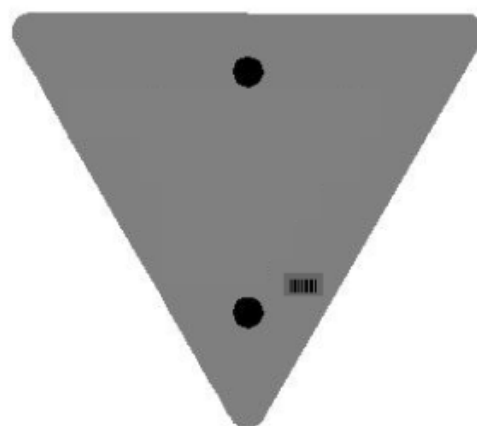
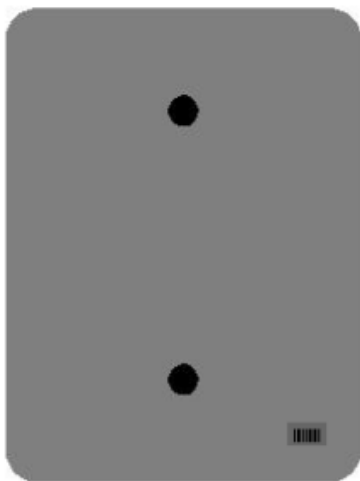
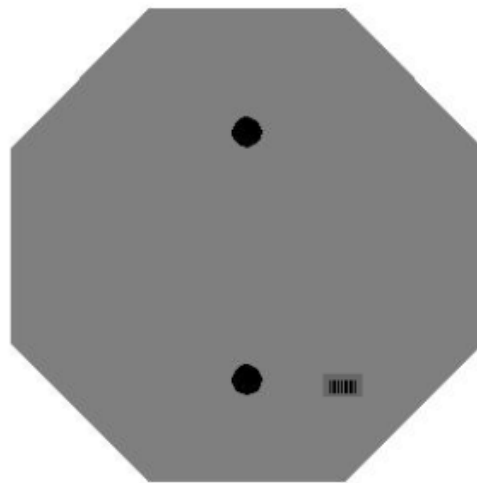
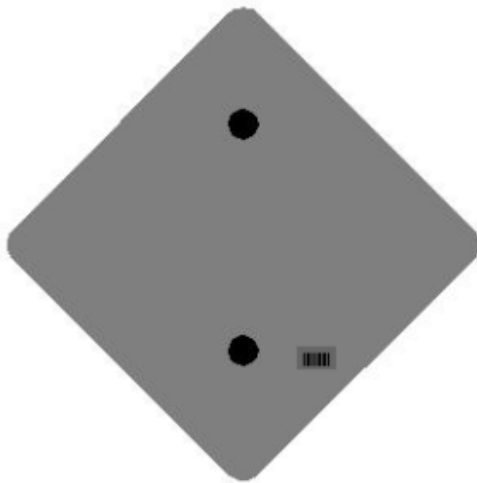
One Sign Post



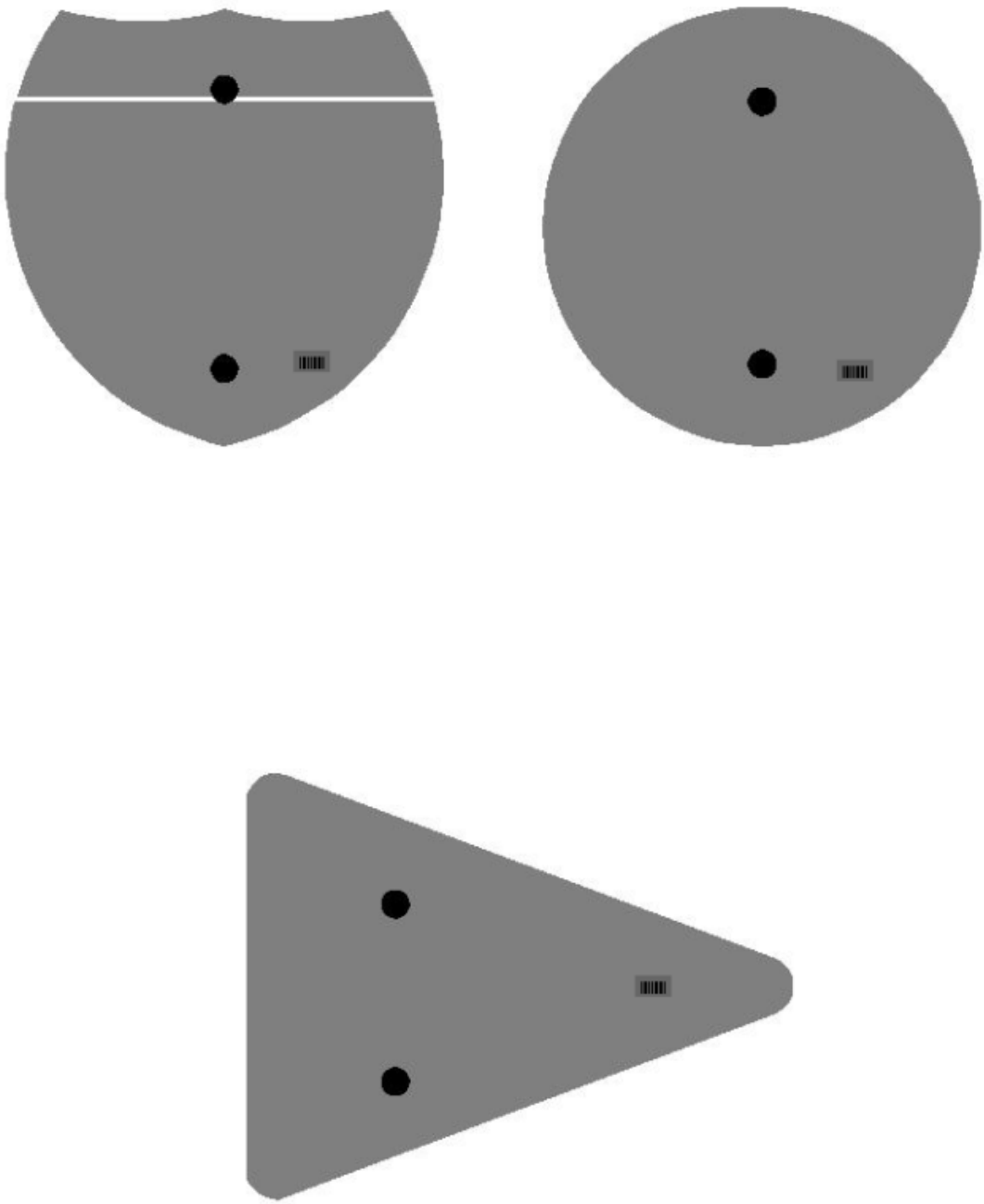
↑
2" Wide Post



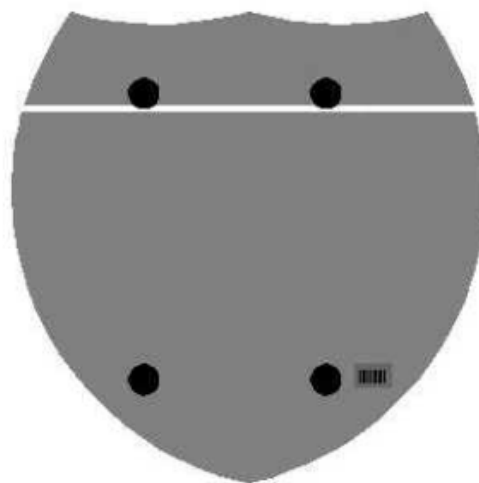
One Sign Post



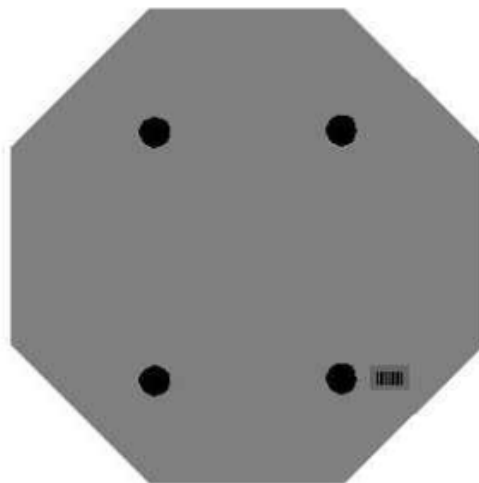
One Sign Post



Double Sign Post

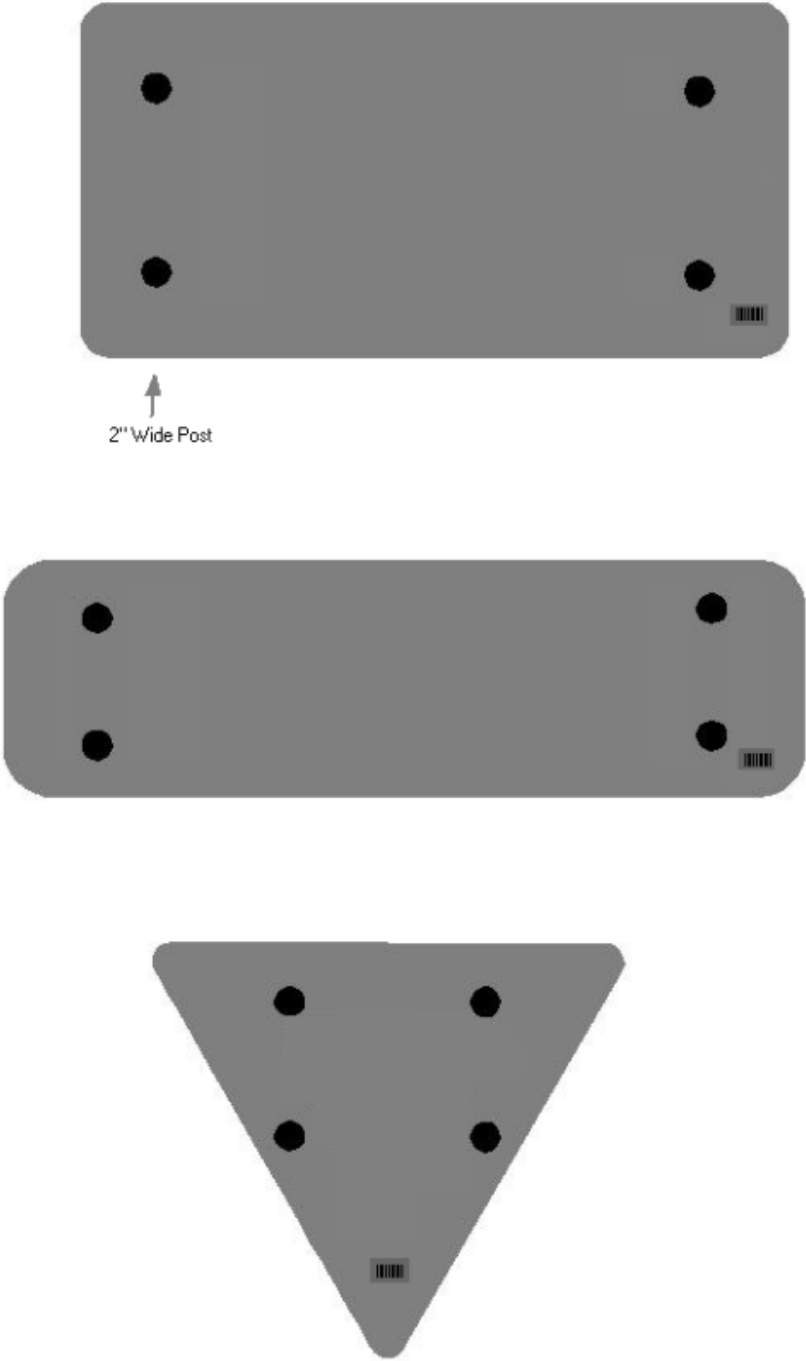


Interstate
Shield



48" Stop

2 Post Signs



SPECIAL NOTE FOR LONGITUDINAL PAVEMENT JOINT ADHESIVE

1. **DESCRIPTION.** This specification covers the requirements and practices for applying an asphalt adhesive material to the longitudinal joint of the surface course of an asphalt pavement. Apply the adhesive to the face of longitudinal joint between driving lanes for the first lane paved. Then, place and compact the adjacent lane against the treated face to produce a strong, durable, waterproof longitudinal joint.
2. **MATERIALS, EQUIPMENT, AND PERSONNEL.**

2.1 Joint Adhesive. Provide material conforming to Subsection 2.1.1.

2.1.1 Provide an adhesive conforming to the following requirements:

Property	Specification	Test Procedure
Viscosity, 400 ° F (Pa·s)	4.0 – 10.0	ASTM D 4402
Cone Penetration, 77 ° F	60 – 100	ASTM D 5329
Flow, 140 ° F (mm)	5.0 max.	ASTM D 5329
Resilience, 77 ° F (%)	30 min.	ASTM D 5329
Ductility, 77 ° F (cm)	30.0 min.	ASTM D 113
Ductility, 39 ° F (cm)	30.0 min.	ASTM D 113
Tensile Adhesion, 77 ° F (%)	500 min.	ASTM D 5329, Type II
Softening Point, ° F	171 min.	AASHTO T 53
Asphalt Compatibility	Pass	ASTM D 5329

Ensure the temperature of the pavement joint adhesive is between 380 and 410 °F when the material is extruded in a 0.125-inch-thick band over the entire face of the longitudinal joint.

2.2. Equipment.

2.2.1 Melter Kettle. Provide an oil-jacketed, double-boiler, melter kettle equipped with any needed agitation and recirculating systems.

2.2.2 Applicator System. Provide a pressure-feed-wand applicator system with an applicator shoe attached.

2.3 Personnel. Ensure a technical representative from the manufacturer of the pavement joint adhesive is present during the initial construction activities and available upon the request of the Engineer.

3. **CONSTRUCTION.**

3.1 Surface Preparation. Prior to the application of the pavement joint adhesive, ensure the face of the longitudinal joint is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the joint face by the use of compressed air.

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Ensure this preparation process occurs shortly before application to prevent the return of debris on the joint face.

3.2 Pavement Joint Adhesive Application. Ensure the ambient temperature is a minimum of 40 ° F during the application of the pavement joint adhesive. Prior to applying the adhesive, demonstrate competence in applying the adhesive according to this note to the satisfaction of the Engineer. Heat the adhesive in the melter kettle to the specified temperature range. Pump the adhesive from the melter kettle through the wand onto the vertical face of the cold joint. Apply the adhesive in a continuous band over the entire face of the longitudinal joint. Do not use excessive material in either thickness or location. Ensure the edge of the extruded adhesive material is flush with the surface of the pavement. Then, place and compact the adjacent lane against the joint face. Remove any excessive material extruded from the joint after compaction (a small line of material may remain).

3.3 Pavement Joint Adhesive Certification. Furnish the joint adhesive's 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 random sample of pavement joint adhesive from each manufacturer's lot of material. Extrude two 5 lb. samples of the heated material and forward the sample to the Division of Materials for testing. Reynolds oven bags, turkey size, placed inside small cardboard boxes or cement cylinder molds have been found suitable. Ensure the product temperature is 400°F or below at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of Pavement Joint Adhesive in linear feet. 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 Pavement Joint Adhesive, the cleaning of the joint face, or furnishing and placing the adhesive. The Department will consider all such items incidental to the Pavement Joint Adhesive.
5. PAYMENT. The Department will pay for the Pavement Joint Adhesive 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. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

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Pavement Joint Adhesive Price Adjustment Schedule						
Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
Joint Adhesive Referenced in Subsection 2.1.1						
Viscosity, 400 ° F (Pa•s)			3.0-3.4	2.5-2.9	2.0-2.4	≤1.9
ASTM D 3236	4.0-10.0	3.5-10.5	10.6-11.0	11.1-11.5	11.6-12.0	≥ 12.1
Cone Penetration, 77 ° F			54-56	51-53	48-50	≤ 47
ASTM D 5329	60-100	57-103	104-106	107-109	110-112	≥ 113
Flow, 140 ° F (mm) ASTM D 5329	≤ 5.0	≤ 5.5	5.6-6.0	6.1-6.5	6.6-7.0	≥ 7.1
Resilience, 77 ° F (%) ASTM D 5329	≥ 30	≥ 28	26-27	24-25	22-23	≤ 21
Tensile Adhesion, 77 ° F (%) ASTM D 5329	≥ 500	≥ 490	480-489	470-479	460-469	≤ 459
Softening Point, ° F AASHTO T 53	≥ 171	≥ 169	166-168	163-165	160-162	≤ 159
Ductility, 77 ° F (cm) ASTM D 113	≥ 30.0	≥ 29.0	28.0-28.9	27.0-27.9	26.0-26.9	≤ 25.9
Ductility, 39 ° F (cm) ASTM D 113	≥ 30.0	≥ 29.0	28.0-28.9	27.0-27.9	26.0-26.9	≤ 25.9

Code
20071EC

Pay Item
Joint Adhesive

Pay Unit
Linear Foot

May 7, 2014

SPECIAL PROVISION FOR EMBANKMENT AT BRIDGE END BENT STRUCTURES

This Special Provision will apply when indicated on the plans or in the proposal. Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, Current Edition.

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with soil, granular or cohesive pile core and place structure granular backfill, as the Plans require. Construct the embankment according to the requirements of this Special Provision, the Plans, Standard Drawing RGX 100 and 105, and the Standard Specifications, Current Edition.

2.0 MATERIALS.

2.1 Granular Embankment. Conform to Subsection 805.10. When Granular Embankment materials are erodible or unstable according to Subsection 805.03.04, use the Special Construction Methods found in 3.2 of the Special Provision.

2.2 Rock Embankment. Provide durable rock from roadway excavation that consists principally of Unweathered Limestone, Durable Shale (SDI equal to or greater than 95 according to KM 64-513), or Durable Sandstone.

2.3 Pile Core. Provide a pile core in the area of the embankments where deep foundations are to be installed unless otherwise specified. The Pile Core is the zone indicated on Standard Drawings RGX 100 and 105 designated as Pile Core. Material control of the pile core area during embankment construction is always required. Proper Pile Core construction is required for installation of foundation elements such as drilled or driven piles or drilled shafts. The type of material used to construct the pile core is as directed in the plans or below. Typically, the pile core area will be constructed from the same material used to construct the surrounding embankment. Pile Core can be classified as one of three types:

A) Pile Core - Conform to Section 206 of the Standard Specifications. Provide pile core material consisting of the same material as the adjacent embankment except the material in the pile core area shall be free of boulders or particle sizes larger than 4 inches in any dimension or any other obstructions that may hinder pile driving operations. If the pile core material hinders pile driving operations, take the appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

B) Granular Pile Core. Granular pile core is required only when specified in the plans. Select a gradation of durable rock to facilitate pile driving that conforms to Subsection 805.11. If granular pile core material hinders pile driving operations, take appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

C) Cohesive Pile Core. Cohesive Pile Core is required only when specified in the plans. Conform to Section 206 of the Standard Specifications and use soil with at least 50 percent passing a No. 4 sieve having a minimum Plasticity Index (PI) of 10. In addition, keep the cohesive pile core free of boulders, larger than 4 inches in any dimension, or any other obstructions, which would interfere with drilling operations. If cohesive pile core material interferes with drilling operations, take appropriate means necessary to maintain

excavation stability, at no expense to the Department.

2.4 Structure Granular Backfill. Conform to Subsection 805.11

2.5 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843.

3.0 CONSTRUCTION.

3.1 General. Construct roadway embankments at end bents according to Section 206 and in accordance with the Special Provision, the Plans, and Standard Drawings for the full embankment section. In some instances, granular or rock embankment will be required for embankment construction for stability purposes, but this special provision does not prevent the use of soil when appropriate. Refer to the plans for specific details regarding material requirements for embankment construction.

Place and compact the pile core and structure granular backfill according to the applicable density requirements for the project. If the embankment and pile core are dissimilar materials (i.e., a granular pile core is used with a soil embankment or a cohesive pile core is used with a granular embankment), a Geotextile Fabric, Type IV, will be required between the pile core and embankment in accordance with Sections 214 and 843 of the Standard Specifications.

When granular or rock embankment is required for embankment construction, conform to the general requirements of Subsection 206.03.02 B. In addition, place the material in no greater than 2-foot loose lifts and compact with a vibrating smooth wheel roller capable of producing a minimum centrifugal force of 15 tons. Apply these requirements to the full width of the embankment for a distance of half the embankment height or 50 feet, whichever is greater, as shown on Standard Drawing RGX-105.

When using granular pile core, install 8-inch perforated underdrain pipe at or near the elevation of the original ground in the approximate locations depicted on the standard drawing, and as the Engineer directs, to ensure positive drainage of the embankment. Wrap the perforated pipe with a fabric of a type recommended by the pipe manufacturer.

After constructing the embankment, excavate for the end bent cap, drive piling, install shafts or other foundation elements, place the mortar bed, construct the end bent, and complete the embankment to finish grade according to the construction sequence shown on the Plans or Standard Drawings and as specified hereinafter.

Certain projects may require widening of existing embankments and the removal of substructures. Construct embankment according to the plans. Substructure removal shall be completed according to the plans and Section 203. Excavation may be required at the existing embankment in order to place the structure granular backfill as shown in the Standard Drawings.

After piles are driven or shafts installed (see design drawings), slope the bottom of the excavation towards the ends of the trench as noted on the plans for drainage. Using a separate pour, place concrete mortar, or any class concrete, to provide a base for forming and placing the cap. Place side forms for the end bent after the mortar has set sufficiently to support workmen and forms without being disturbed.

Install 4-inch perforated pipe in accordance with the plans and Standard Drawings. In the event slope protection extends above the elevation of the perforated pipe, extend the pipe through the slope protection.

After placing the end bent cap and achieving required concrete cylinder strengths, remove adjacent forms and fill the excavation with compacted structure granular backfill material (maximum 1' loose lifts) to the level of the berm prior to placing beams for the bridge. Place Type IV geotextile fabric between embankment material and structure granular backfill. After completing the end bent backwall, or after completing the span end

wall, place the compacted structure granular backfill (maximum 1' loose lifts) to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill (maximum 1' loose lifts) at no expense to the Department. Do not place backfill before removing adjacent form work. Place structure granular backfill material in trench ditches at the ends of the excavation. Place Geotextile Fabric, Type IV over the surface of the compacted structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means approved by the Engineer. Thoroughly compact the backfill under the overhanging portions of the structure to ensure that the backfill is in intimate contact with the sides of the structure.

Do not apply seeding, sodding, or other vegetation to the exposed granular embankment.

3.2 Special Construction Methods. Erodible or unstable materials may erode even when protected by riprap or channel lining; use the special construction method described below when using these materials.

Use fine aggregates or friable sandstone granular embankment at "dry land" structures only. Do not use them at stream crossings or locations subject to flood waters.

For erodible or unstable materials having 50 percent or more passing the No. 4 sieve, protect with geotextile fabric. Extend the fabric from the original ground to the top of slope over the entire area of the embankment slopes on each side of, and in front of, the end bent. Cover the fabric with at least 12 inches of non-erodible material.

For erodible or unstable materials having less than 50 percent passing a No. 4 sieve, cover with at least 12 inches of non-erodible material.

Where erodible or unstable granular embankment will be protected by riprap or channel lining, place Type IV geotextile fabric between the embankment and the specified slope protection.

4.0 MEASUREMENT.

4.1 Granular Embankment. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment any Granular Embankment that is not called for in the plans.

The Department will not measure for payment any special construction caused by using erodible or unstable materials and will consider it incidental to the Granular Embankment regardless of whether the erodible or unstable material was specified or permitted.

4.2 Rock Embankment. The Department will not measure for payment any rock embankment and will consider it incidental to roadway excavation or embankment in place, as applicable. Rock embankments will be constructed using granular embankment on projects where there is no available rock present within the excavation limits of the project.

4.3 Pile Core. Pile core will be measured and paid under roadway excavation or embankment in place, as applicable. The Department will not measure the pile core for separate payment. The Department will not measure for payment the 8-inch perforated underdrain pipe and will consider it incidental to the Pile Core.

4.4 Structure Granular Backfill. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure any additional material required for backfill outside the limits shown on the Plans and Standard Drawings for payment and will

consider it incidental to the work.

The Department will not measure for payment the 4-inch perforated underdrain pipe and will consider it incidental to the Structure Granular Backfill.

4.5 Geotextile Fabric. The Department will not measure the quantity of fabric used for separating dissimilar materials when constructing the embankment and pile core and will consider it incidental to embankment construction.

The Department will not measure for payment the Geotextile Fabric used to separate the Structure Granular Backfill from the embankment and aggregate base course and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the Geotextile Fabric required for construction with erodible or unstable materials and will consider it incidental to embankment construction.

4.6 End Bent. The Department will measure the quantities according to the Contract. The Department will not measure furnishing and placing the 2-inch mortar or concrete bed for payment and will consider it incidental to the end bent construction.

4.7 Structure Excavation. The Department will not measure structure excavation on new embankments for payment and will consider it incidental to the Structure Granular Backfill or Concrete as applicable.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02223	Granular Embankment	Cubic Yards
02231	Structure Granular Backfill	Cubic Yards

The Department will consider payment as full compensation for all work required in this provision.

September 16, 2016

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 -- Revised July 5, 2022

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

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. All laborers and mechanics employed or working upon the site of the work, 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 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.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). 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 classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall 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.(1) The contracting officer shall 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 shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore 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 utilized 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) 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 shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. 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.

(3) 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 shall 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.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall 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.

c. 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. 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, 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.

2. Withholding (29 CFR 5.5)

The contracting agency 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 contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics,

including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, 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.

3. Payrolls and basic records (29 CFR 5.5)

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or

subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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;

(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 of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) 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. 231.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees (29 CFR 5.5)

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State

Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the

corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. 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 journeymen 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 shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 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 (29 CFR 5.5)

a. By entering into this contract, the contractor 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

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 watchmen 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. 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 watchmen 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. 29 CFR 5.5.

* \$27 as of January 23, 2019 (See 84 FR 213-01, 218) 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.

The FHWA or the contracting agency 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 any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this section. 29 CFR 5.5.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section. 29 CFR 5.5.

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 200.326.

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 200.326.

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 contractor). "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.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(a) 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;

(b) 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

(c) 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)

2. 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 administering 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: KY20230038 01/06/2023

Superseded General Decision Number: KY20220038

State: Kentucky

Construction Type: Highway

Counties: Anderson, Bath, Bourbon, Boyd, Boyle, Bracken, Breckinridge, Bullitt, Carroll, Carter, Clark, Elliott, Fayette, Fleming, Franklin, Gallatin, Grant, Grayson, Greenup, Hardin, Harrison, Henry, Jefferson, Jessamine, Larue, Lewis, Madison, Marion, Mason, Meade, Mercer, Montgomery, Nelson, Nicholas, Oldham, Owen, Robertson, Rowan, Scott, Shelby, Spencer, Trimble, Washington and Woodford 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)(2)-(60).

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:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$16.20 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 2023.
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:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$12.15 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 2023.
--	------------------------

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	01/06/2023

BRIN0004-003 06/01/2022

BRECKENRIDGE COUNTY

	Rates	Fringes
BRICKLAYER.....	\$ 33.00	19.46

BRKY0001-005 06/01/2022

BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE,
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, & TRIMBLE
COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 31.87	16.39

BRKY0002-006 06/01/2022

BRACKEN, GALLATIN, GRANT, MASON & ROBERTSON COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 31.87	16.39

BRKY0007-004 06/01/2022

BOYD, CARTER, ELLIOT, FLEMING, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 32.94	20.28

BRKY0017-004 06/01/2022

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN,
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,
OWEN, SCOTT, WASHINGTON & WOODFORD COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 31.87	16.39

CARP0064-001 04/01/2022

	Rates	Fringes
CARPENTER.....	\$ 30.84	22.19
Diver.....	\$ 46.64	22.19
PILEDRIVERMAN.....	\$ 31.09	22.19

ELEC0212-008 06/07/2022

BRACKEN, GALLATIN and GRANT COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 33.29	20.05

ELEC0212-014 11/25/2019

BRACKEN, GALLATIN & GRANT COUNTIES:

	Rates	Fringes
Sound & Communication Technician.....	\$ 24.35	12.09

ELEC0317-012 05/30/2022

BOYD, CARTER, ELLIOT & ROWAN COUNTIES:

	Rates	Fringes
ELECTRICIAN (Wiremen).....	\$ 35.85	28.25

ELEC0369-007 06/01/2022

ANDERSON, BATH, BOURBON, BOYLE, BRECKINRIDGE, BULLITT, CARROLL,
CLARK, FAYETTE, FRAONKLIN, GRAYSON, HARDIN, HARRISON, HENRY,
JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER,
MONTGOMERY, NELSON, NICHOLAS, OLDHAM, OWEN, ROBERTSON, SCOTT,
SHELBY, SPENCER, TRIMBLE, WASHINGTON, & WOODFORD COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 34.60	19.57

ELEC0575-002 05/30/2022

FLEMING, GREENUP, LEWIS & MASON COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 35.50	20.63

ENGI0181-018 07/01/2021

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 34.80	17.85
GROUP 2.....	\$ 31.94	17.85
GROUP 3.....	\$ 32.39	17.85
GROUP 4.....	\$ 31.62	17.85

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 Concrete 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 leads equals or exceeds 150 ft. - \$1.00 over 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.

IRON0044-009 06/01/2022

BRACKEN, GALLATIN, GRANT, HARRISON, ROBERTSON,
BOURBON (Northern third, including Townships of Jackson, Millersburg, Ruddel Mills & Shawhan);
CARROLL (Eastern third, including the Township of Ghent);
FLEMING (Western part, excluding Townships of Beechburg, Colfax, Elizaville, Flemingsburg, Flemingsburg Junction, Foxport, Grange City, Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton, Pecksridge, Plummers Landing, Plummers Mill, Poplar Plains, Ringos Mills, Tilton & Wallingford);
MASON (Western two-thirds, including Townships of Dover, Lewisburg, Mays Lick, Maysville, Minerva, Moranburg, Murphysville, Ripley, Sardis, Shannon, South Ripley & Washington);
NICHOLAS (Townships of Barefoot, Barterville, Carlisle, Ellisville, Headquarters, Henryville, Morningglory, Myers & Oakland Mills);
OWEN (Townships of Beechwood, Bromley, Fairbanks, Holbrook, Jonesville, Long Ridge, Lusby's Mill, New, New Columbus, New Liberty, Owenton, Poplar Grove, Rockdale, Sanders, Teresita & Wheatley);
SCOTT (Northern two-thirds, including Townships of Biddle, Davis, Delaplain, Elmville, Longlick, Muddy Ford, Oxford, Rogers Gap, Sadieville, Skinnersburg & Stonewall)

	Rates	Fringes
IRONWORKER		
Fence Erector.....	\$ 30.28	22.30
Structural.....	\$ 31.87	22.30

IRON0070-006 06/01/2022

ANDERSON, BOYLE, BRECKINRIDGE, BULLITT, FAYETTE, FRANKLIN,
GRAYSON, HARDIN, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON,
MARION, MEADE, MERCER, NELSON, OLDHAM, SHELBY, SPENCER,
TRIMBLE, WASHINGTON & WOODFORD
BOURBON (Southern two-thirds, including Townships of Austerlity,
Centerville, Clintonville, Elizabeth, Hutchison, Littlerock,
North Middletown & Paris);
CARROLL (Western two-thirds, including Townships of Carrollton,
Easterday, English, Locust, Louis, Prestonville & Worthville);
CLARK (Western two-thirds, including Townships of Becknerville,
Flanagan, Ford, Pine Grove, Winchester & Wyandotte);
OWEN (Eastern eighth, including Townships of Glenmary, Gratz,
Monterey, Perry Park & Tacketts Mill);
SCOTT (Southern third, including Townships of Georgetown, Great
Crossing, Newtown, Stampling Ground & Woodlake);

	Rates	Fringes
IRONWORKER.....	\$ 31.79	24.30

IRON0769-007 06/01/2022

BATH, BOYD, CARTER, ELLIOTT, GREENUP, LEWIS, MONTGOMERY & ROWAN
CLARK (Eastern third, including townships of Bloomingdale,
Hunt, Indian Fields, Kiddville, Loglick, Rightangele & Thomson);
FLEMING (Townships of Beechburg, Colfax, Elizaville,
Flemingsburg, Flemingsburg Junction, Foxport, Grange City,
Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton,
Pecksridge, Plummers Landing, Plummers Mill, Poplar Plains,
Ringos Mills, Tilton & Wallingford);
MASON (Eastern third, including Townships of Helena, Marshall,
Orangeburg, Plumville & Springdale);
NICHOLAS (Eastern eighth, including the Township of Moorefield
Sprout)

	Rates	Fringes
IRONWORKER		
ZONE 1.....	\$ 33.71	27.69
ZONE 2.....	\$ 34.11	27.69
ZONE 3.....	\$ 35.71	27.69
ZONE 1 - (no base rate increase) Up to 10 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.		
ZONE 2 - (add \$0.40 per hour to base rate) 10 to 50 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.		
ZONE 3 - (add \$2.00 per hour to base rate) 50 mile radius & over of Union Hall, 1643 Greenup Ave, Ashland, KY.		

LABO0189-003 07/01/2022

BATH, BOURBON, BOYD, BOYLE, BRACKEN, CARTER, CLARK, ELLIOTT,
FAYETTE, FLEMING, FRANKLIN, GALLATIN, GRANT, GREENUP, HARRISON,
JESSAMINE, LEWIS, MADISON, MASON, MERCER, MONTGOMERY, NICHOLAS,
OWEN, ROBERTSON, ROWAN, SCOTT, & WOOLFORD COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.76	17.12
GROUP 2.....	\$ 24.01	17.12
GROUP 3.....	\$ 24.06	17.12
GROUP 4.....	\$ 24.66	17.12

LABORERS 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; Bushhammer; 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; 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

LABO0189-008 07/01/2022

ANDERSON, BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE,
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE &
WASHINGTON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.76	17.12
GROUP 2.....	\$ 24.01	17.12
GROUP 3.....	\$ 24.06	17.12
GROUP 4.....	\$ 24.66	17.12

LABORERS 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; Bushhammer; 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; 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

LABO0189-009 07/01/2022

BRECKINRIDGE & GRAYSON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.76	17.12
GROUP 2.....	\$ 24.01	17.12
GROUP 3.....	\$ 24.06	17.12
GROUP 4.....	\$ 24.66	17.12

LABORERS 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; Bushhammer; 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; 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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PAIN0012-005 06/11/2005

BATH, BOURBON, BOYLE, CLARK, FAYETTE, FLEMING, FRANKLIN,
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,
ROBERTSON, SCOTT & WOODFORD COUNTIES:

	Rates	Fringes
PAINTER		
Bridge/Equipment Tender and/or Containment Builder..	\$ 18.90	5.90
Brush & Roller.....	\$ 21.30	5.90
Elevated Tanks; Steeplejack Work; Bridge & Lead Abatement.....	\$ 22.30	5.90
Sandblasting & Waterblasting.....	\$ 22.05	5.90
Spray.....	\$ 21.80	5.90

PAIN0012-017 05/01/2015

BRACKEN, GALLATIN, GRANT, MASON & OWEN COUNTIES:

	Rates	Fringes
PAINTER (Heavy & Highway Bridges - Guardrails - Lightpoles - Striping)		
Bridge Equipment Tender and Containment Builder.....	\$ 20.73	9.06
Brush & Roller.....	\$ 23.39	9.06
Elevated Tanks; Steeplejack Work; Bridge & Lead Abatement.....	\$ 24.39	9.06
Sandblasting & Water Blasting.....	\$ 24.14	9.06
Spray.....	\$ 23.89	9.06

PAIN0118-004 06/01/2018

ANDERSON, BRECKINRIDGE, BULLITT, CARROLL, GRAYSON, HARDIN,
HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY,
SPENCER, TRIMBLE & WASHINGTON COUNTIES:

	Rates	Fringes
PAINTER		
Brush & Roller.....	\$ 22.00	12.52
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning.....	\$ 23.00	12.52

PAIN1072-003 12/01/2021

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS and ROWAN COUNTIES

	Rates	Fringes
Painters:		
Bridges; Locks; Dams;		
Tension Towers & Energized		
Substations.....	\$ 35.06	21.15
Power Generating Facilities.	\$ 31.82	21.15

PLUM0248-003 06/01/2022

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
Plumber and Steamfitter.....	\$ 38.50	22.40

PLUM0392-007 06/01/2022

BRACKEN, CARROLL (Eastern Half), GALLATIN, GRANT, MASON, OWEN & ROBERTSON COUNTIES:

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 36.81	27.35

PLUM0502-003 08/01/2021

BRECKINRIDGE, BULLITT, CARROLL (Western Half), FRANKLIN (Western three-fourths), GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 38.07	20.78

SUKY2010-160 10/08/2001

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 16.57	7.34
GROUP 2.....	\$ 16.68	7.34
GROUP 3.....	\$ 16.86	7.34
GROUP 4.....	\$ 16.96	7.34

TRUCK DRIVER CLASSIFICATIONS

- GROUP 1 - Mobile Batch Truck Tender
- GROUP 2 - Greaser; Tire Changer; & Mechanic Tender
- GROUP 3 - Single Axle Dump; Flatbed; Semi-trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Distributor; Mixer; & Truck Mechanic
- GROUP 4 - Euclid & Other Heavy Earthmoving Equipment & Lowboy; Articulator Cat; 5-Axle Vehicle; Winch & A-Frame when used in transporting materials; Ross Carrier; Forklift when used to transport building materials; & Pavement Breaker

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) (ii)).

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

KY20230038 Mod 0 - 01/06/2023

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
11.2%	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 Bullitt County.
- (Revised: 1/1/2023)

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

231306

PROPOSAL BID ITEMS

Report Date 12/28/22

Page 1 of 8

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	11,527.00	TON		\$	
0020	00078		CRUSHED AGGREGATE SIZE NO 2	40,961.00	TON		\$	
0030	00100		ASPHALT SEAL AGGREGATE	90.00	TON		\$	
0040	00103		ASPHALT SEAL COAT	11.00	TON		\$	
0050	00194		LEVELING & WEDGING PG76-22	1,434.00	TON		\$	
0060	00216		CL3 ASPH BASE 1.00D PG76-22	13,246.00	TON		\$	
0070	00276		CL3 ASPH BIND 0.50D PG76-22	2,732.00	TON		\$	
0080	00356		ASPHALT MATERIAL FOR TACK	61.00	TON		\$	
0090	00387		CL3 ASPH SURF 0.38B PG76-22	3,583.00	TON		\$	
0100	02099		CEM CONC ENT PAVEMENT-6 IN	3,262.00	SQYD		\$	
0110	02602		FABRIC-GEOTEXTILE CLASS 1	29,682.00	SQYD		\$	
0120	02604		FABRIC-GEOTEXTILE CLASS 1A	37,103.00	SQYD		\$	
0130	20071EC		JOINT ADHESIVE	13,474.00	LF		\$	
0140	23379EC		STAMPED CONCRETE	495.00	SQYD		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0150	00078		CRUSHED AGGREGATE SIZE NO 2	5,640.00	TON		\$	
0160	01000		PERFORATED PIPE-4 IN	3,618.00	LF		\$	
0170	01010		NON-PERFORATED PIPE-4 IN	528.00	LF		\$	
0180	01015		INSPECT & CERTIFY EDGE DRAIN SYSTEM	1.00	LS		\$	
0190	01314		PLUG PIPE	16.00	EACH		\$	
0200	01584		CAP DROP BOX INLET	1.00	EACH		\$	
0210	01634		CAP CURB BOX INLET	1.00	EACH		\$	
0220	01791		ADJUST MANHOLE FRAME TO GRADE	8.00	EACH		\$	
0230	01810		STANDARD CURB AND GUTTER	167.00	LF		\$	
0240	01811		STANDARD CURB AND GUTTER MOD	6,436.00	LF		\$	
0250	01875		STANDARD HEADER CURB	12.00	LF		\$	
0260	01904		REMOVE CURB	64.00	LF		\$	
0270	01921		STANDARD BARRIER MEDIAN TYPE 4	1,995.00	SQYD		\$	
0280	01923		STANDARD BARRIER MEDIAN TYPE 5	263.00	SQYD		\$	
0290	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	10.00	EACH		\$	
0300	01984		DELINEATOR FOR BARRIER - WHITE	31.00	EACH		\$	
0310	01985		DELINEATOR FOR BARRIER - YELLOW	38.00	EACH		\$	
0320	02003		RELOCATE TEMP CONC BARRIER	400.00	LF		\$	
0330	02014		BARRICADE-TYPE III	14.00	EACH		\$	
0340	02091		REMOVE PAVEMENT	1,857.00	SQYD		\$	
0350	02159		TEMP DITCH	4,250.00	LF		\$	
0360	02160		CLEAN TEMP DITCH	2,125.00	LF		\$	
0370	02200		ROADWAY EXCAVATION	29,507.00	CUYD		\$	
0380	02203		STRUCTURE EXCAV-UNCLASSIFIED	54.00	CUYD		\$	
0390	02223		GRANULAR EMBANKMENT	6,800.00	CUYD		\$	
0400	02242		WATER	2.00	MGAL		\$	
0410	02262		FENCE-WOVEN WIRE TYPE 1	965.00	LF		\$	

Report Date 12/28/22

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0420	02274		FENCE-6 FT CHAIN LINK	1,241.00	LF		\$	
0430	02351		GUARDRAIL-STEEL W BEAM-S FACE	898.00	LF		\$	
0440	02360		GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH		\$	
0450	02367		GUARDRAIL END TREATMENT TYPE 1	1.00	EACH		\$	
0460	02369		GUARDRAIL END TREATMENT TYPE 2A	2.00	EACH		\$	
0470	02381		REMOVE GUARDRAIL	2,407.00	LF		\$	
0480	02391		GUARDRAIL END TREATMENT TYPE 4A	1.00	EACH		\$	
0490	02429		RIGHT-OF-WAY MONUMENT TYPE 1	33.00	EACH		\$	
0500	02432		WITNESS POST	33.00	EACH		\$	
0510	02484		CHANNEL LINING CLASS III	848.00	TON		\$	
0520	02545		CLEARING AND GRUBBING -24.4 ACRES	1.00	LS		\$	
0530	02555		CONCRETE-CLASS B	537.00	CUYD		\$	
0540	02562		TEMPORARY SIGNS	1,506.80	SQFT		\$	
0550	02585		EDGE KEY	537.00	LF		\$	
0560	02602		FABRIC-GEOTEXTILE CLASS 1	601.00	SQYD		\$	
0570	02603		FABRIC-GEOTEXTILE CLASS 2	26,534.00	SQYD		\$	
0580	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	8,602.00	SQYD	\$2.00	\$	\$17,204.00
0590	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0600	02651		DIVERSIONS (BY-PASS DETOURS) (B)	1.00	LS		\$	
0610	02651		DIVERSIONS (BY-PASS DETOURS) (C)	1.00	LS		\$	
0620	02651		DIVERSIONS (BY-PASS DETOURS) (D)	1.00	LS		\$	
0630	02671		PORTABLE CHANGEABLE MESSAGE SIGN	9.00	EACH		\$	
0640	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0650	02677		ASPHALT PAVE MILLING & TEXTURING	696.00	TON		\$	
0660	02690		SAFELOADING	34.00	CUYD		\$	
0670	02701		TEMP SILT FENCE	4,250.00	LF		\$	
0680	02703		SILT TRAP TYPE A	25.00	EACH		\$	
0690	02704		SILT TRAP TYPE B	25.00	EACH		\$	
0700	02705		SILT TRAP TYPE C	25.00	EACH		\$	
0710	02706		CLEAN SILT TRAP TYPE A	25.00	EACH		\$	
0720	02707		CLEAN SILT TRAP TYPE B	25.00	EACH		\$	
0730	02708		CLEAN SILT TRAP TYPE C	25.00	EACH		\$	
0740	02720		SIDEWALK-4 IN CONCRETE	901.00	SQYD		\$	
0750	02726		STAKING	1.00	LS		\$	
0760	02775		ARROW PANEL	4.00	EACH		\$	
0770	02898		RELOCATE CRASH CUSHION	1.00	EACH		\$	
0780	03171		CONCRETE BARRIER WALL TYPE 9T	2,460.00	LF		\$	
0790	04934		TEMP SIGNAL MULTI PHASE	4.00	EACH		\$	
0800	04953		TEMP RELOCATION OF SIGNAL HEAD	6.00	EACH		\$	
0810	05950		EROSION CONTROL BLANKET	5,988.00	SQYD		\$	
0820	05952		TEMP MULCH	78,606.00	SQYD		\$	
0830	05953		TEMP SEEDING AND PROTECTION	58,954.00	SQYD		\$	
0840	05963		INITIAL FERTILIZER	2.00	TON		\$	
0850	05964		MAINTENANCE FERTILIZER	4.00	TON		\$	
0860	05985		SEEDING AND PROTECTION	67,224.00	SQYD		\$	
0870	05989		SPECIAL SEEDING CROWN VETCH	2,099.00	SQYD		\$	
0880	05990		SODDING	482.00	SQYD		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0890	05992		AGRICULTURAL LIMESTONE	42.00	TON		\$	
0900	06510		PAVE STRIPING-TEMP PAINT-4 IN	18,500.00	LF		\$	
0910	06511		PAVE STRIPING-TEMP PAINT-6 IN	3,100.00	LF		\$	
0920	06530		PAVE STRIPING REMOVAL-4 IN	6,000.00	LF		\$	
0930	06542		PAVE STRIPING-THERMO-6 IN W	17,702.00	LF		\$	
0940	06543		PAVE STRIPING-THERMO-6 IN Y	10,052.00	LF		\$	
0950	06546		PAVE STRIPING-THERMO-12 IN W	3,784.00	LF		\$	
0960	06547		PAVE STRIPING-THERMO-12 IN Y	75.00	LF		\$	
0970	06550		PAVE STRIPING-TEMP REM TAPE-W	60.00	LF		\$	
0980	06551		PAVE STRIPING-TEMP REM TAPE-Y	250.00	LF		\$	
0990	06556		PAVE STRIPING-DUR TY 1-6 IN W	336.00	LF		\$	
1000	06557		PAVE STRIPING-DUR TY 1-6 IN Y	168.00	LF		\$	
1010	06560		PAVE STRIPING-DUR TY 1-12 IN W	84.00	LF		\$	
1020	06568		PAVE MARKING-THERMO STOP BAR-24IN	328.00	LF		\$	
1030	06573		PAVE MARKING-THERMO STR ARROW	29.00	EACH		\$	
1040	06574		PAVE MARKING-THERMO CURV ARROW	55.00	EACH		\$	
1050	06576		PAVE MARKING-THERMO ONLY	7.00	EACH		\$	
1060	06612		INLAID PAVEMENT MARKER-BY	19.00	EACH		\$	
1070	06613		INLAID PAVEMENT MARKER-B W/R	403.00	EACH		\$	
1080	06614		INLAID PAVEMENT MARKER-B Y/R	310.00	EACH		\$	
1090	08100		CONCRETE-CLASS A	9.00	CUYD		\$	
1100	08900		CRASH CUSHION TY VI CLASS B TL2	2.00	EACH		\$	
1110	08901		CRASH CUSHION TY VI CLASS BT TL2	4.00	EACH		\$	
1120	08903		CRASH CUSHION TY VI CLASS BT TL3	2.00	EACH		\$	
1130	10020NS		FUEL ADJUSTMENT	57,742.00	DOLL	\$1.00	\$	\$57,742.00
1140	10030NS		ASPHALT ADJUSTMENT	82,082.00	DOLL	\$1.00	\$	\$82,082.00
1150	20099ES842		PAVE MARK TEMP PAINT STOP BAR	116.00	LF		\$	
1160	20191ED		OBJECT MARKER TY 3	2.00	EACH		\$	
1170	20550ND		SAWCUT PAVEMENT	7,989.00	LF		\$	
1180	21289ED		LONGITUDINAL EDGE KEY	5,812.00	LF		\$	
1190	21341ND		BOLLARDS	10.00	EACH		\$	
1200	22520EN		PAVE MARKING-THERMO YIELD BAR-36 IN	28.00	LF		\$	
1210	23158ES505		DETECTABLE WARNINGS	440.00	SQFT		\$	
1220	23261EC		PAVE MARK-THERMO-X-WALK-24 IN	643.00	LF		\$	
1230	23274EN11F		TURF REINFORCEMENT MAT 1	2,062.00	SQYD		\$	
1240	24280EC		PAVE MARK THERMO CHEVRON-48 IN	181.00	LF		\$	
1250	24459EC		CONCRETE MEDIAN BARRIER TYPE 9E2	1,675.00	LF		\$	
1260	24540		R/W MONUMENT TYPE 3	13.00	EACH		\$	
1270	24679ED		PAVE MARK THERMO CHEVRON	1,633.00	SQFT		\$	
1280	24683ED		PAVE MARKING-THERMO DOTTED LANE EXTEN	1,311.00	LF		\$	
1290	24814EC		PIPELINE INSPECTION	4,071.00	LF		\$	
1300	25078ED		THRIE BEAM GUARDRAIL TRANSITION TL-3	2.00	EACH		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1310	00440		ENTRANCE PIPE-15 IN	52.00	LF		\$	
1320	00521		STORM SEWER PIPE-15 IN	2,057.00	LF		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1330	00522		STORM SEWER PIPE-18 IN	1,013.00	LF		\$	
1340	00524		STORM SEWER PIPE-24 IN	383.00	LF		\$	
1350	00526		STORM SEWER PIPE-30 IN	349.00	LF		\$	
1360	00528		STORM SEWER PIPE-36 IN	223.00	LF		\$	
1370	00556		STORM SEWER PIPE-30 IN EQUIV	46.00	LF		\$	
1380	01202		PIPE CULVERT HEADWALL-15 IN	3.00	EACH		\$	
1390	01204		PIPE CULVERT HEADWALL-18 IN	1.00	EACH		\$	
1400	01208		PIPE CULVERT HEADWALL-24 IN	1.00	EACH		\$	
1410	01209		PIPE CULVERT HEADWALL-24 IN EQUIV	1.00	EACH		\$	
1420	01210		PIPE CULVERT HEADWALL-30 IN	2.00	EACH		\$	
1430	01212		PIPE CULVERT HEADWALL-36 IN	2.00	EACH		\$	
1440	01450		S & F BOX INLET-OUTLET-18 IN	4.00	EACH		\$	
1450	01452		S & F BOX INLET-OUTLET-30 IN	1.00	EACH		\$	
1460	01453		S & F BOX INLET-OUTLET-36 IN	3.00	EACH		\$	
1470	01456		CURB BOX INLET TYPE A	24.00	EACH		\$	
1480	01490		DROP BOX INLET TYPE 1	1.00	EACH		\$	
1490	01496		DROP BOX INLET TYPE 3	11.00	EACH		\$	
1500	01499		DROP BOX INLET TYPE 4	2.00	EACH		\$	
1510	01544		DROP BOX INLET TYPE 11	1.00	EACH		\$	
1520	01559		DROP BOX INLET TYPE 13G	20.00	EACH		\$	
1530	01568		DROP BOX INLET TYPE 13S	3.00	EACH		\$	
1540	01580		DROP BOX INLET TYPE 15	5.00	EACH		\$	
1550	01756		MANHOLE TYPE A	1.00	EACH		\$	
1560	01761		MANHOLE TYPE B	1.00	EACH		\$	
1570	01767		MANHOLE TYPE C	10.00	EACH		\$	
1580	03262		CLEAN PIPE STRUCTURE	9.00	EACH		\$	
1590	20166ES810		TEMPORARY PIPE	178.00	LF		\$	
1600	21588NN		METAL END SECTION TY 3-30 IN (EQUIV)	1.00	EACH		\$	

Section: 0004 - BRIDGE - 28403 OVER BUFFALO RUN

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1610	02231		STRUCTURE GRANULAR BACKFILL	130.20	CUYD		\$	
1620	02403		REMOVE CONCRETE MASONRY	45.70	CUYD		\$	
1630	03299		ARMORED EDGE FOR CONCRETE	28.00	LF		\$	
1640	08019		CYCLOPEAN STONE RIP RAP	377.00	TON		\$	
1650	08033		TEST PILES	128.00	LF		\$	
1660	08046		PILES-STEEL HP12X53	384.00	LF		\$	
1670	08094		PILE POINTS-12 IN	8.00	EACH		\$	
1680	08100		CONCRETE-CLASS A	18.60	CUYD		\$	
1690	08104		CONCRETE-CLASS AA	119.10	CUYD		\$	
1700	08151		STEEL REINFORCEMENT-EPOXY COATED	14,174.00	LB		\$	
1710	08665		PRECAST PC BOX BEAM CB33-48	420.00	LF		\$	
1720	23378EC		CONCRETE SEALING	4,324.00	SQFT		\$	

Section: 0005 - SEWER - CITY OF SHEPHERDSVILLE

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1730	01310		REMOVE PIPE	695.00	LF		\$	
1740	02690		SAFELOADING	31.00	CUYD		\$	
1750	15000		S BYPASS PUMPING	5.00	EACH		\$	
1760	15025		S ENCASEMENT STEEL OPEN CUT RANGE 6	823.00	LF		\$	
1770	15092		S MANHOLE	10.00	EACH		\$	
1780	15093		S MANHOLE ABANDON/REMOVE	8.00	EACH		\$	
1790	15094		S MANHOLE ADJUST TO GRADE	1.00	EACH		\$	
1800	15099		S MANHOLE TAP EXISTING	4.00	EACH		\$	
1810	15112		S PIPE PVC 08 INCH	175.00	LF		\$	
1820	15113		S PIPE PVC 10 INCH	2,301.00	LF		\$	

Section: 0006 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1830	06400		GMSS GALV STEEL TYPE A	1,346.00	LB		\$	
1840	06401		FLEXIBLE DELINEATOR POST-M/W	62.00	EACH		\$	
1850	06404		FLEXIBLE DELINEATOR POST-M/Y	58.00	EACH		\$	
1860	06405		SBM ALUMINUM PANEL SIGNS	566.00	SQFT		\$	
1870	06406		SBM ALUM SHEET SIGNS .080 IN	780.20	SQFT		\$	
1880	06407		SBM ALUM SHEET SIGNS .125 IN	798.00	SQFT		\$	
1890	06410		STEEL POST TYPE 1	2,604.00	LF		\$	
1900	06441		GMSS GALV STEEL TYPE C	4,551.00	LB		\$	
1910	06448		SIGN BRIDGE ATTACHMENT BRACKET	2.00	EACH		\$	
1920	06451		REMOVE SIGN SUPPORT BEAM	4.00	EACH		\$	
1930	06490		CLASS A CONCRETE FOR SIGNS	54.00	CUYD		\$	
1940	06491		STEEL REINFORCEMENT FOR SIGNS	1,320.00	LB		\$	
1950	20418ED		REMOVE & RELOCATE SIGNS	8.00	EACH		\$	
1960	20912ND		BARRIER WALL POST	2.00	EACH		\$	
1970	21596ND		GMSS TYPE D	163.00	EACH		\$	
1980	24631EC		BARCODE SIGN INVENTORY	230.00	EACH		\$	

Section: 0007 - SIGNALS

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1990	04780		FUSED CONNECTOR KIT	49.00	EACH		\$	
2000	04795		CONDUIT-2 IN	2,043.00	LF		\$	
2010	04811		ELECTRICAL JUNCTION BOX TYPE B	2.00	EACH		\$	
2020	04820		TRENCHING AND BACKFILLING	1,583.00	LF		\$	
2030	04836		WIRE-NO. 2	438.00	LF		\$	
2040	04844		CABLE-NO. 14/5C	11,117.00	LF		\$	
2050	04845		CABLE-NO. 14/7C	6,625.00	LF		\$	
2060	04871		POLE 35 FT WOODEN	1.00	EACH		\$	
2070	04881		MAST ARM POLE	8.00	EACH		\$	
2080	04884		ANCHOR	5.00	EACH		\$	
2090	04885		MESSANGER-10800 LB	282.00	LF		\$	
2100	04932		INSTALL STEEL STRAIN POLE	1.00	EACH		\$	
2110	20093NS835		INSTALL PEDESTRIAN HEAD-LED	12.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2120	20188NS835		INSTALL LED SIGNAL-3 SECTION	32.00	EACH		\$	
2130	20266ES835		INSTALL LED SIGNAL- 4 SECTION	2.00	EACH		\$	
2140	20275EC		VIDEO DETECTION-INSTALL	8.00	EACH		\$	
2150	20390NS835		INSTALL COORDINATING UNIT	1.00	EACH		\$	
2160	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	6.00	EACH		\$	
2170	20392NS835		ELECTRICAL JUNCTION BOX TYPE C	5.00	EACH		\$	
2180	21543EN		BORE AND JACK CONDUIT	1,417.00	LF		\$	
2190	21743NN		INSTALL PEDESTRIAN DETECTOR	12.00	EACH		\$	
2200	22939ND		INSTALL LUMINAIRE POLE	3.00	EACH		\$	
2210	23157EN		TRAFFIC SIGNAL POLE BASE	34.00	CUYD		\$	
2220	23222EC		INSTALL SIGNAL PEDESTAL	9.00	EACH		\$	
2230	23235EC		INSTALL PEDESTAL POST	2.00	EACH		\$	
2240	23670EC		INSTALL VIDEO DETECTION CABLE	4,848.00	LF		\$	
2250	24488ED		INSTALL MAST ARM MOUNTED SIGN	22.00	EACH		\$	
2260	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	372.00	LF		\$	
2270	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	2,855.00	LF		\$	
2280	24908EC		INSTALL SIGNAL CONTROLLER-TY ATC	1.00	EACH		\$	
2290	24955ED		REMOVE SIGNAL EQUIPMENT	3.00	EACH		\$	

Section: 0008 - LIGHTING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2300	04701		POLE 40 FT MTG HT	6.00	EACH		\$	
2310	04710		POLE 80 FT MTG HT HIGH MAST	11.00	EACH		\$	
2320	04725		BRACKET 15 FT	6.00	EACH		\$	
2330	04740		POLE BASE	6.00	EACH		\$	
2340	04742		POLE BASE-HIGH MAST	11.00	EACH		\$	
2350	04750		TRANSFORMER BASE	6.00	EACH		\$	
2360	04761		LIGHTING CONTROL EQUIPMENT	2.00	EACH		\$	
2370	04780		FUSED CONNECTOR KIT	26.00	EACH		\$	
2380	04795		CONDUIT-2 IN	647.00	LF		\$	
2390	04797		CONDUIT-3 IN	3,282.00	LF		\$	
2400	04800		MARKER	21.00	EACH		\$	
2410	04820		TRENCHING AND BACKFILLING	7,211.00	LF		\$	
2420	04832		WIRE-NO. 12	990.00	LF		\$	
2430	04940		REMOVE LIGHTING	1.00	LS		\$	
2440	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	10.00	EACH		\$	
2450	20392NS835		ELECTRICAL JUNCTION BOX TYPE C	6.00	EACH		\$	
2460	20410ED		MAINTAIN LIGHTING	1.00	LS		\$	
2470	21543EN		BORE AND JACK CONDUIT	1,896.00	LF		\$	
2480	23778EC		WIRE-NO. 10	5,118.00	LF		\$	
2490	24589ED		LED LUMINAIRE	3.00	EACH		\$	
2500	24749EC		HIGH MAST LED LUMINAIRE	53.00	EACH		\$	
2510	24851EC		CABLE-NO. 10/3C DUCTED	12,815.00	LF		\$	
2520	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	743.00	LF		\$	
2530	24901EC		PVC CONDUIT-2 IN-SCHEDULE 80	175.00	LF		\$	

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Section: 0009 - INTELLIGENT TRANSPORTATION SYSTEMS

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2540	04795		CONDUIT-2 IN	650.00	LF		\$	
2550	04820		TRENCHING AND BACKFILLING	460.00	LF		\$	
2560	04836		WIRE-NO. 2	1,950.00	LF		\$	
2570	04899		ELECTRICAL SERVICE	1.00	EACH		\$	
2580	20257NC		SITE PREPARATION	1.00	LS		\$	
2590	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	4.00	EACH		\$	
2600	21065ND		MODEL 334 ENCLOSURE	1.00	EACH		\$	
2610	21071ND		DATA SURGE DEVICE	1.00	EACH		\$	
2620	21489ND		RACK MOUNTED UPS	1.00	EACH		\$	
2630	21543EN		BORE AND JACK CONDUIT	190.00	LF		\$	
2640	22403NN		WEB CAMERA ASSEMBLY	1.00	EACH		\$	
2650	23150NN		COMMUNICATION CABLE	40.00	LF		\$	
2660	23151NN		POLE WITH LOWERING DEVICE	1.00	EACH		\$	
2670	23161EN		POLE BASE-HIGH MAST	9.77	CUYD		\$	
2680	23944EC		ADVANCED GROUNDING SYSTEM	1.00	EACH		\$	

Section: 0010 - WATERLINE - LOUISVILLE WATER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2690	14002		W AIR RELEASE VALVE SPECIAL	3.00	EACH		\$	
2700	14011		W ENCASEMENT STEEL BORED RANGE 6	55.00	LF		\$	
2710	14017		W ENCASEMENT STEEL OPEN CUT RANGE 6	175.00	LF		\$	
2720	14020		W FIRE HYDRANT RELOCATE	3.00	EACH		\$	
2730	14023		W FLUSHING ASSEMBLY	1.00	EACH		\$	
2740	14030		W METER RELOCATE	1.00	EACH		\$	
2750	14030		W METER RELOCATE (MODIFIED)	1.00	EACH		\$	
2760	14036		W PIPE DUCTILE IRON 06 INCH	56.00	LF		\$	
2770	14051		W PIPE DCTL IRON RSTRND JOINT 16 IN	1,706.00	LF		\$	
2780	14059		W PIPE PVC 06 INCH	310.00	LF		\$	
2790	14062		W PIPE PVC 12 INCH	14.00	LF		\$	
2800	14074		W PLUG EXISTING MAIN	12.00	EACH		\$	
2810	14094		W TIE-IN 06 INCH	3.00	EACH		\$	
2820	14097		W TIE-IN 12 INCH	1.00	EACH		\$	
2830	14098		W TIE-IN 16 INCH	11.00	EACH		\$	
2840	14105		W VALVE 06 INCH	2.00	EACH		\$	
2850	14108		W VALVE 12 INCH	2.00	EACH		\$	
2860	14109		W VALVE 16 INCH	7.00	EACH		\$	
2870	14124		W VALVE SPECIAL	1.00	EACH		\$	

Section: 0011 - PIPE UNDERDRAIN

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2880	01020		PERF PIPE HEADWALL TY 1-4 IN	2.00	EACH		\$	
2890	01028		PERF PIPE HEADWALL TY 3-4 IN	3.00	EACH		\$	

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Section: 0012 - DEMOBILIZATION & MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2900	02568		MOBILIZATION	1.00	LS		\$	
2910	02569		DEMOBILIZATION	1.00	LS		\$	