CALL NO. 311

CONTRACT ID. 101309

BULLITT COUNTY

FED/STATE PROJECT NUMBER FD04 015 0480 001-003

DESCRIPTION CEDAR GROVE ROAD (KY 480)

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 11/15/2011

LETTING DATE: November 19, 2010

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME November 19, 2010. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

ROAD AND BRIDGE PLANS

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

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PART I

SCOPE OF WORK

CONTRACT ID - 101309 ADMINISTRATIVE DISTRICT - 05

PROJECT(S) IDENTIFICATION AND DESCRIPTION:

COUNTY - BULLITT PCN - DE01504801009
FD04 015 0480 001-003
CEDAR GROVE ROAD (KY 480) FROM THE NORTHBOUND I-65 RAMPS TO CEDAR GROVE ELEMENTARY SCHOOL, A DISTANCE OF 0.95 MILES. GRADE & DRAIN WITH ASPHALT SURFACE. SYP NO. 05-00391.10.
GEOGRAPHIC COORDINATES LATITUDE 38^12'43" LONGITUDE 85^41'00"

COMPLETION DATE(S):
COMPLETION DATE - November 15, 2011
APPLIES TO ENTIRE 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 Expedite Bidding Program available on the Internet web site of the Department of Highways, Division of Construction Procurement. (www.transportation.ky.gov/contract)

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 is advised that the Underground Facility Damage Protection Act of 1994, became law January 1, 1995. It is the contractor's responsibility to determine the impact of the act regarding this project, and take all steps necessary to be in compliance with the provision of the act.

07/01/2010

FUEL AND ASPHALT PAY ADJUSTMENT

The following contract items: Asphalt Adjustment and Fuel Adjustment, are for possible future payments. Additional monies may need to be setup with an additional change order if existing contract amount is insufficient to pay all items on the contract. Unit price is $1.00. Quantity will be actual adjustment after work is completed.

OPTION A

The Contractor is advised that the compaction of asphalt mixtures furnished for driving lanes and ramps, at 25mm (1 inch) or greater, on this project will be accepted according to OPTION A in accordance with Section 402 and Section 403 of the current Standard Specification. Joint cores as described in subsection 402.03.02 are required for surface mixtures only. The compaction of all other asphalt mixtures will be accepted by OPTION B.

SPECIAL PROVISION FOR WASTE AND BORROW SITES

The contractor is advised that it is their responsibility to gain U.S. Army Corp of Engineer's approval before utilizing a waste or borrow site that involves "Waters of the United States". "Waters of the United States" are defined as perennial or intermittent streams, ponds or wetlands. Ephemeral streams are also considered jurisdictional waters, and are typically dry except during rainfall, but have a defined drainage channel. Questions concerning any potential impacts to "Waters…" should be brought to the attention of the appropriate District Office for the Corps of Engineers for a determination, prior to disturbance. Any fees associated with obtaining approval from the U.S. Army Corp of Engineer or other appropriate regulatory agencies for waste and borrow sites is the responsibility of the contractor.

01/01/2009

Right-of-Way Certification Form

Revised 5/27/09

☐ **Federal Funded** ☒ **Original**

☒ **State Funded** ☐ **Re-Certification**

This form must be completed and submitted to FHWA with the PS&E package for federal-aid funded Interstate, Appalachia, and Mega projects. This form shall also be submitted to FHWA for **all** federal-aid projects that fall under conditions No. 2 & 3 outlined elsewhere in this form. For all other federal-aid projects, this form shall be completed and retained in the KYTC project file.

Date: **August 25, 2009**

Project #: **FD04 015 7991601R** County: **BULLITT**

Item #: **05-0391.10** Federal #: **DNA**

Description of Project: Widen Cedar Grove Rd (KY 480) from NB I-65 ramps to Cedar Grove Elementary School

Letting Date: _____

Projects that require NO new or additional right-of-way acquisitions and/or relocations

☐ The proposed transportation improvement will be built within the existing rights-of -way and there are no properties to be acquired, individuals and families ("relocatees") to be relocated, or improvements to be removed as a part of this project.

Projects that require new or additional right-of –way acquisitions and/or relocations

☒ Per 23 CFR 635.309, the KYTC hereby certify that all relocatees have been relocated to decent, safe, and sanitary housing or that KYTC has made available to relocatees adequate replacement housing in accordance with the provisions of the current FHWA directive(s) covering the administration of the Highway Relocation Assistance Program **and** that at least one of the following three conditions has been met. **(Check those that apply.)**

☒ 1. All necessary rights-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 these improvements and enter on all land. **Fair market value has been paid or deposited with the court.**

☐ 2. Although all necessary rights-of-way have 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. Trial or appeal of some parcels may be pending in court and on other parcels full legal possession has not been obtained, but an Interlocutory Judgment has been granted, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish these improvements. **Fair market value has been paid or deposited with the court for most parcels. Fair market value for all pending parcels will be paid or deposited with the court prior to start of construction. (See note.)**

Note: The KYTC shall re-submit a right-of-way re-certification form for this project prior to the start of construction **(Notice to Proceed)**, verifying that fair market value for all parcels has been paid or deposited with the court.

Right-of-Way Certification Form

☐ **3.** The acquisition or right of occupancy and use of a **few** remaining parcels are not complete and/or some parcels still have occupants. However, all remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. The KYTC is hereby requesting authorization to advertise this project for bids and to proceed with physical construction even thought the necessary rights-of-way will not be fully acquired, and/or some occupants will not be relocated, and/or the fair marked value will not be paid or deposited with the court for some parcels at the start of construction. KYTC will fully meet all the requirements outlined in 23 CFR 309(c) (3) and 49 CFR 102(j) and will expedite completion of all acquisitions, relocations, and full payments after construction starts. A full explanation and reason for this request, including identification of each such parcel and dates on which acquisitions, payments, and relocations will be completed, is attached to this certification form for FHWA consideration and approval. **(See note.)**

Note: **The KYTC may request authorization on this basis only in unique and unusual circumstances.** Proceeding to construction of projects on this basis shall be the exception and never become the rule. In all FHWA-approved cases, the KYTC shall make extraordinary efforts to expedite completion of the acquisition, payment for all affected parcels, and the relocation of all relocatees promptly 30 days after start of construction.

Approved: **Ron Geveden** Date 8/25/2009 District ROW Supervisor
Name

Approved: _____ Date 3/19/10 Director of ROW & Utilities
Name or Designee

Approved: _____ Date _____ FHWA, Right-of-Way Officer
Name

Right-of-Way Certification Form

Date: **August 25, 2009**

Project #: **FD04 015 7991601R** County: **BULLITT**
Item #: **05-0391.10** Federal #: **DNA**
Letting Date: _____

This project has **13** Total number of parcels acquired, and **0** Total number of individual or families relocated, as well as **0** Total number of businesses relocated.

13 Parcels were acquired by a signed fee simple deed and fair market value has been paid **(Type 1)**

_____ Parcels have been acquired through condemnation and IOJ granted by the court and fair market value has been deposited with the court **(Type 1 certification)**

_____ Parcels have **not** been acquired at this time but can be Re-certified as acquired prior to Notice to Proceed for construction.(*explain below for each parcel*) **(Type 2 certification)**

_____ Parcels have been acquired or have a "right of Entry" but the fair market value has not been paid or has not been posted with the court, and they can not be re-certified prior to construction. (These parcels require an explanation below for each one as well as FHWA approval. **(Type 3 only)**

_____ Relocatees have not been relocated from parcels.
(explain below for each parcel)

Parcel #	Name	Explanation for delayed acquisition, delayed relocation, or delayed payment of fair market value	Proposed date of payment or of relocation

There are **0** billboards and/or **0** cemeteries involved on this project.
There are **0** water or monitoring wells on parcels.

UTILITY NOTES TO BE INCLUDED IN THE PROPOSAL
SPECIAL NOTES FOR UTILITY CONSTRUCTION
IMPACT ON CONSTRUCTION

BULLITT COUNTY
Cedar Grove Road (KY-480)
ITEM NO. 5-391.10

The following Companies have facilities to be relocated and/or adjusted on subject project.

LOUISVILLE GAS & ELECTRIC (Gas)
The Louisville Gas and Electric Company have existing 4" and 6" gas mains in the area. The 6" gas main lies on the north side of Cedar Grove Road from approximate station 61+75 to 62+10 and the 4" gas main starts at approximate station 62+10 to 107+00, running east to west. There are five separate services that run north or south from this main: two 4" at approximate Station 62+10 and 90+30, a two 6" 90+30 and a 2"at approximate Station 105+20. These mains are being abandoned in place. There is a regulating pit on the north side of Cedar Grove Road at approximate station 82+50 that will be removed. There is an 8" high pressure steel main crossing Cedar Grove Road at approximate station 83+80 that will remain in place. The relocated facilities consist of a 6" gas main on the north side of Cedar Grove Road from approximate station 61+75 to 107+00, running east to west. There are five separate services that will run north or south from this main: two 4" at approximate Station 62+10 and 90+30, a two 6" 90+30 and a 2"at approximate Station 105+20 There will be a regulator pit and lines installed at approximate station 82+50. **This work was completed on December 16, 2009.**

SALT RIVER ELECTRIC COOPERATIVE (Overhead Electric)
Salt River Electric Cooperative has removed seven poles in the proposed right of way and has installed seven poles from approximate station 98+10 to 107+00. There are overhead services south of the roadway from the beginning of the project to approximate station 104+00. There are underground lines south of the roadway from approximate station 89+00 to 91+50. These facilities are not to be disturbed. This work was completed on **June 2, 2009**.

WINDSTREAM (Overhead and Underground Communications)
Windstream has an existing facility that was relocated on poles noted in the above mentioned Salt River Electric note. There are also underground conduits south of the roadway for the entire length of the project. These facilities are not to be disturbed. This work was completed on **June 2, 2009**.

Bullitt County Schools (Overhead Communications)
The Bullitt County School has an existing facility that was relocated on poles noted in the above mentioned Salt River Electric note. This facility is not to be disturbed. This work was completed on **June 2, 2009**.

BULLITT COUNTY
Cedar Grove Road (KY-480)
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Insight (Overhead Cable TV)
Insight has an existing facility that was relocated on poles noted in the above mentioned Salt River Electric note. This facility is not to be disturbed. This work was completed on **June 2, 2009**.

Inside Connect (Overhead Communications)
Inside Connect has an existing facility that was relocated on poles noted in the above mentioned Salt River Electric note. This facility is not to be disturbed. This work was completed on **June 2, 2009**.

LOUISVILLE WATER COMPANY
The Louisville Water Company has 10”/12” mains on the north side of the existing roadway which run east and west from approximate Station 76+53 where the New Cedar Grove Pump Station is located to approximate Station 98+14 where it turns to the south crossing the roadway to the existing pump station, a 16” main on the south side of the existing roadway from the beginning of the project area to approximate Station 98+14, a 6” main on the south side of the existing roadway from approximate Station 98+14 to approximate Station 103+38, and a 10” main on the south side of the existing roadway from approximate Station 98+14 to approximate Station 106+30. A 12” main crosses the roadway from the south to the north from the 16” main at approximate Station 63+68. Two 16” mains cross the roadway from the south to the north from the 16” main at approximate Stations 76+23 and 76+52 to the New Cedar Grove Pump Station. A 10”/12” main crosses the roadway from the north to the south at approximate Station 91+31. A 12” main crosses the roadway from the south to the north from the 16” main at approximate Station 91+87. A 6” main crosses the roadway from the south to the north from the 16” main at approximate Station 103+38. The aforementioned water mains are not to be disturbed should be located prior to work. The facility relocations consist of the relocation of four fire hydrants at approximate Stations 58+70, 82+62, 91+73 and 97+92 on the south side of the roadway. The service transfers from the 10”/12” main on the north side of the roadway to the 16” main on the south side of the roadway consist of a ¾” service at approximate Station 76+62 on the south side of the roadway, a 1” service at approximate Station 76+65 on the south side of the roadway, a 8” service at approximate Station 76+66 on the south side of the roadway, ¾” service at approximate Station 81+45 on the north side of the roadway and a 2” service at approximate Station 103+48 on the south side of the roadway. The service reconnections consist of a ¾” domestic service meter vault on the north side of the roadway at approximate Station 98+46 and reconnection of a ¾” service. This work will be in the road contract. Refer to the plans and specifications in the bid package for additional detail.

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CITY OF SHEPHERDSVILLE SEWER DISTRICT

The City of Shepherdsville Sewer District has an existing 4" sanitary sewer force main along the north side of Cedar Grove Road from the school at approximate station 103+00 to a manhole at approximate station 59+10 with a force main junction at approximate station 90+40. The force main will be replaced by a new force main from approximate station 90+42 to 63+40 and a gravity line will be added from approximate station 103+00 to 99+00 – crossing the road at that

point and joining an existing system south of the road. The existing sanitary manholes will be adjusted to grade. This work will be in the road contract. Any other sewer facilities are not to be disturbed. Refer to the plans and specifications in the bid package for additional detail.

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

The location of utilities provided in the contract documents has been furnished by the facility owners and/or by reviewing record drawings and may not be accurate. It will be the roadway contractor's responsibility to locate utilities before excavating by calling the various utility owners and by examining any supplemental information supplied by the Cabinet. If necessary, the roadway contractor shall determine the exact location and elevation of utilities by hand digging to expose utilities before excavating in the area of a utility. The cost for repair and any other associated costs for any damage to utilities caused by the roadway contractor's operations shall be borne by the roadway contractor.

BEFORE YOU DIG

THE CONTRACTOR IS INSTRUCTED TO CALL 1-800-752-6007 TO REACH KY 811, THE ONE-CALL SYSTEM FOR INFORMATION ON THE LOCATION OF EXISTING UNDERGROUND UTILITIES. THE CALL IS TO BE PLACED A MINIMUM OF TWO (2) AND NO MORE THAN TEN (10) BUSINESS DAYS PRIOR TO EXCAVATION. THE CONTRACTOR SHOULD BE AWARE THAT OWNERS OF UNDERGROUND FACILITIES ARE NOT REQUIRED TO BE MEMBERS OF THE KY 811 ONE-CALL BEFORE-U-DIG (BUD) SERVICE. THE CONTRACTOR MUST COORDINATE EXCAVATION WITH THE UTILITY OWNERS, INCLUDING THOSE WHOM DO NOT SUBSCRIBE TO KY 811. IT MAY BE NECESSARY FOR THE CONTRACTOR TO CONTACT THE COUNTY COURT CLERK TO DETERMINE WHAT UTILITY COMPANIES HAVE FACILITIES IN THE AREA.

SUPPLEMENTARY SPECIFICATIONS

KY 480
MAIN REPLACEMENT
LWC PROJECT 12651

PROJECT LIMITS

Limits of the referenced project include KY 480 from I-65 to Cedar Grove Elementary School.

PROJECT SUMMARY- BASE BID

The referenced project consists of the **supply and installation** of **1106** linear feet of 16-inch Pressure Class 350 ductile iron water main, **278** linear feet of 12-inch Pressure Class 350 ductile iron water main, **6** linear feet of 10-inch Pressure Class 350 ductile iron water main, **121** linear feet of 6-inch Pressure Class 350 ductile iron water main; **renewal/installation** of **6** fire hydrants, and the transfer or renewal of **2** customer services and to restore site, all of the above made ready for use in accordance and compliance with the contract documents.

SCOPE OF WORK

All Ductile Iron pipe and Ductile Iron pipe materials (including but not limited to fittings, gate valves, drain assemblies and air release assemblies) will be supplied and installed by the Contractor. Fire hydrant assemblies and fittings passed the valve will be furnished by LWC at its Allmond Avenue warehouse and storage yard.

The Contractor shall note that the brief scope of work itemized below does not include every task to be performed by the Contractor included in the Project. Contractor shall refer to the Contract Documents, including both the Bidder's Proposal and Project Drawings, for a detailed itemization of all work to be performed for this Project.

- Supply and install **1106** linear feet of 16-inch Pressure Class 350 ductile iron water main.

  Supply and install **278** linear feet of 12-inch Pressure Class 350 ductile iron water main.

  Supply and install **6** linear feet of 10-inch Pressure Class 350 ductile iron water main.

  Supply and install **121** linear feet of 6-inch Pressure Class 350 ductile iron water main.

- Renew or installation **6** fire hydrants.

- Transfer **1** (2") customer service.

- Renew **1** (3/4") customer service.

  The transfer and relocation of services shall include the upgrading of the meter vault and service line to meet Louisville Water Company standards. Contractor may be required to install corporation stops on the inlet and outlet sides at the specified depth. A new meter vault may be required to accommodate the Louisville Water Company meter frame and cover.

- Safeload and abandon **1149** linear feet of 6-inch asbestos cement pipe. If removal is necessary per specifications, the Contractor will be responsible for the proper handling and disposal of the AC main. Bagging and disposal of the pipe will be completed by an approved Contractor under a separate contract with the Louisville Water Company. This item is incidental to pipe construction.

- Removal of **61** linear feet of 16-inch D.P.W. pipe. The Contractor will be responsible for the proper handling and disposal of the pipe materials.

- Removal of **1047** linear feet of 12-inch P.V.C. pipe. The Contractor will be responsible for the proper handling and disposal of the pipe materials.

- Removal of **2337** linear feet of 10-inch P.V.C. pipe. The Contractor will be responsible for the proper handling and disposal of the pipe materials.

- Removal of **82** linear feet of 6-inch asbestos cement pipe. The Contractor will be responsible for the proper handling and disposal of the pipe materials.

PREQUALIFICATION CONDITIONS

- The contracting firm that is to supply and install the 16-inch diameter ductile iron pipe for LWC Project No. 12651, whether acting as the general contractor of the KTC's or as acting as a subcontractor, must be prequalified by the LWC in the category of "4"-16" Iron Pipe" and in the monetary amount, in said category, of at least $500,000.

  The contracting firm(s) that is (are) to install the services and the fire hydrants for LWC Project No. 12651, whether acting as the general contractor of the KTC's or as acting as a subcontractor, must be prequalified by the LWC in the respective category(ies) and in the monetary amount, in said category, of at least $75,000.

  The LWC contact for inquiries about prequalification status is Ms. Carol Lyons: phone, 502-569-3600, Ext. 2239; Fax 502-569-0815.

The contracting firm assigned to install the ductile iron water main need not be the same as the contracting firm assigned to install the service and fire hydrant installation aspects of work.

GENERAL INFORMATION

- Unless otherwise indicated on the project drawings or modified by these supplementary specifications, all applicable provisions of the "Louisville Water Company Technical Specifications for Standard Drawings and Pipeline Construction" (2008 Edition) shall govern work on this project. If LWC standards and specifications conflict with KTC specifications or construction notes, the contractor should ask clarification with LWC and KTC inspectors prior to taking action on the issues.

- Excavation on this project shall be unclassified.

- All permits, easements and right-of-way will be obtained by KTC. The contractor shall not start work on any property until the contractor verifies with KTC that the required permits, easements and right-of-way are secured.

- Contractor shall be responsible for locating **any and all** existing utility services prior to start of construction.

GATE VALVES

- Immediately following these Supplementary Specifications are copies of the Valve Cards that may be needed for shut-offs or as a back up for shut-offs. In accordance with Section 1.4 of the Standard Specifications, the designated valves shall be inspected prior to the start of the project and appropriate action taken to correct the problems(s) prior to the start of the construction work.

- In accordance with Section 2.1 of the Standard Specifications, unless an emergency exists, the Contractor shall not operate any valve without direct supervision or prior approval from the Construction Inspector.

- All Gate Valves shall be Iron body, resilient seat, bronze mounted, mechanical joint ends, nonrising stem, in accordance with AWWA C509 and 2-inch operating nut. Working pressure shall be 350 psi for all gate valves 16" and smaller and 250 psi for gate valves larger than 16". Manufactures shall be one of the following: Crane, Stockham, American Flow Control, M&H Valve, U.S. Pipe or approved equivalent by LWC project manager.

- All Gate Valves shall be Mechanical Joint with coupled gland end (non-friction restraint) and restrained per manufacturer specifications. Megalugs are a friction type restraint and are not approved. All line valves shall be treated as dead end for the joint length calculations. All Gate Valves shall be installed per LWC Technical

Specifications and Standard Drawings for Pipeline Construction Section 6.8 Setting Cast Iron Valves and Fittings and LWC Drawing 1400.

- Gate valves shall be epoxy coated per AWWA C116. All other fittings can be epoxy coated per AWWA C116 or Asphaltic coated per the Supplementary Specifications, Ductile Iron Pipe and Fittings, Part 2-Products, 2.01 Materials F. Coating.

- Unless otherwise specified or approved by the Project Manager, all newly installed gate valves shall maintain a minimum 12” of cover as measured from the top of ground elevation to the top nut elevation.

TRAFFIC CONTROL

- Traffic control shall be provided by the Contractor in accordance with the *Manual for Uniform Traffic Control Devices* (MUTCD), and in accordance with any applicable roadway traffic control requirements.

- This project will be bid and constructed in conjunction with the Kentucky Transportation Cabinet's (KTC) Highway 480 (Cedar Grove Road) project. Therefore, no KTC permits will be required. All other permits will be obtained by KTC and shall be verified by contractor prior to construction.

- Outside the designated work hours, all travel lanes shall be temporarily restored and reopened to traffic, and all construction vehicles, equipment, and personnel removed from the roadway. The Contractor is further reminded that all street plates located in "traveled" lanes must be recessed even with the finished grade of the roadway, and that final restoration shall be completed within 72 hours of the excavation in accordance with Section 5.4.3.1 of the LWC Technical Specification and Standard Drawings for Pipeline Construction latest revision.

- Specific traffic control signage referencing lane blockages, flaggers, etc. shall be removed from the site or covered when not in use. Signs that provide general messages such as "Construction Ahead" shall be left in place throughout the completion of this project.

- All construction vehicles shall be legally parked.

- The Contractor shall be responsible for establishing temporary "No Parking" zones. The zones shall be confined to the immediate work area and appropriate transition zones, and shall be limited in duration to the length of time work is actually performed in that area. In establishing "No Parking" zones, the parking needs of the area businesses and residents shall be considered.

WORK SCHEDULE

- Water main installation shall be performed one section at a time with tie-in and service work completed and restoration begun before proceeding to the next section.

- With the approval of the LWC Construction Inspector, pipeline installation may proceed to a subsequent section only while actively decontaminating and flushing, and while awaiting pressure and disinfection test results. Once acceptable test results have been obtained, work efforts shall be refocused to the prior section until all tie-ins and service work are completed and final restoration is initiated.

- LWC observes the following holidays; New Years Day, Martin Luther King Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving (Thursday and Friday), Christmas Eve, and Christmas Day. Work shall not be performed on any of these holidays without two weeks prior notice and approval from the KTC and LWC Project Managers.

  In addition to these holidays, the Contractor shall be required to shutdown for two weeks during the year-end holiday period between **November 25** to **November 28, 2010** and **December 20, 2010** to **January 2, 2011**. During this no-work period, all equipment, personnel, and materials shall be removed from the work area, all excavations shall be backfilled and restored, and restoration efforts shall be completed.

- The Contractor shall anticipate the need to work after-hours and on weekends to accommodate critical customer needs, and to avoid logistical problems involving work in proximity to driveways and parking lots and in heavily traveled intersections.

  Any such work will be considered incidental to the project and no additional compensation will be provided. As with holidays and any work planned for weekends or after normal work hours shall be pre-approved by the Project Manager.

- Normal work hours for this project shall be 8:00 AM to 5:00 PM.

- In the case of an emergency, the Contractor shall immediately notify the LWC Construction Inspector, Radio Room, and Customer Service. 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.

PIPELINE CONSTRUCTION

- 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 BUD, trees, and other existing site improvements.

  Field modifications to the proposed pipeline alignment may be necessary to avoid or minimize the effects of these 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. The Contractor will be compensated in accordance with the supplementary unit prices for any additional pipeline footage (horizontal or vertical) installed to avoid obstructions, or other site improvements.

- 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. With prior notification and approval from the Construction Inspector, the depth of burial may be reduced to a minimum of 30 inches, or increased to a maximum of 72 inches, for short durations (10 feet or less) to avoid these conflicts. The Chief Engineer of the Louisville Water Company shall approve situations requiring a depth of burial outside these maximum and minimum limits or of a longer duration.

  When replacing the existing asbestos cement water mains, the contractor will have to excavate further than the existing depth to insure proper burial depth. This will be considered incidental to the pipe installation, and additional payment will not be made for the excavation.

  The Contractor is cautioned that OSHA trench safety standards apply to <u>all</u> excavations on this project.

- Unless otherwise specified or approved by the LWC Project Manager or the LWC Construction Inspector, all other pipe replacement work in this project scope shall be constructed with LWC-supplied Pressure Class 350 ductile iron water main pipe using “lay-in-place” or traditional trenching techniques. All new ductile iron pipe and fittings shall be encapsulated in two layers of blue polywrap.

  Care shall be exercised while handling pipe during wrapping to ensure that the asphalt coating or cement lining on the pipe is not damaged or disturbed. Forklifts or other material handling equipment shall not be inserted into the pipe unless the inserted equipment is protected with a non-abrasive material (cardboard tubing, etc.).

  Polywrap shall be thoroughly inspected for cuts, rips or tears prior to burial. Small defects may be repaired with polytape. Larger tears and imperfections shall be covered with an additional layer of polywrap.

- 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 Construction Inspector or 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.

- When installing main within the dripline of any tree with a diameter of 6 inches or larger, the root system shall be bored. The cost of the tree bore shall be

considered incidental to the installation of the pipeline, and no extra compensation will be provided.

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.

SPECIAL CONSIDERATIONS FOR ASBESTOS-CEMENT PIPE

- A portion of this project will involve work on or near asbestos-containing (AC) water mains. Contractor or asbestos sub-contractor shall do this work (see requirements below). Asbestos has been identified as a hazardous material. Pipe cutting or other construction activities that result in the uncontrolled release of asbestos fibers shall be performed only by personnel specially trained and certified in the handling and disposal of asbestos-containing material.

  A copy of the LWC Asbestos Cement (AC) Pipe Cutting Procedures is included as an attachment **(See Attachment A)** to these specifications. These standards shall be followed when AC pipe is cut or when construction activities result in the uncontrolled release of asbestos fibers.

  As an alternate to cutting AC pipe, the Contractor may elect to break or unbolt the couplings and remove an entire joint without cutting the pipe. If removed in this manner, an asbestos worker will not be required.

  Disposal of the pipe, whether cut or unbolted, shall be handled in accordance with the Asbestos Cement (AC) Pipe Cutting Procedure.

  The contractor or asbestos sub-contractor shall meet the following requirements:

  - Insurance coverages shall not contain any exclusions or limitations on coverage of asbestos related work.
  - Division of Air Quality (DAQ) License and DAQ trained/certified workers.
  - Proper transport and disposal of AC pipe including preparation of waste manifest.

  All of this is considered incidental to the project and no additional compensation shall be provided.

  Provided the attached LWC Asbestos Cement (AC) Pipe Cutting Procedures are followed, air testing will not be required.

  Safeloading and Capping of Asbestos Cement (AC) Pipe: If the AC pipe is left in the ground, the safeloading and capping of AC pipe shall be in accordance with the

Kentucky Transportation Cabinets Standard Specifications for Road and Bridge Construction – Section 708.

In addition to the standard procedure outlined in the KTC specification, the contractor shall supply and install insulated No. 10 stranded copper wire to be used as tracer wire for the abandonment operations. Two wires shall be fed through the AC pipe and attached to a test-station or valve box located at each new break in the line for locating the abandoned main in the future **(See Attachment B)**.

Test stations will be installed flush to (final) grade in a vertical manner located in the ground above the water main. Each test station may have multiple tracing wire(s) routed in to the test station and attached to the board on the underside of the test station lid. The wire shall be of sufficient length to extend at least 12-inches above the finished grade of the test station, but not excessive.

Test stations shall be Handley Industries, Inc. model number T42N or approved equal. Generally, test stations shall be approximately 6 inches in diameter and with a cast iron lid and collar and 1½ to 2 feet long, mounted on a rugged plastic key tube with sufficient strength to support vehicular traffic. The lid shall have a locking design with a 5 point nut measuring 7/8" diameter. The lid shall be cast with words "Water" using letters not less than 1-inch high and shall be painted blue from the factory. Test stations shall contain a test board with a minimum of 2 posts terminals connected by a shunt.

Test holes shall be excavated at 100 foot intervals along the existing pipeline alignment to visually inspect that the abandoned water main has been completely filled with grout/flowable fill per KTC's specifications. The LWC construction Inspector shall be present to observe this process.

DELIVERY AND OFF-LOADING

- All pipe shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the Contractor.

- Each pipe shipment shall be inspected prior to uploading to see if the load has shifted or otherwise been damaged. Each pipe shipment shall be checked for quantity and proper pipe size, color and type.

- Pipe shall be loaded, off-loaded, and otherwise handled in accordance with AWWA M23, and all of the pipe supplier's guidelines shall be followed.

- Off-loading devices such as chains, wire rope, chokers, or other pipe handling implements that may scratch, nick, cut or gouge the pipe are strictly prohibited.

- During removal and handling, be sure that the pipe does not strike anything. Significant impact could cause damage, particularly during cold weather.

- If appropriate unloading equipment is not available, pipe may be unloaded by removing individual pieces. Care should be taken to insure that pipe is not dropped or damaged. Pipe should be carefully lowered, not dropped, from trucks.

HANDLING AND STORAGE

- Any length of pip[e showing a crack or which as received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damaged may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of pipe shall be determined by the Project Manager.

- Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the LWC Inspector or Project Manager.

- 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 form dirt and foreign matter.

- 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.

- Pipe shall not be stored on-site for periods greater than 3 months or as approved by the LWC Inspector and Project Manager.

- Pipe shall be stored and stacked per the pipe supplier’s guidelines and as approved the by the LWC Inspector and Project Manager.

PREPARATION PRIOR TO MAKING CONNECTIONS INTO EXISTING PIPING SYSTEMS

- Approximate locations for existing piping systems are shown in the construction documents. Prior to making connections into existing piping systems, the Contractor shall:
    - Field verify location, size, piping material and piping system of the existing pipe.

- Obtain all required fittings, which may include saddles, sleeve type couplings, flanges, tees, or other as shown in the construction documents.
- Have installed all temporary pumps and/or pipe in accordance with established connection plans.

- Unless otherwise specified or approved by the Project Manager or the LWC Construction Inspector, new piping systems shall be completely assembled and successfully tested prior to making connections into existing piping systems.

PIPE SYSTEM CONNECTIONS

- Pipe connections shall be installed per applicable standards and regulations, per the connection manufacturer's guidelines and as indicated in the construction documents subject to approval by the LWC Inspector and Project Manager. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's guidelines subject to approval by the LWC Inspector and Project Manager.

- Unless otherwise specified or approved by the Project Manager or the LWC Construction Inspector, friction type restraints are not approved for restraining any 16" or larger ductile iron water main and connections with the exception of joints located in casing pipe. All joint connections located in casing shall utilize field lock restraints. All fittings for pipe larger than 16" which require restraints shall be MJ coupled joint with standard accessories i.e. restrained with non-friction restraint methods. Push on flex-ring end of MJ with Megalugs are not approved for the conditions outlined above. Working pressure for the purpose of calculating restraining joint length shall be 350 psi for water main 16" and smaller and 250 psi for water main greater than 16".

TRENCH CONSTRUCTION

- Pipeline bedding and initial backfill shall consist of DGA, pit-run sand or manufactured sand; selected, placed, and compacted in accordance with Section 7 of the LWC Technical Specifications and Standard Drawing No. 4300 –Common Backfill and Lawn Restoration.

- When under *pavement (streets, driveways, and entrances)*, the final backfill material shall consist of DGA or pit-run sand placed to within 9-1/2 inches of the final grade elevation, followed by the placement of an 8-inch concrete cap and a 1-1/2 inch asphalt surface.

  When under *sidewalks,* the final backfill may consist of on-site excavated material, provided the material is free of objectionable constituents such as large rock, asphalt, concrete, organic material and demolition debris. This backfill material shall

be placed and compacted to the subgrade elevation, followed by the placement of a 6-inch layer of DGA and the concrete sidewalk. The surface of the DGA shall be level and free from surface depressions or potholes, and may serve as a temporary sidewalk until the concrete sidewalk is completed.

When under *grassed areas*, the final backfill may consist of on-site excavated material, provided the material is free of objectionable constituents such as large rock, asphalt, concrete, organic material, and demolition debris.

ACCEPTANCE TESTING

- Filling and disinfecting of all new water mains shall be accomplished in accordance with Section 8 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

- All new ductile iron pipe installations longer than 50 feet shall be pig cleaned in accordance with Section 8.3.1 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision. Ductile iron pipe sections shorter than 50 feet in length may require pig cleaning at the direction of the LWC Construction Inspector. The Contractor shall supply pigs for the ductile iron pipe. Pigs shall be used one time and discarded. The Contractor will collaborate with the LWC Inspector to determine break points for "pigging."

- Disinfection of all new mains shall be accomplished in accordance with Section 8.2.2 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision. The contractor shall supply liquid sodium hypochlorite for disinfection of water mains as needed.

- Filling of the water main shall be done in accordance with Section 8.2.1 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

- Discharge of hyperchlorinated water and dechlorination with calcium thiosulfate or other approved method shall be accomplished in accordance with Section 8.4 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

- Since there is no sanitary sewer system in the immediate project area for the discharge of hyperchlorinated and potable water associated with these operations, discharge of the hyperchlorinated water and the potable water flush will need to be de-chlorinated in accordance with Kentucky Division of Water requirements. The LWC Construction Inspector will be responsible for providing the equipment and neutralizing materials necessary to complete this operation. The Contractor shall provide the necessary personnel and equipment to make site accessible for the Inspector. The Contractor should expect a delay of 2-4

days to complete the de-chlorination and flushing operation. In accordance with Section O, the Contractor may proceed to the next section of pipe while awaiting the completion of these activities.

- Pressure testing of the new ductile iron water mains shall be performed in accordance with Section 8.5 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

CUSTOMER SERVICES

- Prior to beginning any work that requires a shutdown of the main or an individual service, the work crew shall make a thorough evaluation of each service connection and meter vault within the limits of the shutdown. Discrepancies between the field conditions and the Project Plans shall be discussed with the Construction Inspector.

- 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.

- 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.

- When reconnecting renewed services to deteriorated galvanized service lines, the Contractor shall make at least <u>two</u> attempts to connect the tailpiece to the galvanized line. To make the second attempt, it may be necessary to encroach onto private property. The encroachment shall be limited to a maximum of three feet beyond the property line.

  When the second attempt proves unsuccessful, the Contractor shall immediately notify the LWC Construction Inspector, obtain a representative sample of the deteriorated line, and assist the LWC Construction Inspector in providing a temporary service connection. The Louisville Water Company will supply the hose and fittings to complete the temporary connection.

- Flushing of renewed services shall be initiated immediately after the renewed service is reconnected, and continued for a minimum of 60 minutes. The Contractor shall be responsible for supplying all hoses, fixtures, and couplings needed to

perform the lead service flush. The Contractor shall be responsible for proper disposal of the flush water.

It shall be the responsibility of the Contractor to identify, on a daily basis, those services that will require renewal the following workday. Residences requiring service renewals shall be investigated to determine if an outside spigot is accessible, available and functioning properly. The Contractor shall notify the LWC Construction Inspector when an outside spigot is not accessible, not available, or not properly functioning.

Services that cannot be flushed externally by the Contractor or internally by the customer at the time of the renewal, may be renewed, but shall be left in the **"**off**"** position immediately after the renewal is completed. The Contractor shall immediately notify the LWC Construction Inspector when any service is turned "off".

- New heavy frame and covers shall be used for meter vaults located in or relocated to paved areas or to areas subject to vehicular traffic.

- Temporary water lines installed for the pipe replacement operations on this project shall be installed and maintained in accordance with the following specifications.

  The Contractor shall furnish all piping, fittings, and connections necessary to install a temporary water supply line for the customers located in the affected area.
  Temporary lines that cross roadways or driveways shall be buried. In the event that construction work will be done during freezing weather conditions, temporary water mains shall be buried.

  All temporary lines attached to fire hydrants shall be constructed to allow easy access to the hydrant should a fire emergency arise. Such connections shall be compatible with the standards of the City of Shepherdsville Fire Department.
  The piping, fittings, and hoses used to construct the temporary system and to make connections to customer services shall be FDA or NSF approved for human consumption.
  All piping and hoses shall be clean, watertight, and compatible with the flow and pressure requirements of the LWC distribution system.

  The Contractor shall disinfect the temporary piping and hoses prior to connection to any customer service. Similar to the acceptance of a water main, temporary water lines will require sampling and testing for chlorine, turbidity, taste, odor, and bacteria.

  The Contractor shall be responsible for making all connections to the distribution system and the individual customer services.

- Service discontinues may be indicated at several locations on the Project Plans. Prior to discontinuing a service, the site shall be thoroughly investigated by the LWC

Construction Inspector. If the service requires reconnection (transfer or renewal), the Contractor shall make the appropriate connection. The Contractor shall be compensated in accordance with the supplementary unit pricing.

Services shall be discontinued in accordance with Section 10.11 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision, except that the discontinuation of services at the main will not be required for a main that is scheduled for abandonment as part of this project.

At some locations, meters and meter vaults have already been removed and/or abandoned, but the service lines and taps may still be in place and live. The Contractor shall exercise caution in the vicinity of these services to reduce the risk of "pulling" a live corporation.

RESTORATION

- 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.

- Sidewalks requiring replacement shall be constructed of Class A (3,500 psi) concrete with 6"x6"x10x10 Welded Wire Fabric (WWF) located at mid-depth. In lieu of WWF, the Contractor may utilize a fiber-filled concrete mix. The completed sidewalk finish shall match the existing width and finish. Thickness of the sidewalk shall be 5 inches except at driveway crossings where the thickness shall be increased to 6 inches. Expansion joints shall be provided at driveway crossings and on approximate 25-foot spacing. Tooled joints shall be provided on 4-6 foot spacing. Wheelchair accessible ramps shall be provided as required by the City of Louisville Specifications, Bullitt County Specifications, Americans with Disabilities Act and all other authorized agencies.

- All pavement excavations shall include a 12" cutback except where flowable fill is used for the final backfill (See Backfill and Paving Restoration Detail No.'s 4000 and 4100). For asphalt restoration, the cutback shall extend a minimum of 12 inches beyond the edges of the trench. For concrete pavement, the cutback shall extend a minimum of 12 inches beyond the edges of the trench unless an existing crack or joint is located within six (6) feet of the edge of the trench. If a crack or joint is located within six feet, a new joint shall be established at that location. If a crack is encountered, the Contractor shall provide a clean straight cut behind the crack.
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- Prior to repaving, Contractor shall repair any/all traffic loops that may have been damaged during construction. All striping, stop bars, etc. are to be replaced once road has been repaved using Kentucky Dept. of Highways approved materials.

- In lieu of making two sets of saw cuts, the Contractor may elect to make one set of saw cuts at the cut-back location and excavate all existing pavement materials down to the subgrade elevation for the full width of the cut-back. The pipeline trench can then be further excavated along the centerline of the cutback trench. If this option is exercised, the Contractor shall place the concrete cap over the completed pipe installation, on a daily basis, to ensure that the concrete cap bears on "undisturbed" material outside the limits of the pipeline trench.

  Unless otherwise directed, the asphalt pavement shall be a minimum of 1-1/2 inches in thickness and shall extend to the outer edge of the cutback.

- Crossing of any blueline or intermittent blueline creek as shown on the appropriate USGS map shall be in accordance with section 1 of the LWC Technical Specifications and Standard Drawing No. 4501-Creek Crossing with Concrete Cap and shall conform to all other standards contained in the LWC Technical Specifications and Project Drawings.

POST CONSTRUCTION

- 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.

EROSION CONTROL MEASURES

- LWC hereby gives notice to Contractors (and, Contractors are directed to provide notice to their employees, agents, assigns and Contractor's subcontractors, their employees, agents and assigns, and Contractor's suppliers, their employees, agents and assigns on the project site) that LWC expects proper care to be taken with regard to erosion control. This project area is not under the jurisdiction of the Jefferson County Erosion Control Ordinance, and the City of Shepherdsville does not have an erosion control ordinance. However, LWC expects the Contractor to utilize MSD's typical details for the installation of silt fence and rock check dams, as necessary, throughout the project area. LWC reserves the right to request additional silt control measures at no additional cost to LWC or KTC.

- Contractor shall refer to Louisville Water Company "Technical Specifications and Standard Drawings for Pipeline Construction (2008 Edition)", section 1.3.5 Soil Erosion Control Permit.

- 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.

WARRANTY

- 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.

- 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.

- 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.

- 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.

- 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 materials shall be warranted for five (5) years after the iron pipeline is placed in service. Satisfactory performance of the iron water main and appurtenances, as they relate to installation, shall be warranted for two (2) years after the iron 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.

- 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.

CONTROLLED BLASTING, LINE DRILLING AND PRESPLITTING

PART 1 GENERAL

1.01 WORK INCLUDED

A. This section covers the Work necessary for the use of explosives and blasting, line drilling, presplitting, cushion blasting, and controlled blasting specified herein in connection with tunneling excavation and trench excavation.

1.02 DEFINITIONS

A. Controlled Blasting: The use of explosives and blasting accessories in carefully spaced and aligned drill holes to produce a free surface or shear plane in the rock along the specified excavation surface.

B. Presplitting: The definition is the same as for Controlled Blasting except that the detonation of the presplit face or line shall be before the detonation of any production holes.

C. Line Drilling: A technique where blast holes are normally drilled within two to four diameters of one another. The unloaded, closely-spaced drill holes will be used to cause a crack in the rock surface between them.

D. Air Blast: A transient air pressure impulse generated by explosions.

E. Blaster in Charge: Person authorized to act on behalf of Contractor and licensed by the state or local regulatory agency to possess, transport, and use explosives.

F. Peak Particle Velocity: Maximum of three velocity components measured in three mutually perpendicular directions at a point.

G. Fly Rock Debris that is ejected or propelled through air by blast.

H. Frequency: Ground vibration oscillation at peak event, expressed in Hertz.

1.03 GENERAL

A. The blast design and field execution shall be developed such that the maximum peak particle velocity measured at the nearest structure, pipe, or utility, shall not exceed 2 inches per second. If the measured peak particle velocity exceeds 2 inches per second, the blast design shall be modified at no additional cost to the Owner.

B. No quantities of explosives larger than required for one day's Work shall be stored onsite at any time. Unused explosives shall be removed from site at the end of each day.

C. The rock excavation for any trench, gas main, or utility within a 20-foot distance from any existing facility, utility, pipe, power line post foundation, or structure shall be performed using mechanical tools. Beyond a distance of 20 feet, presplitting and controlled blasting may be used in lieu of mechanical methods.

D. All tunnel excavation shall be performed using mechanical tools or tunnel boring machine.

E. Provide notification to LG&E (EON) 15 days in advance of proposed blasting operations within 500 feet of an LG&E (EON) natural gas transmission pipeline or 300 feet of a natural gas distribution pipeline. This notification shall be given to the the LG&E Auburndale Operations Center, 502-333-1915 / 502-627-3282. In addition, a copy of the Blasting Submittals shall be provided to LG&E (EON) for review concurrently with submittals furnished to Owner.

F. All blasting operations shall be conducted in accordance with applicable federal statutes and regulations, Kentucky Revised Statute (KRS) 351.330, and Kentucky Administrative Regulations (KAR) 805 KAR Chapter 4.

1.04 SUBMITTALS

A. The following specific information shall be provided:

1. Permits: The Contractor shall obtain and submit to the Engineer a copy of all applicable permits for transportation, storage, and use of explosives.

2. Line Drilling Plan: The Contractor shall submit the following information for Line Drilling:

   a. Number, location, diameter, depth, and equipment used to achieve the Line Drilling.

3. Presplitting: The Contractor shall submit the following information for Line Drilling.

   a. Number, location, diameter, depth, and equipment used to achieve the Presplitting.

4. Initial Blast Designs: The Contractor shall submit the following information for initial blast design for each structure or trench excavation as appropriate:

    a. Number, location, diameter, depth, and inclination of drill holes on a scaled drawing of the excavation; type of explosive, location, and weight of charge in each hole; total amount of explosives in the blast and maximum charge per delay period; delay arrangement showing delay period in each hole; and the method of detonation, including the type of blasting cap, character, and source of firing current.

    b. Modifications to subsequent blast designs based on initial blast data shall be submitted prior to implementation of such modifications.

5. Blasting Monitoring Plan: Prior to commencement of blasting operations, the Contractor shall submit, in writing, Contractor's plan for monitoring operations to assure compliance with the vibration limitation. As a minimum, this plan shall provide for the following:

    a. The Contractor's recommended vibration limitation.

    b. Name of a qualified blast vibration specialist who will be responsible for establishing the monitoring program and interpretation of the vibration readings.

    c. Names of the trained personnel provided to operate the equipment and interpret the recordings.

    d. The-type and model of blasting seismograph proposed for use.

    e. The number and location of proposed monitoring stations.

    f. The Methods to be used to coordinate blast detonation with recording of the blast; and the steps to be taken if blasting vibrations equal or exceed the vibration limits.

6. Blasting Records: The Contractor shall submit within 24 hours of blasting, the following blasting records and information for each blast detonated:

    a. Location of the blast in relation to project stationing or elevation.

    b. Date and time of loading and detonation of the blast.

    c. Name of person in responsible charge of the loading and firing and blaster permit number.

d. Signature and title of person making recording entries.

e. Details of each blast according to the criteria listed above for the initial blast design.

f. Vibration records including the location and distance of the seismograph geophones to the blast and to the nearest structure, and the measured peak particle velocity.

g. Air blast overpressure records, if appropriate.

h. Comments by the blaster in charge regarding any misfires, unusual results, or unusual effects.

i. Any other records required by the Kentucky Board of Housing, Buildings, and Construction, and other federal or local codes and regulations.

7. Pre-Blast Condition Survey: As part of the Existing Facilities Survey, the Contractor shall arrange for a pre-blast survey of any nearby buildings, structures, or utilities within 100-foot diameter of the blast area, which may potentially be at risk from blasting damage. The survey method used shall be acceptable to the Contractor's insurance company and the LWC Inspector and Project Manager. The 100-foot diameter blast zone shall be included in the Pre-construction video recording in accordance with Section 1.6 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision. The Contractor shall be responsible for any damage resulting from blasting. The pre-blast survey records shall be made available to the Engineer for review and record. Occupants of local buildings shall be notified by the Contractor prior to the commencement of blasting. The survey shall be conducted and certified by a professional engineer (structural or geotechnical) licensed in the Commonwealth of Kentucky, and is to be submitted within 60 days of Notice to Proceed.

PART 3 EXECUTION

3.01 AREAS WHERE BLASTING IS PROHIBITED

A. No blasting shall be allowed within 20 feet of any existing building, structure, foundation of power line post; basin, buried utilities, or liquid conveyance pipes or lines including, but not limited to, water lines, sewerage lines, gas main, force mains, chemical conveyance lines and process lines, or any new facilities. A greater no blasting zone distance should be used if utility companies specify a distance greater than 20 feet. No blasting zone shall require removal by mechanical means.

B. Only if permitted by the Engineer, the Contractor shall completely remove all overburden soil and loose or decomposed rock along the top of the excavation for a distance of at least 15 feet beyond the end of the production hole drilling limits, or to the end of the excavation, before drilling the presplitting holes. In such case, the Contractor shall use adequate blasting mats to prevent fly rocks.

C. Potentially dangerous boulders or other material located beyond the excavation limits shall also be removed as directed by the Engineer.

D. Tunneled crossings.

3.02 HOURS OF OPERATION

A Blasting Work shall not be permitted between 6:00 p.m. and 8:00 a.m., nor on Saturdays, Sundays, or holidays observed by the Owner without the written permission of the Owner.

3.03 WARNING SYSTEM

A. The Contractor shall erect signboards of adequate size stating that blasting operations are taking place in the area, and such signs shall be clearly visible at all points of access to the area. All requirements of the Kentucky Board of Housing, Buildings, and Construction shall be followed.

B. Contractor shall be responsible to notify of blasting to all concerned parties and neighbors.

3.04 SAFEGUARDS

A. Explosives shall be handled, transported, used, controlled, stored, and monitored as prescribed by the most stringent of the rules promulgated by the Kentucky Board of Housing, Buildings, and Construction, the provisions specified in the OSHA Standards, these Specifications, and local codes and ordinances.

B. The first blasting operation at each location shall be monitored by the Contractor as a test case, and the proper drilling pattern and amount and type of explosive to be subsequently used shall be determined from the vibration record. Vibration recording shall be continued for every blast round. Changes in drilling patterns, delay sequence, and amount of explosives shall be made when records indicate vibration in excess of the established vibration limits.

C. Before the firing of any blast in areas where flying material may result in damage to persons, property, or the Work, the rock to be blasted shall be covered with suitable matting or material to prevent the debris from flying. After a blast is fired, all loose and shattered rock or other loose material which may endanger the structure or the workers shall be removed and the excavation made safe before proceeding with the Work. Before drilling of new round, the face shall be thoroughly cleaned and examined for holes containing unexploded powder. Blasting techniques shall be developed and improved as Work progresses. The fact that the removal of loose or shattered rock or other loose material may enlarge the excavation beyond the required limits shall not relieve the Contractor of responsibility for such removal and subsequent additional backfill.

D. Check for Misfires: The Contractor shall observe the entire blast area for a minimum of 5 minutes following. a blast to guard against rock fall before commencing Work in the cut. The 5-minute delay between blasting and allowing anyone but the blaster to enter the area is needed to make sure that no misfires have occurred. During the 5-minute delay, it is the blaster's responsibility to go into the shot area and check all holes to make sure that they have detonated. If any holes have not fired, these misfires will be handled by the blaster before others enter the Work area. The Engineer shall, at all times, have the authority to prohibit or halt the Contractor's blasting operations if it is apparent that, through the methods being employed, the required slopes are not being obtained in a stable condition or the safety and convenience of the traveling public is being jeopardized.

E. Misfire Handling Procedures: Should a visual inspection indicate that complete detonation of all charges did not place, the following procedures will be followed:

1. If the system was energized and no charges fired for electric systems, the lead wire will be tested for continuity prior to inspection of the remainder of the blast. For nonelectric systems, the lead-in or tube will be checked to make sure that detonation has entered the blast area.

2. Should an inspection of the electrical trunkline or lead-in tubing line indicate that there is a break in the line or if the tubing did not fire, then the system will be repaired and the blast refired. If the inspection indicates that the trunkline has fired and misfired charges remain, the blaster will do the following:

a. The blaster will exclude all employees except those necessary to rectify the problem.

b. Traffic will be closed if a premature explosion could be a hazard to traffic on nearby roads.

c. The blaster will correct the misfire in a safe manner. If the misfire poses problems that cannot be safely corrected by the blaster, a consultant or an explosive company representative skilled in the art of correcting misfires will be called to rectify the problem.

F. In the event damage to any structure occurs due to blasting Work, all blasting shall be suspended immediately and a report shall be made to the Engineer. Before being allowed to resume blasting operations, the Contractor may be required to adjust the hole pattern, delay sequence, weight of explosives, or take other appropriate Measures to control the effects of blasting.

3.05 VIBRATION LIMITATION AND RECORDING

A. All blasting shall be done in such a manner so that vibrations reaching adjacent structures and facilities are within specified limits. Vibrations shall be recorded using an approved seismograph(s) for each blasting occurrence. Recording of blast vibrations and interpretation of the results shall be done by trained personnel under the direction of a qualified blast vibration specialist. If any blast results in vibration(s) in excess of the vibrations permitted herein or causes any damage to any structure, basin, underground utility or liquid conveyance pipes or lines including, but not limited to, water lines, sewerage lines, forcemains, chemical conveyance lines and process fines, regardless of the vibration or other measurements, the Contractor shall cease all blasting activity until the Contractor submits information to the satisfaction of the Owner explaining the reason for the exceedance or damage and setting forth measures that will be taken to prevent a recurrence of the exceedance or damage. Any property damage shall be restored to its original condition to the satisfaction of the Property Owner, LWC Inspector and Project Manager at no cost to the Property Owner or LWC.

B. Vibrations shall be monitored by measuring the Peak Particle Velocity in the vicinity of blasting. Peak Particle Velocity is defined as a maximum of the three velocity components, measured in three mutually perpendicular directions at any Point by an appropriate instrument. The maximum Peak Particle Velocity occurring on, or at, the structure closest to the point of blasting operations, shall be established by the Contractor. However, the established Peak Particle Velocity shall not exceed 2 inches per second. The Engineer reserves the right to record his own vibration measurements.

C. The blast vibration specialist shall supervise establishment of the program and initial operation of the equipment; visit the job at least at monthly intervals or more often if requested by the Engineer, inspect the recording program and interpretation of records; check the operations; and, on a monthly basis, provide the Engineer with a comprehensive written report of the vibration measuring program and an analysis of the blasting and measurement program.

D. All blasting shall be completed prior to the start of any new construction.

3.06 BLASTING RECORDS

A. The Contractor shall maintain a record of each blast detonated. This record shall include the information listed above in section 1.04 Submittals.

ROCK EXCAVATION BY MECHANICAL METHODS

1.01 DEFINITIONS

A. Common Excavation: Removal of material not classified as rock excavation.

B. Rock Excavation:

1. General: Removal of solid material which by actual demonstration cannot, in Engineer's opinion, be reasonably loosened or ripped by single-tooth, hydraulically operated ripper mounted on crawler tractor in good condition and rated at minimum 410 flywheel horsepower, and which must be systematically drilled and blasted or broken by power-operated hammer, hydraulic rock breaker, expansive compounds, or other similar means prior to removal.

2. Trench: Removal of solid material which by actual demonstration cannot, in Engineer's opinion, be reasonably excavated with minimum 180-horsepower, and minimum size of Cat 245 or equivalent backhoe in good condition and equipped with manufacturer's standard boom, two rippers, and rock points or similar approved equipment; and which must be systematically drilled and blasted or broken by power-operated hammer, hydraulic rock breaker, expansive compounds, or other similar means prior to removal.

3. Term "rock excavation" indicates removal of solid material, as specified above, and does not necessarily correspond to "rock' as implied by names of geologic formations.

4. Removal of boulders larger than 1/2 cubic yard will be classified as rock excavation, if drilling and blasting or breaking them apart with power-operated hammer, hydraulic rock breaker, expansive compounds, or other similar means is both necessary and actually used for their removal.

5. All excavation shall be considered part of the lump sum unit price.

WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required for furnishing and installing all piping and appurtenances specified herein.

1.02 SUBMITTALS

A. A notarized certification shall be furnished for all pipe and fittings that verifies compliance with all applicable specifications.

B. The requirement for this certification does not eliminate the need for shop drawings submittals.

C. Thrust Restraint for Restrained Joints: Details including materials, sizes, assembly ratings, pipe attachment methods, and design calculations signed and sealed by a registered professional engineer and rated for Ductile Iron pressure class 250 for pipe larger than 16” and pressure class 350 for pipe 16” and smaller.

1.03 EXISTING CONDITIONS

A. The existing piping shown on the Contract Drawings is based on the best available information. The Engineer makes no guarantee as to the accuracy of the locations or type of piping depicted. All new piping which ties into existing lines must be made compatible with that piping.

B. So that piping conflicts may be avoided, Contractor shall open up his trench well ahead of the pipe laying operation to confirm exact locations of existing piping before installing any new piping.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51, latest revision, pressure class 350 for all pipe 16” and smaller and pressure class 250 for all pipe larger than 16”, with push-on joints unless otherwise noted on Drawings.

B. The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with ANSI/AWWA C104/A21.4, latest revision. Thickness of the lining shall be as set forth in the ANSI/AWWA C104/A21.4 specification unless otherwise directed by the Engineer. The exterior of all pipe, unless otherwise specified, shall receive either coal tar or asphalt base coating a minimum of 1 mil thick.

C. Each piece of pipe shall bear the manufacturer's name or trademark, the year in which it was produced and the letters "DI" or the word "DUCTILE". Pipe manufacturer shall furnish notarized certificate of compliance to the above AWWA or ANSI specifications.

D. Fittings shall be ductile iron and have mechanical-joints in accordance with ANSI/AWWA C110/A21.10, latest revision and shall conform to the details and dimensions shown therein. Fittings shall have interior cement-mortar lining as specified hereinbefore for the pipe. Compact ductile iron fittings meeting the requirements of ANSI/AWWA C153/A21.53, latest revision, will also be acceptable.

E. Joints for ductile iron pipe and fittings, as described hereinbefore, shall be rubber-gasket joints and be in accordance with ANSI/AWWA C111/A21.11, latest revision. Joints shall have the same pressure rating as the pipe or fitting of which they are a part. Joints shall be installed per the manufacturer’s recommendations.

F. Provide ANSI/AWWA C110/A21.10 mechanical joint plugs and locked or restrained pipe joints where indicated on Drawings. Fittings under structures shall be mechanical joint with retainer glands.

2.02 COUPLING AND ADAPTORS

A. Flexible couplings shall be of the sleeve type with a middle ring, two wedge shaped resilient gaskets at each end, two follower rings, and a set of steel trackhead bolts. The middle ring shall be flared at each end to receive the wedge portion of the gaskets. The follower rings shall confine the outer

ends of the gaskets, and tightening of the bolts shall cause the follower rings to compress the gaskets against the pipe surface, forming a leak-proof seal. Flexible couplings shall be steel with minimum wall thickness of the middle ring or sleeve installed on pipe being 5/16-inch for pipe smaller than 10 inches, 3/8-inch for pipe 10 inches or larger. The minimum length of the middle ring shall be 5-inches for pipe sizes up to 10 inches and 7 inches for pipe 10 inches to 30 inches. The pipe stop shall be removed. Gaskets shall be suitable for 350 psi pressure rating for all pipe 16" and smaller or at rated working pressure of the connecting pipe. Gaskets shall be suitable for 250 psi pressure rating for all pipe larger than 16" or at rated working pressure of the connecting pipe. Couplings shall be harnessed and be designed for 350 psi for all pipes 16" and smaller and 250 psi for all pipes larger than 16".

B. Flanged adapters shall have one end suitable for bolting to a pipe flange and the other end of flexible coupling similar to that described hereinbefore. All pressure piping with couplings or adapters shall be harnessed with full threaded rods spanning across the couplings or adapters. The adapters shall be furnished with bolts of an approved corrosion resistant steel alloy, extending to the adjacent pipe flanges. Flanges on flanged adapter (unless otherwise indicated or required) shall be faced and drilled ANSI B16.1 Class 125.

C. Flexible couplings and flanged adapters shall be as manufactured by Dresser, Rockwell, or equal, per the following, unless otherwise specified and/or noted on the Drawings:

D. Steel couplings for joining same size, plain-end, steel, cast iron, and PVC plastic pipe -

Dresser	Rockwell
Style 138	4ll

E. Transition couplings for joining pipe of different outside diameters-

Dresser	Rockwell
Style 162 (4"-12")	413 steel (2"-24")
Style 62 (2"-24")	415 steel (6"-48")
	433 cast (2"-16")
	435 cast (2"-12")

F. Flanged adapters for joining plain-end pipe to flanged pipe, fittings, valves and equipment.

Dresser	Rockwell
Style 127 cast (3"-12")	912 cast (3"-12")
Style 128 steel (3"-48" C.I. Pipe)	913 steel (3" and larger)
Style 128 steel (2"-96" steel pipe)	

2.03 CONNECTION OF NEW WATER MAINS TO EXISTING SYSTEM

A. The Contractor shall connect the new water main to existing water main where shown on the Drawings or directed by the Engineer, and shall furnish all necessary equipment and materials required to complete the connection.

PART 3 - EXECUTION

3.01 SETTLEMENT OF TRENCHES

A. Whenever lines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these rights-of-way within five (5) years from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Owner.

3.02 UNPAVED DRIVEWAY (CRUSHED STONE) SURFACE REPLACEMENT

A. The Contractor shall replace those sections of existing driveways and parking areas required to be removed to install the pipe lines under this contract. Contractor shall construct same to the original lines and grades and in such manner as to leave all such surfaces in fully as good or better condition than that which existed prior to the operations. See also Trench Construction.

B. Material for backfilling of the pipeline trench shall be dense-graded aggregate in accordance with the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

3.03 REMOVING AND REPLACING CONCRETE CURB AND GUTTER OR SIDEWALK

A. The Contractor shall remove the curb and gutter or sidewalk when encountered when required for laying the pipe. Only that portion of the curb and gutter or sidewalk needed to lay the pipe shall be removed.

B. Where concrete curb and gutter or sidewalk is removed or disturbed during the construction work, it shall be replaced, using 3000 psi concrete, in fully as good or better condition than that which existed prior to the Contractor's operation.

3.04 REPLACEMENT OF EXISTING MAIL BOXES, CULVERTS, CLOTHES LINE POSTS, FENCES AND OTHER SUCH FACILITIES

A. Existing mail boxes, drainage culverts, clothes line posts, fences and the like shall not be damaged or disturbed unless necessary, in which case, they shall be replaced in as good condition as found as quickly as possible. Existing materials shall be reused in replacing such facilities when materials have not been damaged by the Contractor's operations. Existing

facilities damaged by Contractor's operation shall be replaced with new materials of the same type at the Contractor's expense. Work in this category is not a pay item.

B. Replacement of paved drainage ditches within highway right-of-way shall be accomplished in accordance with Department of Transportation specifications. See also Trench Construction Section.

3.05 CEMENT CONCRETE DRIVEWAY REPLACEMENT

A. Wherever cement concrete driveways are removed, they shall be reconstructed to the original lines and grades and in such manner as to leave all such surfaces in fully as good or better condition than existed prior to the operation.

B. The existing concrete paving shall be sawed or cut to straight edges 12-inches outside the edges of the trench or broken out to an existing joint, as directed by the Engineer. The concrete pavement shall be equal to the existing pavement thickness but not less than 6-inches in thickness for driveways.

C. Pavement shall be reinforced with 6 x 6 #10-10 wire mesh and shall be constructed with 3000 psi concrete.

3.06 CLEAN UP

A. Upon completion of installation of the piping and appurtenances, the Contractor shall remove all debris and surplus construction materials resulting from the Work. The Contractor shall grade the ground along each side of pipe trenches in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line.

3.07 DISINFECTION OF POTABLE WATER LINES

A. The new potable waterlines shall not be placed in service--either temporarily or permanently--until they have been thoroughly disinfected in accordance with the requirements stated in “Louisville Water Company Technical Specifications and Standard Drawings for Pipeline Construction 2008” and to the satisfaction of the Project Manager.

DUCTILE IRON PIPE AND FITTINGS

PART 1 – GENERAL

1.01 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American Association of State Highway and Transportation Officials (AASHTO):

   a. T99, Standard Specification for the Moisture-Density Relations of Soils Using a 2.5 kg (5.5LB) Hammer and a 305mm (12 in.) Drop.

2. ASTM International (ASTM)

   a. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
   b. A563, Standard Specification for Carbon and Alloy Steel Nuts.
   c. B16.21, Standard Specification for Nonmetallic Flat Gaskets for Pipe Flanges.
   d. D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
   e. D1330, Standard Specification for Rubber Sheet Gaskets.
   f. D1922, Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method.
   g. D2000, Standard Classification System for Rubber Products in Automotive Applications.
   h. D4976, Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

3. American Water Works Association (AWWA):

   a. C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.
   b. C105, Polyethylene Encasement for Ductile Iron Pipe Systems.
   c. C110, Ductile Iron and Grey Iron-Fittings, 3-inch through 48-inch.
   d. C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
   e. C115, Flanged Ductile Iron Pipe with Ductile Iron and Grey Iron Fittings.
   f. C150, Thickness Design of Ductile-Iron Pipe.
   g. C151, Ductile Iron Pipe. Centrifugally Cast, for Water.

h. C153, Ductile Iron Compact Fittings, 3-inch through 24-inch for Water Service.
i. C207, Steel Pipe Flanges for Waterworks Service, Sizes 4-inch Through 144-inch (100mm through 3600mm).
j. C600, Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.02 SUBMITTALS

A. Action Submittals:

1. Shop Drawings/Lay Schedules: Provide catalog cuts of pipe and fittings in accordance with the requirements of this section.

   a. Certified dimensional drawings of all valves, fittings, and appurtenances.
   b. Certified dimensional drawings of joints, showing the manufacturer's allowable deflections.
   c. Copies of the manufacturer's approved installation instructions for the types of joints being used.
   d. For pipe 20 inches in diameter and larger, provide lay schedule(s) that indicate the type of pipe, fitting, or special, and the location and the direction of each of these components. In addition, the lay schedule shall include: the pipe stationing at all changes in grade or horizontal alignment; all elements of curves and bends, both in horizontal and vertical alignment; and the limits of each reach of restrained joints or concrete encasement.

2. Certifications: Furnish a certified affidavit of compliance for all pipe and other products or materials furnished under this section.

B. Informational Submittals:

1. Manufacturer's Certificate of Compliance, in accordance with the Company’s “Terms and Conditions” Section, stating that inspections and specified tests have been made and that results thereby comply with company standard requirements.

2. Field Hydrostatic Testing Plan: Submit at least 15 days prior to testing and at minimum, include the following:

   a. Testing dates.
   b. Piping systems and section(s) to be tested.
   c. Method of isolation.
   d. Method of conveying water from source to system being tested.

e. Calculation of maximum allowable leakage for piping section(s) to be tested.

3. Certifications of Calibration: Approved testing laboratory certificate if pressure gauge for hydrostatic test has been previously used. If pressure gauge is new, no certificate is required.

4. Test documentation form and results.

1.03 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping:

1. Ship with padded, curved and fitted bolsters and padded tie-downs.

2. Flanges: Securely attach metal, hardboard, or wood protectors over entire gasket surface.

B. Storage, Cold Weather: Elevate products to prevent pipe from freezing to ground.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Pipe:

1. General:

   a. Centrifugally cast, grade 60-42-10 iron.
   b. Meet requirements of AWWA CI50, C153 and C111.
   c. Lined and coated as specified.
   d. Where shown on the Drawings, furnish petroleum-resistant gaskets constructed of acrylonitrile butadiene (nitrile).

2. Minimum Pipe Class: Pipe shall conform to AWWA 0151. All pipe shall have a minimum pressure rating as indicated below unless otherwise noted in the Contract Documents.

Pipe Size (inches)	Pressure Class (psi)
4 to 16	350
18 to 24	250

3. Pipe shall be new and recently manufactured. Refurbished pipe shall not be provided.

4. Pipe shall be manufactured in the U.S. Fittings and bends, if manufactured overseas, shall bear the name of the pipe manufacturer providing the pipe for the Project.

B. Joints:

1. Push-On Joint: Rated at minimum working pressure equal to pipe material design.

2. Restrained Joint:

   a. Manufactured proprietary joint that mechanically restrains pipe to adjoining pipe.
   b. Manufacturers and Products:

1) American Cast Iron Pipe; Flex-Ring and Lok-Ring.
2) U.S. Pipe; TR Flex.

3. Mechanical Wedge Action Type Joint:

   a. Use only in areas where adjoining to fixed points where laying length is determined in field.
   b. Prior to purchase and installation, type and application of this joint shall be approved by Engineer.

4. Use of set screws for restraint or field-lock gaskets shall not be allowed.

5. Flanged Joint: Threaded 250 psi working pressure ductile iron flanges conforming to AWWA C115.

C. Fittings:

1. Ductile Iron, Push-On, Flanged or Restrained Joint: In accordance with AWWA C153, 250 psi minimum working pressure for 3- to 24-inch fittings and AWWA C111.

2. Mechanical Joint Fittings: In accordance with AWWA C111.

3. Fittings shall be new and recently manufactured. Refurbished fittings will not be accepted.

D. Welded Outlet: Only weld to pipe in manufacturer's shop.

E. Lining: Pipe and fittings for clean water applications shall be cement lined in accordance with AWWA C104.

F. Coating: Asphaltic type, I mil thick, in accordance with AWWA C151, C115, C110 and C153.

G. Polyethylene Encasement:

1. Virgin polyethylene raw material conforming to requirements of ASTM D4976.

2. Elongation: 800 percent, minimum, in machine and transverse direction (ASTM D882).

3. Tensile Strength: 3,600 psi, minimum.

4. Dielectric Strength: 800V per mil-thickness, minimum.

5. Propagation Tear Resistance: 250-grams force (gf), minimum, in machine and transverse direction (ASTM D1922).

6. Tube form, conforming to AWWA C105.

7. Film shall have minimum thickness of 0.008 inch (8 mil).

8. All ductile iron pipe and joints shall be wrapped in polyethylene encasement.

H. Bolting:

1. Bolts for flanged connections shall be carbon steel, ASTM A307, Grade A hex bolts and ASTM A563, Grade A hex head nuts.

2. Bolts for grooved end connections shall be manufacturer's standard.

I. Gaskets:

1. Push-on Joint Standard styrene butadiene copolymer (SBR), or as recommended by manufacturer.

2. Restrained Joint: SBR, or as recommended by manufacturer.

3. Flanged: Toroseal or approved equal.

J. Stulling (Strutting): Manufacturer shall provide stulling if the contractor's handling, shipping or installation loads will exceed the design service loads for the pipe. Adequate strutting shall be designed and provided by pipe manufacturer on all specials, fittings, and straight pipe so as to avoid damage to the pipe and fittings during handling, storage, hauling, and installation.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Inspect pipe and fittings to ensure no cracked, broken, or otherwise defective materials are being used.

3.02 PREPARATION

A. Trench Grade:

1. Grade bottom of trench by hand to specified line and grade, with proper allowance for pipe thickness and pipe base, when specified. Trench bottom shall form a continuous and uniform bearing and support for pipe between bell holes.

2. Before laying each section of pipe, check grade and correct irregularities found. Grade may be disturbed for removal of lifting tackle.

B. Pipe Bedding: As specified in LWC “Technical Specifications” 2008

1. Install to full width of trench, from the following depths below bottom to springline of pipe:

   a. Pipe Larger than 12-Inch Diameter: 6 to 8 inches.

2. Compact to at least 95 percent of its maximum density as determined by AASHTO T99.

3. Ensure that no unfilled or uncompacted areas occur beneath pipe.

C. Bell (Joint) Holes: At each joint, dig bell holes of ample dimensions in bottom of trench, and at sides where necessary, to permit joint to be made properly and to permit easy visual inspection of entire joint.

3.03 INSTALLATION

A. General:

1. Provide and use proper implements, tools, and facilities for safe and proper prosecution of Work.

2. Lower pipe, fittings, and appurtenances into trench, piece by piece, by means of a crane, slings, or other suitable tools and equipment, in

such a manner as to prevent damage to pipe materials, protective coatings and linings.

3. Do not drop or dump pipe materials into trench.

B. Cleaning Pipe and Fittings:

1. Remove lumps, blisters, and excess coal tar coating from bell and spigot ends of each pipe. Wire brush outside of spigot and inside of bell and wipe clean, dry, and free from oil and grease before pipe is laid.

2. Wipe ends of mechanical joint pipe and fittings and of rubber gasket joint pipe and fittings clean of dirt, grease, and foreign matter.

C. Laying Pipe:

1. Direction of Laying: Lay pipe with bell end facing in direction of laying. For lines on an appreciable slope, face bells upgrade at discretion of Engineer.

2. Mechanical Joint, Push-On Joint, and Restrained Joint Pipe: After first length of pipe is installed in trench, secure pipe in place with approved backfill material tamped under and along sides to prevent movement. Keep ends clear of backfill. After each section is jointed, place backfill as specified to prevent movement.

3. Take precautions necessary to prevent floating of pipe prior to completion of backfill operation.

4. When using movable trench shield, take necessary precautions to prevent pipe joints from pulling apart when moving shield ahead.

5. Do not allow foreign material to enter pipe while it is being placed in trench.

6. Close and block open end of last laid section of pipe to prevent entry of foreign material or creep of gasketed joints when laying operations are not in progress, at close of day's work, or whenever workers are absent from job.

D. Joining Push-On Joint Pipe and Mechanical Joint Fittings:

1. Join pipe with push-on joints and mechanical joint fittings in strict accordance with manufacturer's recommendations.

2. Provide special tools and devices, such as, special jacks, chokers, and similar items required for installation.

3. Lubricate pipe gaskets using lubricant furnished by pipe manufacturer. No substitutes will be permitted.

4. Clean ends of fittings of dirt, mud, and foreign matter by washing with water and scrubbing with a wire brush, after which, slip gland and gasket on plain end of pipe. If necessary, lubricate end of pipe to facilitate sliding gasket in place, then guide fitting onto spigot of pipe previously laid.

E. Cutting Pipe:

1. General: Cut pipe for inserting valves, fittings, or closure pieces in a neat and workmanlike manner without damaging pipe or lining and so as to leave a smooth end, at right angles to axis of pipe.

2. Pipe: Cut pipe with milling type cutter or saw. Do not flame cut.

3. Dressing Cut Ends: Dress cut end of mechanical joint pipe to remove sharp edges or projections, which may damage rubber gasket. Dress cut ends of push-on joint pipe by beveling, as recommended by manufacturer.

F. Field Welding:

1. Use of field welded outlets will not be allowed. Welding for outlets shall be performed only in pipe manufacturer's shop.

2. Field installed outlets may be installed with saddle approved by Engineer. Opening in pipe shall be machined cut and not with cutting torch.

3. Field welding of bars for restrained joint systems will not be allowed. All welding shall be performed in pipe manufacturer's shop.

G. Line and Grade:

1. Minimum Pipe Cover: 3.5 feet, unless otherwise indicated.

2. No high points will be allowed between air valves.

3. Maintain pipe grade between centerline elevations to provide minimum clearance at air valve locations of 6 feet from existing ground surface to top of pipe.

4. Install air valves as shown and field verify intervening low points. When field conditions warrant, exceptions may be made upon approval of Engineer.

5. Deviations exceeding 6 inches from specified line or 1 inch from specified grade will not be allowed without express approval of Engineer.

6. Pipeline sections that are not installed to elevations shown or installed as approved by Engineer shall be reinstalled to proper elevation.

H. Thrust Restraint:

1. Restrained joints.

2. Thrust blocks.

I. Backfill For Pipe Zone: Place and compact pipe zone material as follows:

1. After pipe bedding is in place, place imported granular material at approximately same rate on each side of pipe.

2. Place such that backfill elevation of is approximately equal on each side of pipe at all times.

3. Place to the following depths:

a. Pipe Larger than 12. Inches in Diameter: 6 to 12 inches above top of pipe barrel.

4. Compact material to top of pipe zone in 6-inch lifts, to at least 95 percent of its maximum density, as determined by AASHTO T99.

J. Polyethylene Encasement:

1. Encase all pipe, fittings, and valves in accordance with AWWA C105, Method A.

2. Cut polyethylene tube approximately 2 feet longer than pipe length.

3. Slip tube around pipe; centering to provide 1-foot overlap on each adjacent section.

4. Pull encasement to take out slack and wrap snug around pipe.

5. Secure overlap in place and fold at quarter points of pipe length.

6. Wrap and tape encasement snug around fittings and valves.

3.04 HYDROSTATIC TESTING

A. Pipeline Hydrostatic Test:

1. General:

a. Notify Engineer in writing 5 days in advance of testing. Perform testing in presence of Engineer.
b. Test newly installed pipelines. Using water as test medium, pipes shall successfully pass a leakage test prior to acceptance.
c. Furnish testing equipment and perform tests in manner satisfactory to Engineer. Testing equipment shall provide observable and accurate measurements of leakage under specified conditions.
d. Isolate new pipelines that are connected to existing pipelines.
e. Conduct tests on entire pipeline after trench has been backfilled. Testing may be done prior to placement of asphaltic concrete or roadway structural section.

REINFORCED CONCRETE

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Concrete Institute (ACI):

   a. 301, Specifications for Structural Concrete for Buildings.
   b. 305R, Hot Weather Concreting.
   c. 306R, Cold Weather Concreting.
   d. 318/318R, Building Code Requirements for Structural Concrete and Commentary.
   e. 347, Formwork for Concrete.

2. ASTM International (ASTM):

   a. A497, Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
   b. A615, Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   c. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   d. C33, Standard Specification for Concrete Aggregates.
   e. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   f. C94, Standard Specification for Ready-Mixed Concrete.
   g. C150, Standard Specification for Portland Cement.
   h. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
   i. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   j. C494, Standard Specification for Chemical Admixtures for Concrete.
   k. C618, Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
   l. C989, Standard Specification for Ground Granulated Blast-Furnace Slag.
   m. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

3. Concrete Reinforcing Steel Institute (CRSI):

a. Manual of Standard Practice.
b. Recommended Practice for Placing Reinforcing Bars.

1.02 SUBMITTALS

A. Action Submittals:

1. Reinforcing steel in accordance with CRSI Manual of Standard Practice.
2. Product Data: Curing compound and nonshrink grout.
3. Complete data on the concrete mix, including aggregate gradations and admixtures, in accordance with ASTM C94.

B. Informational Submittals:

1. Manufacturer's application instructions for curing compound.
2. Ready-mix delivery tickets for each truck in accordance with ASTM C94.

1.03 QUALITY ASSURANCE

A. Formwork: Unless otherwise specified, follow the recommendations of ACI 347.

B. Concrete and Reinforcement: Unless otherwise specified, meet the requirements of ACI 301 and ACI 318/318R.

C. Hot Weather Concreting: Conform to ACI 305R.

D. Cold Weather Concreting: Conform to ACI 306R.

1.04 ENVIRONMENTAL REQUIREMENTS

A. Do not place Concrete when the ambient temperature is below 40 degrees F or approaching 40 degrees F and air temperature less than 40 degrees F for the first 7 days, without special protection to keep Concrete above 40 degrees F.

B. Do not use curing compound where solvents in the curing compounds are prohibited by state or federal air quality laws. Use only water curing methods.

PART 2 PRODUCTS

2.01 CONCRETE

A. Ready-mixed meeting ASTM C94, Option C.

B. Portland Cement: ASTM C150, Type II.

C. Admixtures:

1. Air-Entraining: ASTM C260.

2. Water-Reducing: ASTM C494, Type A or Type D.

3. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 120.

D. Mix Design:

1. Minimum Allowable 28 day Compressive Field Strength: 4,000 psi when cured and tested in accordance with ASTM C31 and ASTM C39.

2. Water-cement Ratio: 0.48, maximum.

3. Cement Content: 540 pounds per cubic yard, minimum.

4. Coarse Aggregate Size: 1 inch and smaller.

5. Slump Range: 3 inches to 5 inches.

6. Air Entrainment: Between 3 and 6 percent by volume. Use 4 percent minimum for concrete placed under requirements of cold weather concreting.

7. Water Reducers: Use in all concrete.

8. Ground Granulated Blast-Furnace Slag: May be used at Contractor's option as a partial replacement for portland cement, maximum 30 percent replacement by weight of the total cementitious content.

E. Mixing: Minimum 70 and maximum 270 revolutions of mixing drum. Nonagitating equipment is not allowed.

F. Class "A" Concrete: As specified in Section 601 of Standard Specifications for Road and Bridge Construction, Kentucky Transportation Cabinet, 2004.

2.02 REINFORCING STEEL

A. Deformed Bars: ASTM A615, Grade 60.

B. Welded Wire Fabric: ASTM A497.

2.03 ANCILLARY MATERIALS

A. Premolded Joint Filler: ASTM D994, 1/2 inch thick, or as shown.

B. Nonshrink Grout:

1. Prepackaged natural aggregate grout requiring only the addition of water.

2. Minimum Compressive Strength at Fluid Consistency: 3,500 psi at 1 day, 4,500 psi at 3 days, and 7,500 psi at 28 days.

3. Color: To match concrete.

4. Manufacturers and Products:

a. Master Builder Co., Cleveland, OH; Master Flow 928.
b. Euclid Chemical Co., Cleveland, OH; Hi flow Grout.

C. Curing Compound:

1. Water based, high solids content nonyellowing curing compound meeting requirements of ASTM C309 and ASTM C1315.

a. Moisture Loss: 0.40 kg/square meter/72 hours maximum.
b. Capable of meeting moisture retention at manufacturer's specified application rate.

2. Manufacturers and Products:

a. Chemrex, Inc., Shakopee, MN; Masterkure.
b. Euclid Chemical Co., Cleveland, OH; Super Diamond Clear VOX.
c. WR Meadows, Inc., Hampshire, IL; VOCOMP 30.
d. Vexcon Chemical, Inc.; Philadelphia, PA; Starseal 1315.
e. Dayton Superior; Safe Cure and Seal 30%.

PART 3 EXECUTION

3.01 FORMWORK

A. Form Materials:

1. Use hard plastic finished plywood for exposed areas, and new shiplap or plywood for unexposed areas.

2. Earth cuts may be used for forming footings.

B. Form Ties:

1. Fixed conical or spherical type inserts that remain in contact with forming material and allow for dry packing of form tie holes.

2. Ties shall withstand pressures and limit deflection of forms to acceptable limits.

3. Wire ties are not acceptable.

C. Construction:

1. In accordance with ACI 347.

2. Make joints tight to prevent escape of mortar and to avoid formation of fins.

3. Brace as required to prevent distortion during concrete placement.

4. On exposed surfaces locate form ties in uniform pattern or as shown.

5. Construct so ties remain embedded in the wall with no metal within 1 inch of concrete surface when forms, inserts, and tie ends are removed.

D. Form Removal:

1. Remove after concrete has attained 28 day strength, or approval is obtained in writing from Engineer.

2. Remove forms with care to prevent scarring and damaging the surface.

3. Prior to form removal, provide thermal protection for concrete being placed under the requirements of cold weather concreting.

3.02 PLACING REINFORCING STEEL

A. Unless otherwise specified, place reinforcing steel in accordance with CRSI Recommended Practice for Placing Reinforcing Bars.

B. Splices and Laps:

1. Top Bars: Horizontal bars placed such that 12 inches of fresh concrete is cast below in single placement.

2. Horizontal wall bars are considered top bars.

3. Lap top bars 48 diameters or minimum 24 inches.

4. Lap all other bars 38 diameters or minimum 18 inches.

5. Tie splices with 18 gauge annealed wire as specified in CRSI Standard.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 301.

B. Prior to placing concrete, remove water from excavation and debris and foreign material from forms. Check reinforcing steel for proper placement and correct discrepancies.

C. Before depositing new concrete on old concrete, clean surface using sandblast or bushhammer or other mechanical means to obtain a 1/4 inch rough profile, and pour a cement-sand grout to minimum depth of 1/2 inch over surface. Proportion 1 part cement to 2.5 parts sand by weight.

D. Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or steel above, and in layers not over 2 feet deep. Place within 1 1/2 hours after adding cement to mix.

E. Eight feet maximum vertical drop to final placement, when not guided with chutes or other devices to prevent segregation due to impact with reinforcing.

3.04 COMPACTION

A. Vibrate concrete as follows:

1. Apply approved vibrator at points spaced not farther apart than vibrator's effective radius.

2. Apply close enough to forms to vibrate surface effectively but not damage form surfaces.

3. Vibrate until concrete becomes uniformly plastic.

4. Vibrator must penetrate fresh placed concrete and into previous layer of fresh concrete below.

3.05 CONSTRUCTION JOINTS

A. Locate as shown or as approved.

B. Maximum Spacing Between Construction Joints: 40 feet.

3.06 FINISHING

A. Floor Slabs and Tops of Walls:

1. Screed surfaces to true level planes.

2. After initial water has been absorbed, float with wood float and trowel with steel trowel to smooth finish free from trowel marks.

3. Do not absorb wet spots with neat cement.

B. Unexposed Slab Surfaces: Screed to true surface, bull float with wood float, and wood trowel to seal surface.

C. Tolerances: Floors shall not vary from level or true plane more than 1/4 inch in 10 feet when measured with a straightedge.

D. Exterior Slabs and Sidewalks:

1. Bull float with wood float, wood trowel, and lightly trowel with steel trowel.

2. Finish with broom to obtain nonskid surface.

3. Finish exposed edges with steel edging tool.

4. Mark walks transversely at 5 foot intervals with jointing tool.

3.07 FINISHING AND PATCHING FORMED SURFACES

A. Cut out honeycombed and defective areas.

B. Cut edges perpendicular to surface at least 1 inch deep. Do not feather edges. Soak area with water for 24 hours, then allow surface to drain free of standing water.

C. Patch with color-matched nonshrink grout.

D. Finish surfaces to match adjacent concrete.

E. Cure nonshrink grout in accordance with grout manufacturer's instructions.

F. Fill form tie holes with nonshrink grout.

3.08 PROTECTION AND CURING

A. Protect fresh concrete from direct rays of sunlight, drying winds, and wash by rain.

B. Keep concrete slabs continuously wet for a 7 day period. Intermittent wetting is not acceptable.

C. Use curing compound only where approved by Engineer. Use only water curing where additional finishes such as seaters, hardeners, painting, or other special coatings are required. Cure formed surfaces with curing compound applied in accordance with manufacturer’s directions as soon as forms are removed and finishing is completed.

D. Remove and replace concrete damaged by freezing.

3.09 FIELD TESTS

A. Evaluation of Concrete Field Strength: In accordance with ACI 318/318R.

PRECAST CONCRETE VAULTS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. American Society for Testing and Materials (ASTM):

a. C913, Standard Specification for Precast Concrete Water and Wastewater Structures.
b. C923, Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
c. C990, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

1.02 SUBMITTALS

A. Shop Drawings:

1. Details of construction and product data.

2. Design calculations prepared and stamped by an experienced professional engineer registered in the Commonwealth of Kentucky.

3. Concrete mix designs.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide all labor, materials, and equipment necessary to accomplish the Work specified in this section.

B. Precast concrete vaults shall be watertight to prevent any ground or surface water from entering the structure.

C. Precast concrete sections shall be supplied (by the precast manufacturer) with lifting holes for lifting and assembly of sections.

D. The number of section joints for the precast concrete vaults shall be held to a minimum. The minimum heights of sections shall be 4 feet, 0 inches, except top section where the minimum height is 1 foot, 0 inches.

2.02 CONCRETE

A. As specified in Reinforced Concrete Section.

2.03 NONSHRINK GROUT

A. As specified in Reinforced Concrete Section.

2.04 REINFORCING STEEL

A. As specified in Reinforced Concrete Section.

2.05 PRECAST RECTANGULAR SECTIONS

A. Precast Vault Shape: Riser sections shall be a four-sided box with open top and bottom. Base sections shall have a base slab that is cast monolithically with the walls. Top slabs can be either cast integrally with upper riser section or cast separately.

B. Dimensions: Vault dimensions shall be as shown on the Drawings.

C. Design Criteria: Design in accordance with ASTM C913 for the design loads shown on the Drawings.

D. Joints: Each section shall have a male and female end with not less than 1 1/2 inch concrete overlap. Each section shall have a preplaced plastic gasket cemented to the joint surface. All joints shall be watertight.

2.06 PREFORMED PLASTIC GASKETS

A. Provide on all joints.

B. Meet requirements of ASTM C990.

C. Manufacturers and Products:

1. Hamilton Kent of Nevada, Sparks, NV; Kent-Seal No. 2.

2. Henry Company, Houston, TX; Ram-Nek.

2.07 RESILIENT MANHOLE/PIPE CONNECTORS

A. Meet requirements of ASTM C923.

B. Manufacturers:

1. “Kor N Seal” flexible rubber boot with stainless steel accessories as manufactured by NPC, Inc., Milford, New Hampshire.

2. “Z LOK XP” or “A LOK” flexible connectors as manufactured by A LOK Products, Inc., Tullytown, PA.

2.08 ACCESS HATCHES

A. Access hatches shall be cast integrally with top slabs.

PART 3 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. Excavation and Backfill shall be in accordance with Section 5 and 7 of the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision.

B. Contractor shall remove and keep all water clear from the excavation.

C. Contractor shall place an 8 inch minimum layer of base rock to undisturbed earth.

D. Contractor shall thoroughly compact base rock with a mechanical vibrating or power tamper.

E. Backfill around vaults shall be granular fill.

3.02 PLACING PRECAST SECTIONS

A. Preparation of Base: Install base rock so that the first precast section has a uniform bearing throughout its circumference.

B. Thoroughly clean ends of sections to be joined.

C. Joints: Contractor shall install in accordance with manufacturer's instructions.

D. Preformed Plastic Gaskets: Contractor shall install preformed plastic gaskets at each joint in accordance with manufacturer's instructions.

E. Contractor shall ensure that the final assembly is both watertight and meets the requirements shown on the Drawings.

F. Lifting Holes: Lifting holes shall be plugged with a rubber plug and sealed with nonshrink grout.

3.03 RESILIENT MANHOLE/PIPE CONNECTORS

A. Provide at valve operator-to-vault connections.

B. Install in accordance with manufacturer's instructions.

AIR AND VACUUM RELEASE VALVE ASSEMBLIES

PART 1 – GENERAL

1.01 REFERENCES

A.The following is a list of standards which may be referenced in this section:

1. American Society of Mechanical Engineers (ASME):

    a. B16.1, Cast Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250.
    b. B36.10M, Welded and Seamless Wrought Steel Pipe.
    c. B36.19M, Stainless Steel Pipe.
    d. Boiler and Pressure Vessel Code.

2. American Water Works Association (AWWA):

    a. C209, Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines.
    b. C214, Tape Coating Systems for the Exterior of Steel Water Pipelines.
    c. C220, Stainless Steel Pipe, 4 In. (100 mm) and Larger.
    d. C500, Metal-Seated Gate Valves for Water Supply Service.
    e. C504, Rubber-Seated Butterfly Valves.
    f. C507, Ball Valves, 6 In. Through 48 In. (150 mm Through 1200 mm)
    g. C509, Resilient-Seated Gate Valves for Water Supply Service.
    h. C512, Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service.
    i. C550, Protective Epoxy Interior Coatings for Valves and Hydrants.
    j. C800, Underground Service Line Valves and Fittings.

3. ASTM International (ASTM):

    a. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    b. B43, Standard Specification for Seamless Red Brass Pipe, Standard Sizes.
    c. C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.

d. D1785 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

4. Environmental Protection Agency (EPA): Safe Drinking Water Act.

1.02 SUBMITTALS

A. Action Submittals:

1. Product data sheets for make and model.

2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.

3. Maximum recommended test pressure; maximum and minimum recommended working pressures of air valves, isolation valves, flanges, connecting piping, and fittings.

4. Recommended seating materials for specified operating pressures.

B. Informational Submittals:

1. Manufacturers' Instructions:

a. Installation and testing of products specified.
b. Pipeline tapping and service saddle installation.

2. Operation and maintenance data.

3. Affidavit of Compliance that materials comply with the requirements of the EPA Safe Drinking Water Act and other federal, state, and local requirements.

4. Manufacturer's Certificate of Proper Installation.

PART 2 – PRODUCTS

2.01 AIR VALVES

A. General

1. Air release, air/vacuum, and combination air valves shall conform to AWWA C512.

2. Exterior of air valves shall be coated in accordance with AWWA C550.

3. Interior of air valves shall be coated in accordance with AWWA C550.

4. Air valves shall be factory tested in accordance with AWWA C512.

5. Suitable for operating pressures between 45 and 115 psi.

B. Combination Air Valve, Water Service, 1 Inch to 16 Inches:

1. Suitable for water service.

2. Combines operating features of air and vacuum valve, and air release valve.

   a. Air and vacuum portion to automatically exhaust air during filling of system and allow air to re-enter during draining or when vacuum occurs.
   b. Air release portion to automatically exhaust entrained air that accumulates in system.

3. Single body or dual body.

4. Air/water Inlet: NPT.

5. Air Outlet: NPT.

6. Rated 250 psi working pressure; cast iron, ductile iron, or steel body, cover with stainless steel float and trim.

7. Manufacturers and Products:

   a. APCO Valve and Primer Corp.; Series 150C.
   b. Val-Matic Valve; Series 206C.
   c. Vent-O-Mat; Series RBX.

2.02 CONNECTION TO MAINLINE

A. Flanged Outlet: Factory installed.

2.03 ISOLATION VALVES

A. Gate Valve in accordance with the LWC Technical Specifications and Standard Drawings for Pipeline Construction latest revision and this document.

2.04 PIPING BETWEEN MAINLINE AND AIR. VALVE, AND PIPING FOR AIR VENT

A. Brass pipe conforming to ASTM B43.

2.05 VALVE VAULT

A. Precast concrete vault with minimum dimensions of 4 feet by 5 feet or as shown on the Drawings.

2.06 ACCESSORIES

A. Insulation:

1. Cellular polystyrene, 1 inch thick.

5. Manufacturer and Product: Dow Chemical Co.; Styrofoam.

END SUPPLEMENTARY SPECIFICATIONS

ATTACHMENT A

ASBESTOS CEMENT (AC) CUTTING PROCEDURES

1. If possible, the AC pipe will be excavated from mill end to mill end and the entire section replaced.

2. If removing the entire section of pipe is impractical, an employee from the asbestos workers call-out list will be notified and assigned to perform the cutting of the AC pipe.

3. The employee performing the cutting shall wear all necessary personal protective equipment.

   - Hardhat
   - Safety shoes
   - Eye protection
   - Gloves
   - Disposable coveralls
   - Half-mask respirator with HEPA disposable filter

4. The area shall be properly demarcated with warning signs.

5. All personnel not engaged in the cutting operation shall remain a minimum of 15’ away from the work area.

6. AC pipe cutting personnel shall not enter a work area which is considered unsafe (i.e. poor traffic control, excavation protection.)

7. AC pipe cutting personnel shall use a ratchet cutter or “star” cutter to perform the cutting operation. The use of abrasive cutting wheels, saws or other cutting tools is prohibited.

8. Water suppression shall be utilized at the point of cutting.

9. The cut may be finished with a hammer and chisel when cutting tools fail to complete the cut.

10. A HEPA vacuum shall be used to remove stray asbestos fibers from the clothing of AC pipe cutting personnel.

11. The AC pipe and all waste material will be disposed of using the following procedures:

    A) Lengths of pipe exceeding 10’ may be abandoned in place.

    B) Lengths of pipe less than 10’ in length shall be double wrapped in poly-wrap, marked with appropriate warning labels and disposed of in a landfill.

    C) All disposable waste material such as coveralls, gloves and respirator filters shall be disposed of in the same manner described in (B).

12. All non-disposable cutting equipment shall be thoroughly cleaned with soap and running water.

13. All cutting personnel shall shower and change uniforms after cutting and clean-up operations are complete. All uniforms worn during the cutting operation shall be cleaned by an outside service.

14. After cutting and clean-up operations are complete, all cutting personnel shall complete the AC Pipe Cutting Report and send to the Process Owner of Assuring Employee Health & Safety for review.

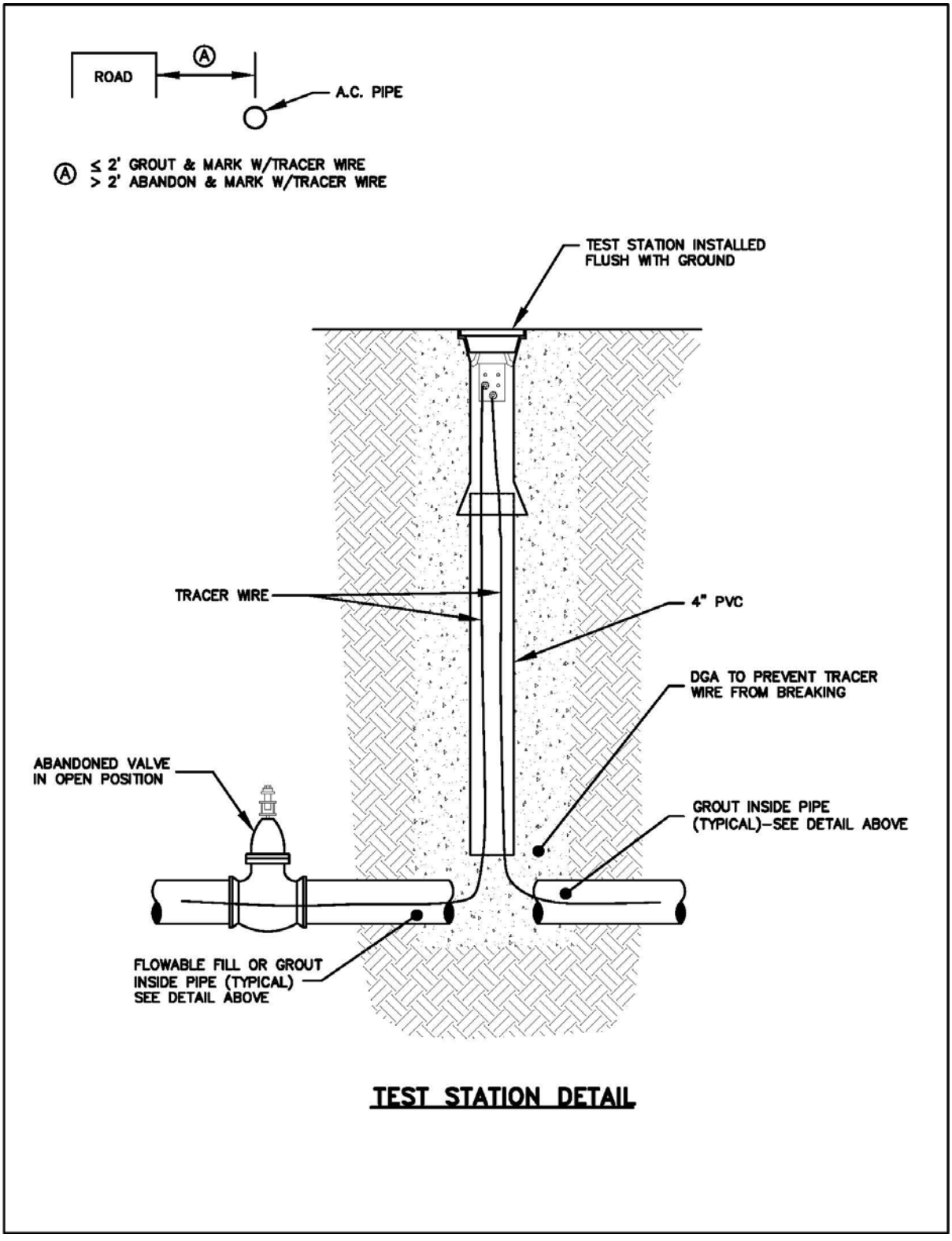
15. All LWC employees included on the asbestos workers call-out list shall adhere to requirements listed below in regard to respirator usage and maintenance.

    A) All employees must undergo an annual physical by a company assigned physician to determine physical ability to wear a respirator. The physicals will be scheduled during the employee's birthday month.

    B) All employees shall be fit tested to determine proper respirator size and fit. Beards or other facial hair which prevents proper fit of the respirator are prohibited.

    C) Employees shall perform a monthly visual inspection of the respirator to determine usability.

ATTACHMENT B – TEST STATION



TEST STATION DETAIL

CITY OF SHEPHERDSVILLE STANDARD SPECIFICATIONS

These specifications apply only to the sanitary sewer construction plans included in this contract. Any specifications that conflict with KYTC specifications will be superseded by the KYTC specifications. Only sections 1, 3, 4, and 5 of the City of Shepherdsville standard specifications apply to this contract. Those sections are included as shown in the index below.

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SECTION 5 - STRUCTURES

SECTION 1

THE 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 for Capital Improvement Projects.

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 for Capital Improvement Projects 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 for work on Capital Projects 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 for Capital Improvement Projects. Such information is furnished subject to the limitations set out in the Contract.

1.6. SURVEYING AND STAKING

1.*6.1*. Capital Improvement Projects. 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 CAPITAL IMPROVEMENT 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 on Capital Improvement Projects, 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.

1.6.1.1 Private Developments. The Developer's Engineer/Surveyor or Contractor's Engineer/Surveyor is responsible for all construction surveying, staking and checking of Line and Grade as specified in sections 1.6.2 and 1.6.3.

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 upon request. 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. 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. The Contractor's Licensed Professional Land Surveyor shall keep a record of all deviations in location or elevation of any installation from that shown on the Plans. Records shall also be kept of any significant changes in installations from shop drawings. Record drawings shall consist of red-lined shop drawings and Plans which shall be available to the CITY OF SHEPHERDSVILLE 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.

Upon completion of the Work, the Contractor's Licensed Professional Land Surveyor shall revise the CITY OF SHEPHERDSVILLE's record drawings (mylar copy) in a manner acceptable to the CITY OF SHEPHERDSVILLE and shall make a copy of those mylars on heavy bond paper for the City's use.

Where constructed information differs from the proposed information, the Licensed Professional Land Surveyor shall mark a line through the proposed information and hand letter the constructed information near the crossed-out proposed information. Proposed information shall under no circumstances be erased from the original Plans. Plan corrections must be made in the same ink as the original drawing. Lettering must be dark black 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 that has been verified to be correct as constructed. Any unverified data shall show +/- thereby indicating that information has not been verified. At a minimum, the following construction items should be reviewed and verified to produce the Final Record Drawings:

(A) Changes in alignment and stations on installations (manholes, catch basins, headwalls, retaining walls)

(B) Changes in elevation shall be made to the following (to the nearest tenth), rims, surface inlet grates, (to the nearest hundredth), inverts, paved ditch, structures, etc.

(C) Changes in Structures such as manhole collar size; all revisions in pipe sizes, lengths, slopes and angles; changes in offset distances of structures; and, for Pump Stations and Wastewater Treatment Plants (to be signed by the appropriate Licensed Professional Engineer), the following:

All revisions in pipe sizes
All revisions in electrical controls
All revisions to exhaust and ventilation systems
Pump modifications
Changes in elevation for inverts and level controls
Equipment layout modifications
Building modifications

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, stormwater, 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 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 overbreakage, 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 throught 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 SHALL NOT be 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 SHEPHERDSVILLE 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 nor 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 is 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 blueline stream or intermittent blueline 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 a 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 a 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 a 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.

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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 78ºF (25.5ºC); 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 @ 73ºF (22.7ºC), 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 ***C***115/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.

Diameter	Pipe Stiffness
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.

Diameter of Structure	Maximum Size Pipe*
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:

Physical Property	Required Value	Test Method
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.

Kentucky Transportation Cabinet

Highway District 5

And

_____(2), Construction

Kentucky Pollutant Discharge Elimination System Permit KYR10 Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

The Widening of Cedar Grove Road (KY 480) from the Northbound I-65 Ramps to Cedar Grove Elementary School

Project: PCN ## -

KyTC BMP Plan for Project PCN ## - ####

Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District 5

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 – KY 480

6. Latitude/Longitude (project mid-point) 37-degrees 58-minutes 42-seconds North / 85-degrees 41-minutes 11-seconds West

7. County - Bullitt

8. Project start date (date work will begin): (2)

9. Projected completion date: (2)

A. Site description:

1. Nature of Construction Activity – Road Widening

2. Order of major soil disturbing activities (2) and (3)

3. Projected volume of material to be moved – Approximately 21,000-cubic yards

4. Estimate of total project area (acres) – Approximately 14-acres

5. Estimate of area to be disturbed (acres) – Approximately 11-acres

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.

7. Data describing existing soil condition – New Albany Shale shall not be used in the subgrade of the road. (2)

8. Data describing existing discharge water quality (if any) – (2)

9. Receiving water name – Storm sewers from the project ultimately flow to the Salt River via Buffalo Run Creek.

10. TMDLs and Pollutants of Concern in Receiving Waters: No TMDLs were involved on this project.

11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.

12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing

and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

B. Sediment and Erosion Control Measures:

1. Plans for highway construction projects will include erosion control sheets that depict Disturbed Drainage Areas (DDAs) and related information. These plan sheets will show the existing project conditions with areas delineated by DDA within the right of way limits, the discharge points and the areas that drain to each discharge point. Project managers and designers will analyze the DDAs and identify Best Management Practices (BMPs) that are site specific. The balance of the BMPs for the project will be listed in the bid documents for selection and use by the contractor on the project with approval by the resident engineer.

   Projects that do not have DDAs annotated on the erosion control sheets will employ the same concepts for development and managing BMP plans.

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as “Do Not Disturb” until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP’s shall be for the first phase (generally Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA’s as the work progresses. <u>All DDA’s will have adequate BMP’s in place before being disturbed.</u>

3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:

   - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.
   - At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants. Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be

inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.

- Clearing and Grubbing – The following BMP's will be considered and used where appropriate.
  - Leaving areas undisturbed when possible.
  - Silt basins to provide silt volume for large areas.
  - Silt Traps Type A for small areas.
  - Silt Traps Type C in front of existing and drop inlets which are to be saved
  - Diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
  - Brush and/or other barriers to slow and/or divert runoff.
  - Silt fences to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence may be considered.
  - Temporary Mulch for areas which are not feasible for the fore mentioned types of protections.
  - Non-standard or innovative methods.
- Cut & Fill and placement of drainage structures - The BMP Plan will be modified to show additional BMP's such as:
  - Silt Traps Type B in ditches and/or drainways as they are completed
  - Silt Traps Type C in front of pipes after they are placed
  - Channel Lining
  - Erosion Control Blanket
  - Temporary mulch and/or seeding for areas where construction activities will be ceased for 21 days or more.
  - Non-standard or innovative methods
- Profile and X-Section in place – The BMP Plan will be modified to show elimination of BMP's which had to be removed and the addition of new BMP's as the roadway was shaped. Probably changes include:
  - Silt Trap Type A, Brush and/or other barriers, Temporary Mulch, and any other BMP which had to be removed for final grading to take place.
  - Additional Silt Traps Type B and Type C to be placed as final drainage patterns are put in place.
  - Additional Channel Lining and/or Erosion Control Blanket.
  - Temporary Mulch for areas where Permanent Seeding and Protection cannot be done within 21 days.
  - Special BMP's such as Karst Policy
- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
  - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to

control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.

- Permanent Seeding and Protection
- Placing Sod
- Planting trees and/or shrubs where they are included in the project

➢ BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are : NA

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 Resident Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

4. Spill Prevention

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

➢ **Good Housekeeping:**

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

- An effort will be made to store only enough product required to do the job
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site contractor will inspect daily to ensure proper use and disposal of materials onsite

➢ **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

➢ **Petroleum Products:**

Vehicles and equipment that are fueled and maintained on site will be monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products onsite will be stored in tightly sealed containers, which are clearly labeled and will be protected from exposure to weather.

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum

products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

This project (will / will not) (3) have over 1,320 gallons of petroleum products with a total capacity, sum of all containers 55 gallon capacity and larger.

- **Fertilizers:**

Fertilizers will be applied at rates prescribed by the contract, standard specifications or as directed by the resident engineer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

- **Paints:**

All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

- **Concrete Truck Washout:**

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

- **Spill Control Practices**

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

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.

- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contract with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations.

D. Other State and Local Plans

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. NA

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.

- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.

- Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. NA

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 received KyTC Grade Level II training or other qualification as prescribed by the cabinet that includes instruction concerning sediment and erosion control.
- 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 70 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

G. Non – Storm Water discharges

It is expected that non-storm water discharges may occur from the site during the construction period. Examples of non-storm water discharges include:

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

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

H. Groundwater Protection Plan (3)

This plan serves as the groundwater protection plan as required by 401 KAR 5:037.

- Contractors statement: (3)

The following activities, as enumerated by 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan, will or may be may be conducted as part of this construction project:

_____ 2. (e) land treatment or land disposal of a pollutant;

_____ 2. (f) Storing, …, or related handling of hazardous waste, solid waste or special waste, …, in tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);

_____ 2. (g) …. Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;

_____ 2. (j) Storing or related handling of road oils, dust suppressants, …., at a central location;

_____ 2. (k) Application or related handling of road oils, dust suppressants or deicing materials, (does not include use of chloride-based deicing materials applied to roads or parking lots);

KyTC BMP Plan for Project PCN ## - ####

_____ 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 PCN ## - ####

Contractor and Resident Engineer Plan certification

The contractor that is responsible for implementing this BMP plan is identified in the Project Information section of this plan.

The following certification applies to all parties that are signatory to this BMP plan:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, this plan complies with the requirements of 401 KAR 5:037. By this certification, the undersigned state that the individuals signing the plan have reviewed the terms of the plan and will implement its provisions as they pertain to ground water protection.

Resident Engineer and Contractor Certification:

(2) Resident Engineer signature

Signed _____title_____, _____
Typed or printed name[2] signature

(3) Signed _____title_____, _____
Typed or printed name[1] signature

1. Contractors Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

2. KyTC note: to be signed by the Chief District Engineer or a person designated to have the authority to sign reports by such a person (usually the resident engineer) in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601 Reference the Project Control Number (PCN) and KPDES number when one has been issued.

Sub-Contractor Certification

The following sub-contractor shall be made aware of the BMP plan and responsible for implementation of BMPs identified in this plan as follows:

Subcontractor

Name:
Address:
Address:

Phone:

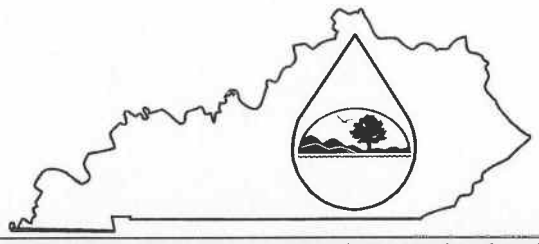
The part of BMP plan this subcontractor is responsible to implement is:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System permit that authorizes the storm water discharges, the BMP plan that has been developed to manage the quality of water to be discharged as a result of storm events associated with the construction site activity and management of non-storm water pollutant sources identified as part of this certification.

Signed _____title_____, _____
Typed or printed name[1] signature

1. Sub Contractor Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

KPDES FORM NOI-SW



Kentucky Pollutant Discharge Elimination System (KPDES)

Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity Under the KPDES General Permit

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by a KPDES permit issued for storm water discharges associated with industrial activity. Becoming a permittee obligates such discharger to comply with the terms and conditions of the permit.

ALL NECESSARY INFORMATION MUST BE PROVIDED ON THIS FORM (See Instructions on back)

I. Facility Operator Information

Name:	KYTC District 5	**Phone:**	(502)210-5400
Address:	8310 Westport Road	**Status of Owner/Operator:**	S
City, State, Zip Code:	Louisville, Kentucky, 40242		

II. Facility/Site Location Information

Name:	KyTC PCN ##-####		
Address:	KY 480		
City, State, Zip Code:	Shepherdsville, Kentucky, 40165		
County:	Bullitt		
Site Latitude: (degrees/minutes/seconds)	37/58/42 N	**Site Longitude: (degrees/minutes/seconds)**	85/41/11 W

III. Site Activity Information

MS4 Operator Name:	City of Shepherdsville
Receiving Water Body:	City of Shepherdsville (sewer system)
Are there existing quantitative data?	**Yes** ☐ **If Yes, submit with this form.** **No** ☒

SIC or Designated Activity Code Primary		**2nd**		**3rd**		**4th**	

If this facility is a member of a Group Application, enter Group Application Number:	
If you have other existing KPDES Permits, enter Permit Numbers:	

IV. Additional Information Required FOR CONSTRUCTION ACTIVITIES ONLY

Project Start Date:		**Completion Date:**	
Estimated Area to be disturbed (in acres):		5.2	
Is the Storm Water Pollution Prevention Plan in Compliance with State and/or Local Sediment and Erosion Plans?		**Yes** ☒ **No** ☐	

V. Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, 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.

Printed or Typed Name:	**Matt Bullock, P.E.**		
Signature:	Matt Bullock	**Date:**	**August 21, 2009**

Kentucky Pollutant Discharge Elimination System (KPDES)
Instructions
Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity
To Be Covered Under The KPDES General Permit

WHO MUST FILE A NOTICE OF INTENT (NOI) FORM

Federal law at 40 CFR Part 122 prohibits point source discharges of stormwater associated with industrial activity to a water body of the Commonwealth of Kentucky without a Kentucky Pollutant Discharge Elimination System (KPDES) permit. The operator of an industrial activity that has such a storm water discharge must submit a NOI to obtain coverage under the KPDES Storm Water General Permit. If you have questions about whether you need a permit under the KPDES Storm Water program, or if you need information as to whether a particular program is administered by the state agency, call the Storm Water Contact, Industrial Section, Kentucky Division of Water at (502) 564-3410.

WHERE TO FILE NOI FORM

NOIs must be sent to the following address:

Section Supervisor
Inventory & Data Management Section
KPDES Branch, Division of Water
Frankfort Office Park
14 Reilly Road
Frankfort, KY 40601

COMPLETING THE FORM

Type or print legibly in the appropriate areas only. If you have any questions regarding the completion of this form call the Storm Water Contact, Industrial Section, at (502) 564-3410.

SECTION I - FACILITY OPERATOR INFORMATION

Give the legal name of the person, firm, public organization, or any other entity that operates the facility or site described in this application. The name of the operator may or may not be the same as the name of the facility. The responsible party is the legal entity that controls the facility's operation, rather than the plant or site manager. Do not use a colloquial name. Enter the complete address and telephone number of the operator.

Enter the appropriate letter to indicate the legal status of the operator of the facility.

F = Federal M = Public (other than federal or state)
S = State P = Private

SECTION II - FACILITY/SITE LOCATION INFORMATION

Enter the facility's or site's official or legal name and complete street address, including city, state, and ZIP code.

SECTION III - SITE ACTIVITY INFORMATION

If the storm water discharges to a municipal separate storm sewer system (MS4), enter the name of the operator of the MS4 (e.g., municipality name, county name) and the receiving water of the discharge from the MS4. (A MS4 is defined as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that is owned or operated by a state, city, town, borough, county, parish, district, association, or other public body which is designed or used for collecting or conveying storm water.)

If the facility discharges storm water directly to receiving water(s), enter the name of the receiving water.

Indicate whether or not the owner or operator of the facility has existing quantitative data that represent the characteristics and concentration of pollutants in storm water discharges. If data is available submit with this form.

List, in descending order of significance, up to four 4-digit standard industrial classification (SIC) codes that best describe the principal products or services provided at the facility or site identified in Section II of this application.

If the facility listed in Section II has participated in Part 1 of an approved storm water group application and a group number has been assigned, enter the group application number in the space provided.

If there are other KPDES permits presently issued for the facility or site listed in Section II, list the permit numbers.

SECTION IV - ADDITIONAL INFORMATION REQUIRED FOR CONSTRUCTION ACTIVITIES ONLY

Construction activities must complete Section IV in addition of Sections I through III. Only construction activities need to complete Section IV.

Enter the project start date and the estimated completion date for the entire development plan.

Provide an estimate of the total number of acres of the site on which soil will be disturbed (round to the nearest acre).

Indicate whether the storm water pollution prevention plan for the site is in compliance with approved state and/or local sediment and erosion plans, permits, or storm water management plans.

SECTION V - CERTIFICATION

Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer,which means: (i) president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision making functions, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authroity to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

For a partnership or sole proprietorship: by a general partner or the proprietor; or

For a municipality, state, Federal, or other public facility: by either a principal executive officer or ranking elected official.

KENTUCKY TRANSPORTATION CABINET

COMMUNICATING ALL PROMISES (CAP)

BULLITT COUNTY

5-391.10

(NO CAPS INVOLVED IN PROJECT)

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to the *Standard Specifications for Road and Bridge Construction, Edition of 2004,* and *Standard Drawings, Edition of 2000* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2008* and *Standard Drawings, Edition of 2003 with the 2008 Revision.*

Supplemental Specifications to The Standard Specifications for Road and Bridge Construction, 2008 Edition

(Effective with the August 27, 2010 Letting)

SUBSECTION: **REVISION:**	101.02 Abbreviations. Insert the following abbreviation and text into the section: KEPSC Kentucky Erosion Prevention and Sediment Control
SUBSECTION: **REVISION:**	101.03 Definitions. Replace the definition for Specifications – *Special Provisions* with the following: Additions and revisions to the Standard and Supplemental Specifications covering conditions peculiar to and individual project.
SUBSECTION: **REVISION:**	102.03 Contents of the Bid Proposal Form. Replace the first sentence of the first paragraph with the following: The Bid Proposal form will be available on the Department internet website (http://transportation.ky.gov/contract/). Delete the second paragraph. Delete the last paragraph.
SUBSECTION: **REVISION:**	102.04 Issuance of Bid Proposal Form. Replace Heading with the following: 102.04 Bidder Registration. Replace the first sentence of the first paragraph with the following: The Department reserves the right to disqualify or refuse to place a bidder on the eligible bidder's list for a project for any of the following reasons: Replace the last sentence of the subsection with the following: The Department will resume placing the bidder on the eligible bidder's list for projects after the bidder improves his operations to the satisfaction of the State Highway Engineer.
SUBSECTION: **REVISION:**	102.06 Examination of Plans, Specifications, Special Provisions, Special Notes, and Site of Work. Replace the first paragraph with the following: Examine the site of the proposed work, the Bid Proposal, Plans, specifications, contract forms, and bulletins and addendums posted to the Department's website and the Bid Express Bidding Service Website before submitting the Bid Proposal. The Department considers the submission of a Bid Proposal prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the Contract.
SUBSECTION: **REVISION:**	102.07.01 General. Replace the first sentence with the following: Submit the Bid Proposal on forms furnished on the Bid Express Bidding Service website (www.bidx.com). Replace the first sentence of the third paragraph with the following: Bid proposals submitted shall use an eligible Digital ID issued by Bid Express.

Supplemental Specifications to The Standard Specifications for Road and Bridge Construction, 2008 Edition

(Effective with the August 27, 2010 Letting)

SUBSECTION: **REVISION:**	102.07.02 Computer Bidding. Replace the first paragraph with the following: Subsequent to registering for a specific project, use the Department's Expedite Bidding Program on the internet website of the Department of Highways, Division of Construction Procurement (http://transportation.ky.gov/contract/). Download the bid file from the Bid Express Bidding Service Website to prepare a Bid Proposal for submission to the Department. Submit Bid Proposal electronically through Bid Express Bidding Service. Delete the second and third paragraph.
SUBSECTION: **REVISION:**	102.08 Irregular Bid Proposals. Delete the following from the first paragraph: 4) fails to submit a disk created from the Highway Bid Program. Replace the second paragraph with the following: The Department will consider Bid Proposals irregular and may reject them for the following reasons: 1) when there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the Bid Proposal incomplete, indefinite, or ambiguous as to its meaning; or 2) when the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a Contract pursuant to an award; or 3) any failure to comply with the provisions of Subsection 102.07; or 4) Bid Proposals in which the Department determines that the prices are unbalanced; or when the sum of the total amount of the Bid Proposal under consideration exceeds the bidder's Current Capacity Rating.
SUBSECTION: **REVISION:**	102.09 Bid Proposal Guaranty. Insert the following after the first sentence: Bid Proposals must have a bid proposal guaranty in the amount indicated in the bid proposal form accompany the submittal. A guaranty in the form of a paper bid bond, cashier's check, or certified check in an amount no less than the amount indicated on the submitted electronic bid is required when the electronic bid bond was not utilized with the Bid Express Bidding Service. Paper bid bonds must be delivered to the Division of Construction Procurement prior to the time of the letting.
SUBSECTION: **REVISION:**	102.10 Delivery of Bid Proposals. Replace paragraph with the following: Submit all Bid Proposals prior to the time specified in the Notice to Contractors. All bids shall be submitted electronically using Bid Express Bidding Services. Electronically submitted bids must be done in accordance with the requirements of the Bid Express Bidding Service.
SUBSECTION: **REVISION:**	102.11 Withdrawal or Revision of Bid Proposals. Replace the paragraph with the following: Bid Proposals can be withdrawn in accordance the requirements of the Bid Express Bidding Service prior to the time of the Letting.
SUBSECTION: **REVISION:**	102.13 Public Opening of Bid Proposals. Replace Heading with the following: 102.13 Public Announcement of Bid Proposals. Replace the paragraph with the following: The Department will publicly announce all Bid Proposals at the time indicated in the Notice to Contractors.

Supplemental Specifications to The Standard Specifications for Road and Bridge Construction, 2008 Edition

(Effective with the August 27, 2010 Letting)

SUBSECTION: **REVISION:**	103.02 Award of Contract. Replace the first sentence of the third paragraph with the following: The Department will normally award the Contract within 10 working days after the date of receiving Bid Proposals unless the Department deems it best to hold the Bid Proposals of any or all bidders for a period not to exceed 60 calendar days for final disposition of award.
SUBSECTION: **REVISION:**	105.03 Record Plans. Replace the section with the following: Record Plans are those reproductions of the original Plans on which the accepted Bid Proposal was based and, and signed by a duly authorized representative of the Department. The Department will make these plans available for inspection in the Central Office at least 24 hours prior to the time of opening bids and up to the time of letting of a project or projects. The quantities appearing on the Record Plans are the same as those on which Bid Proposals are received. The Department will use these Record Plans as the controlling plans in the prosecution of the Contract. The Department will not make any changes on Record Plans subsequent to their issue unless done so by an approved contract modification. The Department will make 2 sets of Record Plans for each project, and will maintain one on file in the Central Office and one of file in the District Office. The Department will furnish the Contractor with the following: 1 full size, 2 half size and an electronic file copy of the Record Plans at the Pre-Construction conference.
SUBSECTION: **REVISION:**	105.12 Final Inspection and Acceptance of Work. Insert the following paragraphs after the first paragraph: Notify the Engineer when all electrical items are complete. A notice of the electrical work completion shall be made in writing to the Contractor. Electrical items will be inspected when the electrical work is complete and are not subject to waiting until the project as a whole has been completed. The Engineer will notify the Division of Traffic Operations within 3 days that all electrical items are complete and ready for a final inspection. A final inspection will be completed within 90 days after the Engineer notifies the Division of Traffic Operations of the electrical work completion. Energize all electrical items prior to notifying the Engineer that all electrical items are complete. Electrical items must remain operational until the Division of Traffic Operations has inspected and accepted the electrical portion of the project. Payment for the electrical service is the responsibility of the Contractor from the time the electrical items are energized until the Division of Traffic Operations has accepted the work. Complete all corrective work within 90 calendar days of receiving the original electrical inspection report. Notify the Engineer when all corrective work is complete. The Engineer will notify the Division of Traffic Operations that the corrective work has been completed and the project is ready for a follow-up inspection. Upon re-inspection, if additional corrective work is required, complete within the same 90 calendar day allowance. The Department will not include time between completion of the corrective work and the follow up electrical inspection(s). The 90 calendar day allowance is cumulative regardless of the number of follow-up electrical inspections required. The Department will assume responsibility for the electrical service on a project once the Division of Traffic Operations gives final acceptance of the electrical items on the project. The Department will also assume routine maintenance of those items. Any damage done to accepted electrical work items by other Contractors shall be the responsibility of the Prime Contractor. The Department will not be responsible for repairing damage done by other contractors during the construction of the remaining project. Failure to complete the electrical corrective work within the 90 calendar day allowance will result in penalties assessed to the project. Penalties will be assessed at ½ the rate of liquidated damages established for the contract. Replace the following in the second sentence of the second paragraph: Replace Section 213 with Section 212. Delete the fifth paragraph from the section.

Supplemental Specifications to The Standard Specifications for Road and Bridge Construction, 2008 Edition

(Effective with the August 27, 2010 Letting)

SUBSECTION:	105.13 Claim Resolution Process.
REVISION:	Replace the last sentence of the 3. Bullet with the following: If the Contractor did not submit an as-bid schedule at the Pre-Construction Meeting or a written narrative in accordance with Subsection 108.02, the Cabinet will not consider the claim for delay. Delete the last paragraph from the section.
SUBSECTION:	106.04 Buy America Requirement.
REVISION:	Replace the section with the following: **106.04 Buy America Requirement.** Follow the "Buy America" provisions as required by Title 23 Code of Federal Regulations § 635.410. Except as expressly provided herein all manufacturing processes of steel or iron materials including but not limited to structural steel, guardrail materials, corrugated steel, culvert pipe, structural plate, prestressing strands, and steel reinforcing bars shall occur in the United States of America, including the application of: • Coating, • Galvanizing, • Painting, and • Other coating that protects or enhances the value of steel or iron products. The following are exempt, unless processed or refined to include substantial amounts of steel or iron material, and may be used regardless of source in the domestic manufacturing process for steel or iron material: • Pig iron, • Processed, pelletized, and reduced iron ore material, or • Processed alloys. The Contractor shall submit a certification stating that all manufacturing processes involved with the production of steel or iron materials occurred in the United States. Produce, mill, fabricate, and manufacture in the United States of America all aluminum components of bridges, tunnels, and large sign support systems, for which either shop fabrication, shop inspection, or certified mill test reports are required as the basis of acceptance by the Department. Use foreign materials only under the following conditions: 1) When the materials are not permanently incorporated into the project; or 2) When the delivered cost of such materials used does not exceed 0.1 percent of the total Contract amount or $2,500.00, whichever is greater. The Contractor shall submit to the Engineer the origin and value of any foreign material used.

Supplemental Specifications to The Standard Specifications for Road and Bridge Construction, 2008 Edition

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SUBSECTION: **REVISION:**	106.10 Field Welder Certification Requirements. Insert the following sentence before the first sentence of the first paragraph: All field welding must be performed by a certified welder unless otherwise noted.
SUBSECTION: **REVISION:**	108.02 Progress Schedule. Insert the following prior to the first paragraph: Specification 108.02 applies to all Cabinet projects except the following project types: • Right of Way Mowing and/or Litter Removal • Waterborne Paint Striping • Projects that contain Special Provision 82 • Projects that contain the Special Note for CPM Scheduling Insert the following paragraph after paragraph two: Working without the submittal of a Written Narrative is violation of this specification and additionally voids the Contractor's right to delay claims. Insert the following paragraph after paragraph six: The submittal of bar chart or Critical Path Method schedule does not relieve the Contractor's requirement to submit a Written Narrative schedule. Insert the following at the beginning of the first paragraph of A) Written Narrative.: Submit the Written Narrative Schedule using form TC 63-50 available at the Division of Construction's website (http://www.transportation.ky.gov/construction/ResCenter/ResCenter.htm). Replace Part A) Written Narrative 1. And 2. with the following: 1. Provide a description that includes how the Contractor will sequence and stage the work, how the Contractor plans to maintain and control traffic being specific and detailed, and what equipment and crew sizes are planned to execute the work. 2. Provide a list of project milestones including, if applicable, winter shut-downs, holidays, or special events. The Contractor shall describe how these milestones and other dates effect the prosecution of the work. Also, include start date and completion date milestones for the contract, each project if the contract entails multiple projects, each phase of work, site of work, or segment of work as divided in the project plans, proposal, or as subdivided by the Contractor.

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SUBSECTION: **REVISION:**	110.01 Mobilization. Replace paragraph three with the following: Do not bid an amount for Mobilization that exceeds 5 percent of the sum of the total amounts bid for all items in the Bid Proposal, excluding Mobilization, Demobilization, and contingent amounts established for adjustments and incentives. The Department will automatically adjust any Bid Proposals that are in excess of this amount down to 5 percent to compare Bid Proposals and award the Contract. The Department will award a Contract for the actual amount bid when the amount bid for Mobilization is less than 5 percent, or the Department will award the Contract for the adjusted bid amount of 5 percent when the amount bid for Mobilization is greater than 5 percent. If any errors in unit bid prices for other Contract items in a Contractor's Bid Proposal are discovered after bid opening and such errors reduce the total amount bid for all other items, excluding Mobilization, Demobilization, and contingent amounts established for adjustments and incentives, so that the percent bid for Mobilization is larger than 5 percent, the Department will adjust the amount bid for Mobilization to 5 percent of the sum of the corrected total bid amounts.
SUBSECTION: **REVISION:**	110.02 Demobilization. Replace the third paragraph with the following: Bid an amount for Demobilization that is a minimum of $1,000 or 1.5 percent of the sum of the total amounts bid for all other items in the Bid Proposal, excluding Mobilization, Demobilization, and contingent amounts established for adjustments and incentives. The Department will automatically adjust any Bid Proposal that is less than this amount up to $1,000 or 1.5 percent to compare Bid Proposals and award the Contract. The Department will award a Contract for the actual amount bid when the amount bid for demobilization exceeds 1.5 percent, or the Department will award the Contract for the adjusted bid amount when the amount bid for demobilization is less than the minimum of $1,000 or less than 1.5 percent of the sum of the total amounts bid for all other items in the Bid Proposal, excluding Mobilization, Demobilization, and contingent amounts established for adjustments and incentives.
SUBSECTION: **REVISION:**	110.04 Payment. Insert the following paragraph following the demobilization payment schedule (4th paragraph): The Department will withhold an amount equal to $1,000 for demobilization, regardless of the schedule listed above. The $1,000 withheld for demobilization will be paid when the final estimate is paid.
SUBSECTION: **REVISION:**	112.03.01 General Traffic Control. Replace paragraph three with the following: All flaggers shall be trained in current MUTCD flagging procedures. Proof of training must be available for review at the Department's request. Flagging credentials must be current within the last 5 years.
SUBSECTION: **PART:** **REVISION:**	112.03.11 Temporary Pavement Markings. B) Placement and Removal of Temporary Striping. Replace the 2nd sentence of the first paragraph with the following: On interstates and parkways, and other roadways approved by the State Highway Engineer, install pavement striping that is 6 inches in width.
SUBSECTION: **REVISION:**	112.03.12 Project Traffic Coordinator (PTC). Add the following at the end of the subsection: After October 1, 2008 the Department will require the PTC to have successfully completed the applicable qualification courses. Personnel that have not successfully completed the applicable courses by that date will not be considered qualified. Prior to October 1, 2008, conform to Subsection 108.06 A) and ensure the designated PTC has sufficient skill and experience to properly perform the task.

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SUBSECTION: 112.03.15 Non-Compliance of Maintain and Control of Traffic.
REVISION: Add the following section:

112.03.15 Non-Compliance of Maintain and Control of Traffic. It is the Contractor's responsibility to conform to the traffic control requirements in the TCP, Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices.

Unless specified elsewhere in the contract, a penalty will be assessed in the event of non-compliance with Maintain and Control of Traffic requirements. These penalties will be assessed when the Contractor fails to correct a situation or condition of non-compliance with the contract traffic control requirements after being notified by the Engineer. The calculation of accrued penalties for non-compliance will be based upon the date/time of notification by the Engineer.

The amount of the penalty assessed for non-compliance will be determined based upon the work zone duration, as defined by the MUTCD, and will be the greatest of the different calculation methods indicated below:

A) Long-term stationary work that occupies a location more than 3 days.

Correct the non-compliant issue within 24 hours from initial notification by the Engineer. If the issue is not corrected within 24 hours from the initial notification, a penalty for non-compliance will be assessed on a daily basis beginning from the initial notification of non-compliance. The Contractor will be assessed a $1,000 daily penalty or the amount equal to the contract liquidated damages in Section 108.09, whichever of the 2 is greater. The penalty for non-compliance will escalate as follows for continued non-compliance after the initial notification.

3 Days after Notification
$1,500 daily penalty or 1.5 times the contract liquidated damages daily charge rate in Section 108.09, whichever is greater.

7 Days after Notification
$2,000 daily penalty or double the contract liquidated damages daily charge rate in Section 108.09, whichever is greater.

B) Intermediate-term stationary work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than 1 hour.

Correct the non-compliant issue within 4 hours from initial notification by the Engineer. If the issue is not corrected within 4 hours from notification, a penalty for non-compliance will be assessed on an hourly basis beginning from the initial notification of non-compliance. The penalty for non-compliance will be assessed at $200 per hour.

C) Short-term stationary is daytime work that occupies a location for more than 1 hour within a single daylight period.

Correct the non-compliant issue within 1 hour from initial notification by the Engineer. If the issue is not corrected within 1 hour from notification, a penalty for non-compliance will be assessed on an hourly basis beginning from the initial notification of non-compliance. The penalty for non-compliance will be assessed at $200 per hour.

If the Contractor remains in violation of the Maintain and Control of Traffic requirements, or if the Department determines it to be in the public's interest, work will be suspended in accordance with Section 108.08 until the deficiencies are corrected. The Department reserves the right to correct deficiencies by any means available and charge the Contractor for labor, equipment, and material costs incurred in emergency situations.

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SUBSECTION: **REVISION:**	206.03.02 Embankment Replace the last paragraph with the following: When rock roadbed is specified, construct the upper 2 feet of the embankment according to Subsection 204.03.09 A).
SUBSECTION: **REVISION:**	213.03.03 Inspection and Maintenance. Insert the following paragraph after the second paragraph: When the Contractor is required to obtain the KPDES permit, it is their responsibility to ensure compliance with the inspection and maintenance requirements of the permit. The Engineer will perform verification inspections a minimum of once per month and within 7 days of a ½ inch or greater rainfall event. The Engineer will document these inspections using Form TC 63-61 A. The Engineer will provide copies of the inspection only when improvements to the BMP's are required. Verification inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit. Initiate corrective action within 24 hours of any noted deficiency and complete the work within 5 days.
SUBSECTION: **PART:** **REVISION:**	213.03.05 Temporary Control Measures. E) Temporary Seeding and Protection. Replace the first paragraph with the following: Apply an Annual Rye seed mix at a rate of 100 pounds per acre during the months of March through August. In addition to the Annual Rye, add 10 pounds of German Foxtail-Millet (Setaria italica), when performing temporary seeding during the months of June through August. During the months of September through February, apply Winter Wheat or Rye Grain at a rate of 100 pounds per acre. Obtain the Engineer's approval prior to the application of the seed mixture.
SUBSECTION: **PART:** **REVISION:**	213.03.05 Temporary Control Measures. F) Temporary Mulch. Replace the last sentence with the following: Place temporary mulch to an approximate 2-inch loose depth (2 tons per acre) and anchor it into the soil by mechanically crimping it into the soil surface or applying tackifier to provide a protective cover. Regardless of the anchoring method used, ensure the protective cover holds until disturbance is required or permanent controls are in installed.
SUBSECTION: **REVISION:**	303.05 Payment. Replace the second paragraph of the section with the following: The Department will make payment for Drainage Blanket-Type II (ATDB) according to the Lot Pay Adjustment Schedule for Specialty Mixtures in Section 402.
SUBSECTION: **PART:** **REVISION:**	401.02.04 Special Requirements for Dryer Drum Plants. F) Production Quality Control. Replace the first sentence with the following: Stop mixing operations immediately if, at any time, a failure of the automatic electronic weighing system of the aggregate feed, asphalt binder feed, or water injection system control occurs.

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SUBSECTION: 401.02.04 Special Requirements for Dryer Drum Plants.
REVISION: Add the following:

Part G) **Water Injection System.** Provided each system has prior approval as specified in Subsection 402.01.01, the Department will allow the use of water injection systems for purposes of foaming the asphalt binder and lowering the mixture temperature for production of Warm Mix Asphalt (WMA).

Ensure the equipment for water injection meets the following requirements:

1) Injection equipment computer controls are automatically coupled to the plants controls (manual operation is not permitted);
2) Injection equipment has variable controls that introduce water ratios based on production rates of mixtures;
3) Injects water into the flow of asphalt binder prior to contacting the aggregate;
4) Provides alarms on the water injection system that operate when the flow of water is interrupted or deviates from the prescribed water rate.

SUBSECTION: 401.03.01 Preparation of Mixtures.
REVISION: Replace the last sentence of the second paragraph with the following:

Do not use asphalt binder while it is foaming in a storage tank.

SUBSECTION: 401.03.01 Preparation of Mixtures.
REVISION: Replace the third paragraph and Mixing and Laying Temperature table with the following:

Maintain the temperature of the component materials and asphalt mixture within the ranges listed in the following table:

MIXING AND LAYING TEMPERATURES (°F)

Material		Minimum	Maximum
Aggregates		240	330
Aggregates used with Recycled Asphalt Pavement (RAP)		240	—
Asphalt Binders	PG 64-22	230	330
	PG 76-22	285	350
Asphalt Mixtures at Plant (Measured in Truck)	PG 64-22 HMA	250	330
	PG 76-22 HMA	310	350
	PG 64-22 WMA	230	275
	PG 76-22 WMA	250	300
Asphalt Mixtures at Project (Measured in Truck When Discharging)	PG 64-22 HMA	230	330
	PG 76-22 HMA	300	350
	PG 64-22 WMA	210	275
	PG 76-22 WMA	240	300

SUBSECTION: 402.01 Description.
REVISION: Replace the paragraph with the following:

Provide the process control and acceptance testing of all classes and types of asphalt mixtures which may be furnished either as hot mix asphalt (HMA) or warm mix asphalt (WMA) produced with water injection systems.

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SUBSECTION REVISION:	402.01.01 Warm Mix Asphalt (WMA) Evaluation and Approval. Add the following subsection: 402.01.01 Warm Mix Asphalt (WMA) Evaluation and Approval. The Department will evaluate trial production of WMA by use of a water injection system provided the system is installed according to the manufacturer's requirements and satisfies the requirements of Section 401. Evaluation will include production and placement of WMA to demonstrate adequate mixture quality including volumetric properties and density by Option A as specified in Subsection 402.03.02 D). Do not place WMA for evaluation on Department projects. Provided production and placement operations satisfy the applicable quality levels, the Department will approve WMA production on Department projects using the water injection system as installed on the specific asphalt mixing plant evaluated.
SUBSECTION: **REVISION:**	402.05.02 Asphalt Mixtures and Mixtures With RAP. Replace Subsection Title as below: 402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP.
SUBSECTION: **REVISION:**	402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP. Replace the paragraph with the following: The Department will pay for the mixture at the Contract unit bid price and apply a Lot Pay Adjustment for each lot placed based on the degree of compliance with the specified tolerances. Using the appropriate Lot Pay Adjustment Schedule, the Department will assign a pay value for the applicable properties within each sublot and average the sublot pay values to determine the pay value for a given property for each lot. The Department will apply the Lot Pay Adjustment for each lot to a defined unit price of $50.00 per ton. The Department will calculate the Lot Pay Adjustment using all possible incentives and disincentives but will not allow the overall pay value for a lot to exceed 1.00.
SUBSECTION: **PART:** **REVISION:**	402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP. C) Conventional and RAP Mixtures Placed on Shoulders. Replace title with the following: HMA, WMA, and RAP Mixtures Placed on Shoulders.
SUBSECTION: **PART:** **REVISION:**	402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP. D) Conventional and RAP Mixtures Placed Monolithically as Asphalt Pavement Wedge. Replace the title with the following: HMA, WMA, and RAP Mixtures Placed Monolithically as Asphalt Pavement Wedge.
SUBSECTION: **PART:** **TABLES:** **REVISION:**	402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP. Lot Pay Adjustment Schedule, Compaction Option A, Base and Binder Mixtures VMA Replace the VMA table with the following:

VMA

Pay Value	Deviation From Minimum
1.00	≥ min. VMA
0.95	0.1-0.5 below min.
0.90	0.6-1.0 below min.
(1)	> 1.0 below min.

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SUBSECTION: 402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP.
PART: Lot Pay Adjustment Schedule, Compaction Option A, Surface Mixtures
TABLES: VMA
REVISION: Replace the VMA table with the following:

VMA	
Pay Value	Deviation From Minimum
1.00	≥ min. VMA
0.95	0.1-0.5 below min.
0.90	0.6-1.0 below min.
(1)	> 1.0 below min.

SUBSECTION: 402.05.02 Asphalt Mixtures, HMA and WMA, Including Mixtures With RAP.
PART: Lot Pay Adjustment Schedule, Compaction Option B Mixtures
TABLE: VMA
REVISION: Replace the VMA table with the following:

VMA	
Pay Value	Deviation From Minimum
1.00	≥min. VMA
0.95	0.1-0.5 below min.
0.90	0.6-1.0 below min.
(2)	> 1.0 below min.

SUBSECTION: 403.03.03 Preparation of Mixture.
PART: C) Mix Design Criteria.
NUMBER: 1) Preliminary Mix Design.
REVISION: Replace the last two sentences of the paragraph and table with the following:

Complete the volumetric mix design at the appropriate number of gyrations as given in the table below for the number of 20-year ESAL's. The Department will define the relationship between ESAL classes, as given in the bid items for Superpave mixtures, and 20-year ESAL ranges as follows:

		Number of Gyrations		
Class	**ESAL's (millions)**	$N_{initial}$	N_{design}	N_{max}
2	< 3.0	6	50	75
3	3.0 to < 30.0	7	75	115
4	≥ 30.0	8	100	160

SUBSECTION: 403.03.09 Leveling and Wedging, and Scratch Course.
PART: A) Leveling and Wedging.
REVISION: Replace the first sentence of the first paragraph with the following:

Conform to the gradation requirements (control points) of AASHTO M 323 for base, binder, or surface as the Engineer directs.

SUBSECTION: 403.03.09 Leveling and Wedging, and Scratch Course.
PART: B) Scratch Course.
REVISION: Replace the second sentence of the first paragraph with the following:

Conform to the gradation requirements (control points) of AASHTO M 323 for base, binder, or surface as the Engineer directs.

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SUBSECTION:	407.01 DESCRIPTION.
REVISION:	Replace the first sentence of the paragraph with the following: Construct a pavement wedge composed of a hot-mixed or warm-mixed asphalt mixture.
SUBSECTION:	409.01 DESCRIPTION.
REVISION:	Replace the first sentence of the paragraph with the following: Use reclaimed asphalt pavement (RAP) from Department projects or other approved sources in hot mix asphalt (HMA) or warm mix asphalt (WMA) provided mixture requirements are satisfied.
SUBSECTION:	410.01 DESCRIPTION.
REVISION:	Delete the second sentence of the paragraph.
SUBSECTION:	410.03.01 Corrective Work.
REVISION:	Replace the last sentence of the paragraph with the following: Provide a final surface comparable to the adjacent pavement that does not require corrective work in respect to texture, appearance, and skid resistance.
SUBSECTION:	410.03.02 Ride Quality.
PART:	B) Requirements.
NUMBER:	1) Category A.
REVISION:	Replace the last sentence of the first paragraph with the following: At the Department's discretion, a pay deduction of $1200 per 0.1-lane-mile section may be applied in lieu of corrective work.
SUBSECTION:	410.03.02 Ride Quality.
PART:	B) Requirements.
NUMBER:	2) Category B.
REVISION:	Replace the second and third sentence of the first paragraph with the following: When the IRI is greater than 90 for a 0.1-mile section, perform corrective work, or remove and replace the pavement to achieve the specified IRI. At the Department's discretion, a pay deduction of $750 per 0.1-lane-mile section may be applied in lieu of corrective work.
SUBSECTION:	410.05 PAYMENT.
REVISION:	Add the following sentence to the end of the first paragraph: The sum of the pay value adjustments for ride quality shall not exceed $0 for the project as a whole.
SUBSECTION:	413.05.02 CL3 SMA BASE 1.00D PG76-22.
REVISION:	Insert the following sentence between the first and second sentence of the first paragraph: The Department will calculate the Lot Pay Adjustment using all possible incentives and disincentives but will not allow the overall pay value for a lot to exceed 1.00.

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SUBSECTION: 413.05.02 CL3 SMA BASE 1.00D PG 76-22.
TABLE: JOINT DENSITY TABLE
REVISION: Replace the joint density table with the following:

LANE DENSITY	
Pay Value	Test Result (%)
1.05	95.0-96.5
1.00	93.0-94.9
0.95	92.0-92.9 or 96.6-97.0
0.90	91.0-91.9 or 97.1-97.5
(1)	< 91.0 or > 97.5

SUBSECTION: 413.05.03 CL3 SMA SURF 0.50A PG76-22 and CL3 SMA SURF 0.38A PG76-22.
REVISION: Insert the following sentence between the first and second sentence of the first paragraph:

The Department will calculate the Lot Pay Adjustment using all possible incentives and disincentives but will not allow the overall pay value for a lot to exceed 1.00.

SUBSECTION: 413.05.03 CL3 SMA SURF 0.50A PG76-22 and CL3 SMA SURF 0.38A PG76-22.
TABLE: JOINT DENSITY TABLE
REVISION: Replace the joint density table with the following:

DENSITY		
Pay Value	Lane Density Test Result (%)	Joint Density Test Result (%)
1.05	95.0-96.5	92.0-96.0
1.00	93.0-94.9	90.0-91.9
0.95	92.0-92.9 or 96.6-97.0	89.0-89.9 or 96.1-96.5
0.90	91.0-91.9 or 97.1-97.5	88.0-88.9 or 96.6-97.0
0.75	----	< 88.0 or > 97.0
(1)	< 91.0 or > 97.5	----

SUBSECTION: 501.05.02 Ride Quality.
REVISION: Add the following sentence to the end of the first paragraph:

The sum of the pay value adjustments for the ride quality shall not exceed $0 for the project as a whole.

SUBSECTION: 505.03.04 Detectable Warnings.
REVISION: Replace the first sentence with the following:

Install detectable warning pavers at all sidewalk ramps and on all commercial entrances according to the Standard Drawings.

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SUBSECTION: **REVISION:**	505.04.04 Detectable Warnings. Replace the paragraph with the following: The Department will measure the quantity in square feet. All retrofit applications for maintenance projects will require the removal of existing sidewalks to meet the requirements of the standard drawings applicable to the project. The cost associated with the removal of the existing sidewalk will be incidental to the detectable warnings bid item or incidental to the bid item for the construction of the concrete sidewalk unless otherwise noted.
SUBSECTION: **REVISION:**	505.05 PAYMENT. Add the following to the bid item table: Code — Pay Item — Pay Unit 23158ES505 — Detectable Warnings — Square Foot
SUBSECTION: **REVISION:**	509.01 DESCRIPTION. Replace the second paragraph with the following: The Department may allow the use of similar units that conform to the National Cooperative Highway Research Program (NCHRP) 350 Test Level 3 (TL-3) requirements and the typical features depicted by the Standard Drawings. Obtain the Engineers approval prior to use. Ensure the barrier wall shape, length, material, drain slot dimensions and locations typical features are met and the reported maximum deflection is 3 feet or less from the NCHRP 350 TL-3 for Test 3 – 11 (pickup truck impacting at 60 mph at a 25-degree angle.)
SUBSECTION: **REVISION:**	601.03.02 Concrete Producer Responsibilities. Add the following to the first paragraph: If a concrete plant becomes unqualified during a project and there are no other qualified plants in the region, the Department will provide qualified personnel to witness and ensure the producer follows the required specifications. The Department will assess the Contractor a $100 per hour charge for this service.
SUBSECTION: **REVISION:**	606.02.11 Coarse Aggregate. Replace with the following: Conform to Section 805, size No. 8 or 9-M.
SUBSECTION: **REVISION:**	609.04.06 Joint Sealing. Replace Subsection 601.04 with the following: Subsection 606.04.08.
SUBSECTION: **REVISION:**	609.05 Payment. Replace the Pay Unit for Joint Sealing with the following: See Subsection 606.05.
SUBSECTION: **REVISION:**	701.03.06 Initial Backfill. Replace the first sentence of the last paragraph with the following: When the Contract specifies, perform quality control testing to verify compaction according to KM 64-512.

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SUBSECTION:	701.03.08 Testing of Pipe.
REVISION:	Replace and rename the subsection with the following: **701.03.08 Inspection of Pipe.** The engineer will visually inspect all pipe. The Department will require camera/video inspection on a minimum of 50 percent of the linear feet of all installed pipe structures. Conduct camera/video inspection according to KM 64-114. The pipe to be installed under pavement will be selected first. If the total linear feet of pipe under pavement is less than 50 percent of the linear feet of all pipe installed, the Engineer will randomly select installations from the remaining pipe structures on the project to provide for the minimum inspection requirement. The pipe will be selected in complete runs (junction-junction or headwall-headwall) until the total linear feet of pipe to be inspected is at least 50 percent of the total linear feet of all installed pipe on the project. Unless the Engineer directs otherwise, schedule the inspections no sooner than 30 days after completing the installation and completion of earthwork to within 1 foot of the finished subgrade. When final surfacing conflicts with the 30-day minimum, conduct the inspections prior to placement of the final surface. The contractor must ensure that all pipe are free and clear of any debris so that a complete inspection is possible. Notify the Engineer immediately if distresses or locations of improper installation are discovered. When camera testing shows distresses or improper installation in the installed pipe, the Engineer may require additional sections to be tested. Provide the video and report to the Engineer when testing is complete in accordance with KM 64-114. Pipes that exhibit distress or signs of improper installation may necessitate repair or removal as the Engineer directs. These signs include, but are not limited to: deflection, cracking, joint separation, sagging or other interior damage. If corrugated metal or thermoplastic pipes exceed the deflection and installation thresholds indicated in the table below, provide the Department with an evaluation of each location conducted by a Professional Engineer addressing the severity of the deflection, structural integrity, environmental conditions, design service life, and an evaluation of the factor of safety using Section 12, "Buried Structures and Tunnel Liners," of the AASHTO LRFD Bridge Design Specifications. Based on the evaluation, the Department may allow the pipe to remain in place at a reduced unit price as shown in the table below. Provide 5 business days for the Department to review the evaluation. When the pipe shows deflection of 10 percent or greater, remove and replace the pipe. When the camera/video or laser inspection results are called into question, the Department may require direct measurements or mandrel testing. The Cabinet may elect to conduct Quality Assurance verifications of any pipe inspections.
SUBSECTION:	701.04.07 Testing.
REVISION:	Replace and rename the subsection with the following: **701.04.07 Pipeline Video Inspection.** The Department will measure the quantity in linear feet along the pipe invert of the structure inspected. When inspection above the specified 50 percent is performed due to a disagreement or suspicion of additional distresses and the Department is found in error, the Department will measure the quantity as Extra Work according to Subsection 104.03. However, if additional distresses or non-conformance is found, the Department will not measure the additional inspection for payment.
SUBSECTION:	701.05 PAYMENT.
REVISION:	Add the following pay item to the list of pay items: Code — Pay Item — Pay Unit 23131ER701 — Pipeline Video Inspection — Linear Foot

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SUBSECTION: 701.05 PAYMENT
TABLE: PIPE DEFLECTION DETERMINED BY CAMERA TESTING
REVISION: Replace this table with the following table and note:

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

(1) *Provide Structural Analysis as indicated above. Based on the structural analysis, pipe may be allowed to remain in place at the reduced unit price.*

SUBSECTION: 701.05 PAYMENT
TABLE: PIPE DEFLECTION DETERMINED BY MANDREL TESTING
REVISION: Delete this table.

SUBSECTION: 713.02.01 Paint.
REVISION: Replace with the following:

Conform to Section 842 and Section 846.

SUBSECTION: 713.03 CONSTRUCTION.
REVISION: Replace the first sentence of the second paragraph with the following:

On interstates and parkways, and other routes approved by the State Highway Engineer, install pavement striping that is 6 inches in width.

SUBSECTION: 713.03.03 Paint Application.
REVISION: Replace the second paragraph with the following table:

Material	**Paint Application Rate**	**Glass Beads Application Rate**
4 inch waterborne paint	Min. of 16.5 gallons/mile	Min. of 6 pounds/gallon
6 inch waterborne paint	Min. of 24.8 gallons/mile	Min. of 6 pounds/gallon
6 inch durable waterborne paint	Min. of 36 gallons/mile	Min. of 6 pounds/gallon

SUBSECTION: 713.03.04 Marking Removal.
REVISION: Replace the last sentence of the paragraph with the following:

Vacuum all marking material and removal debris concurrently with the marking removal operation.

SUBSECTION: 713.05 PAYMENT.
REVISION: Insert the following codes and pay items below the Pavement Striping – Permanent Paint:

Code	Pay Item	Pay Unit
23159EN	Durable Waterborne Marking – 6 IN W	Linear Foot
23160EN	Durable Waterborne Marking – 6 IN Y	Linear Foot

SUBSECTION: 714.03 CONSTRUCTION.
REVISION: Insert the following paragraph at the end of the third paragraph:

Use Type I Tape for markings on bridge decks, JPC pavement and JPC intersections. Thermoplastic should only be used for markings on asphalt pavement.

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SUBSECTION: **REVISION:**	714.03.07 Marking Removal. Replace the third sentence of the paragraph with the following: Vacuum all marking material and removal debris concurrently with the marking removal operation.
SUBSECTION: **REVISION:**	716.01 DESCRIPTION. Insert the following after the first sentence: Energize lighting as soon as it is fully functional and ready for inspection. Ensure that lighting remains operational until the Division of Traffic Operations has provided written acceptance of the electrical work.
SUBSECTION: **REVISION:**	716.02.01 Roadway Lighting Materials. Replace the third sentence of the paragraph with the following: Submit for material approval an electronic file of descriptive literature, drawings, and any requested design data.
SECTION: **REVISION:**	717 – THERMOPLASTIC INTERSECTION MARKINGS. Replace the section name with the following: INTERSECTION MARKINGS.
SUBSECTION: **REVISION:**	717.01 DESCRIPTION: Replace the paragraph with the following: Furnish and install thermoplastic or Type I tape intersection markings (Stop Bars, Crosswalks, Turn Arrows, etc.) Thermoplastic markings may be installed by either a machine applied, screed extrusion process or by applying preformed thermoplastic intersection marking material.
SUBSECTION: **REVISION:**	717.02 MATERIALS AND EQUIPMENT. Insert the following subsection: 717.02.06 Type I Tape. Conform to Section 836.
SUBSECTION: **REVISION:**	717.03.03 Application. Insert the following part to the subsection: B) Type I Tape Intersection Markings. Apply according to the manufacturer's recommendations. Cut all tape at pavement joints when applied to concrete surfaces.
SUBSECTION: **PART:** **REVISION:**	717.03.05 Proving Period. A) Requirements. Insert the following to this section: 2) Type I Tape. During the proving period, ensure that the pavement marking material shows no signs of failure due to blistering, excessive cracking, bleeding, staining, discoloration, oil content of the pavement materials, drippings, chipping, spalling, poor adhesion to the pavement, loss of retroreflectivity, vehicular damage, and normal wear. Type I Tape is manufactured off site and warranted by the manufacturer to meet certain retroreflective requirements. As long as the material is adequately bonded to the surface and shows no signs of failure due to the other items listed in Subsection 714.03.06 A) 1), retroreflectivity readings will not be required. In the absence of readings, the Department will accept tape based on a nighttime visual observation.

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SUBSECTION: 717.03.06 Marking Removal.
REVISION: Replace the third sentence of the paragraph with the following:

Vacuum all marking material and removal debris concurrently with the marking removal operation.

SUBSECTION: 717.05 PAYMENT.
REVISION: Insert the following bid item codes:

Code	Pay Unit	Pay Item
06563	Pave Marking – R/R X Bucks 16 IN	Linear Foot
20782NS714	Pave Marking Thermo – Bike	Each
23251ES717, 23264ES717	Pave Mark TY I Tape X-Walk, Size	Linear Foot
23252ES717, 23265ES717	Pave Mark TY I Tape Stop Bar, Size	Linear Foot
23253ES717	Pave Mark TY I Tape Cross Hatch	Square Foot
23254ES717	Pave Mark TY I Tape Dotted Lane Extension	Linear Foot
23255ES717	Pave Mark TY I Tape Arrow, Type	Each
23268ES717-23270ES717		
23256ES717	Pave Mark TY I Tape- ONLY	Each
23257ES717	Pave Mark TY I Tape- SCHOOL	Each
23266ES717	Pave Mark TY 1 Tape R/R X Bucks-16 IN	Linear Foot
23267ES717	Pave Mark TY 1 Tape-Bike	Each

SUBSECTION: 725.02.02 Type VI Class C & CT.
REVISION: Replace bullet 2) with the following:

2) The SCI100GM System as developed by SCI Products, Inc. of St. Charles, Illinois. For all miscellaneous metal work conform to ASTM A 36 and galvanize according to ASTM A 123. For the SCI100GM fender panels conform to AASHTO 180. Galvanize the SCI100GM fender panels and SCI100GM -beam connectors after fabrication according to ASTM A 123.

SUBSECTION: 725.02.04 Type VII Class C.
REVISION: Replace bullet 2) with the following:

2) The SCI100GM System as developed by SCI Products, Inc. of St. Charles, Illinois. For all miscellaneous metal work conform to ASTM A 36 and galvanize according to ASTM A 123. For the SCI100GM fender panels conform to AASHTO 180. Galvanize the SCI100GM fender panels and SCI100GM-beam connectors after fabrication according to ASTM A 123.

SUBSECTION: 805.01 GENERAL.
REVISION: Replace the second paragraph with the following:

The Department's List of Approved Materials includes the Aggregate Source List, the list of Class A and Class B Polish-Resistant Aggregate Sources, and the Concrete Restriction List.

SUBSECTION: 805.04 CONCRETE.
REVISION: Replace the "AASHTO T 160" reference in first sentence of the third paragraph with "KM 64-629"

SUBSECTION: 805.15 GRADATION ACCEPTANCE OF NON-SPECIFICATION COARSE AGGREGATE.
TABLE: AGGREGATE SIZE USE
PART: Cement Concrete Structures and Incidental Construction
REVISION: Replace "9-M for Waterproofing Overlays" with "8 or 9-M for Waterproofing Overlays"

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SUBSECTION: 805.15 GRADATION ACCEPTANCE OF NON-SPECIFICATION COARSE AGGREGATE.
REVISION: Replace the "SIZES OF COARSE AGGREGATES" table in with the following:

SIZES OF COARSE AGGREGATES

	Sieve	AMOUNTS FINER THAN EACH LABORATORY SIEVE (SQUARE OPENINGS) PERCENTAGE BY WEIGHT															
Aggregate Size	Nominal [3] Maximum Aggregate Size	4 inch	3 1/2 inch	3 inch	2 1/2 inch	2 inch	1 1/2 inch	1 inch	3/4 inch	1/2 inch	3/8 inch	No. 4	No. 8	No. 16	No. 30	No. 100	No. 200
1	3 ½ inch	100	90-100		25-60		0-15		0-5								
2	2 ½ inch			100	90-100	35-70	0-15		0-5								
23	2 inch			100		40-90		0-15		0-5							
3	2 inch				100	90-100	35-70	0-15		0-5							
357	2 inch				100	95-100		35-70		10-30		0-5					
4	1 ½ inch					100	90-100	20-55	0-15		0-5						
467	1 ½ inch					100	95-100		35-70		10-30	0-5					
5	1 inch						100	90-100	20-55	0-10	0-5						
57	1 inch						100	95-100		25-60		0-10	0-5				
610	1 inch						100	85-100		40-75		15-40					
67	3/4 inch							100	90-100		20-55	0-10	0-5				
68	3/4 inch							100	90-100		30-65	5-25	0-10	0-5			
710	3/4 inch							100	80-100		30-75	0-30					
78	1/2 inch								100	90-100	40-75	5-25	0-10	0-5			
8	3/8 inch									100	85-100	10-30	0-10	0-5			
9-M	3/8 inch									100	75-100	0-25	0-5				
10[2]	No. 4										100	85-100				10-30	
11[2]	No. 4										100	40-90	10-40			0-5	
DENSE GRADED AGGREGATE [1]	3/4 inch							100	70-100		50-80	30-65			10-40		4-13
CRUSHED STONE BASE [1]	1 ½ inch				100		90-100		60-95		30-70	15-55			5-20		0-8

[1] *Gradation performed by wet sieve KM 64-620 or AASHTO T 11/T 27.*
[2] *Sizes shown for convenience and are not to be considered as coarse aggregates.*
[3] *Nominal Maximum Size is the largest sieve on the gradation table for an aggregate size on which any material may be retained.*

Note: The Department will allow blending of same source/same type aggregate when precise procedures are used such as cold feed, belt, or equivalent and combining of sizes or types of aggregate using the weigh hopper at concrete plants or controlled feed belts at the pugmill to obtain designated sizes.

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SUBSECTION: 805.16 SAMPLING AND TESTING.
REVISION: Replace the "AASHTO T 160" method with the "KM 64-629" method for the Concrete Beam Expansion Test.

Replace the "ASTM D 3042" method with the "KM 64-625" method for Insoluble Residue.

SUBSECTION: 810.04.01 Coating Requirements.
REVISION: Replace the "Subsection 806.07" references with "Subsection 806.06"

SUBSECTION: 810.06.01 Polyvinyl Chloride (PVC) Pipe.
PART: B) Culvert and Entrance Pipe.
REVISION: Replace the title with the following:

B) Culvert Pipe, Storm Sewer, and Entrance Pipe.

SUBSECTION: 837.03 APPROVAL.
REVISION: Replace the last sentence with the following:

The Department will sample and evaluate for approval each lot of thermoplastic material delivered for use per contract prior to installation of the thermoplastic material. Do not allow the installation of thermoplastic material until it has been approved by the Division of Materials. Allow the Department a minimum of 10 working days to evaluate and approve thermoplastic material.

SUBSECTION: 837.03.01 Composition.
REVISION: COMPOSITION Table:

Replace

Lead Chromate	0.0 max.	4.0 min.

with

Heavy Metals Content	Comply with 40 CFR 261

SECTION: DIVISION 800 MATERIAL DETAILS
REVISION: Add the following section in Division 800

SECTION 846 – DURABLE WATERBORNE PAINT

846.01 DESCRIPTION. This section covers quick-drying durable waterborne pavement striping paint for permanent applications. The paint shall be ready-mixed, one-component, 100% acrylic waterborne striping paint suitable for application on such traffic-bearing surfaces as Portland cement concrete, bituminous cement concrete, asphalt, tar, and previously painted areas of these surfaces.

846.02 Approval. Select materials that conform to the composition requirements below. Provide independent analysis data and certification for each formulation stating the total concentration of each heavy metal present, the test method used for each determination, and compliance to 40 CFR 261 for leachable heavy metals content. Submit initial samples for approval before beginning striping operations. The initial sample may be sent from the manufacture of the paint. The Department will randomly sample and evaluate the paint each week that the striping operations are in progress.

The non-volatile portion of the vehicle shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis. The acrylic resin used shall be a 100% cross-linking acrylic as evidenced by infrared peaks at wavelengths 1568, 1624, and 1672 cm-1 with intensities equal to those produced by an acrylic resin known to be 100% cross-linking.

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PAINT COMPOSITION		
Property and Test Method	Yellow	White
Daytime Color (CIELAB) Spectrophotometer using illuminant D65 at 45º illumination and 0º viewing with a 2º observer	L* 81.76 a* 19.79 b* 89.89 Maximum allowable variation 2.0ΔE*	L* 93.51 a* -1.01 b* 0.70 Maximum allowable variation 2.0ΔE*
Nighttime Color (CIELAB) Spectrophotometer using illuminant A at 45º illumination and 0º viewing with a 2º observer	L* 86.90 a* 24.80 b* 95.45 Maximum allowable variation 2.0ΔE*	L* 93.45 a* -0.79 b* 0.43 Maximum allowable variation 2.0ΔE*
Heavy Metals Content	Comply with 40 CFR 261	Comply with 40 CFR 261
Titanium Dioxide ASTM D 4764	NA	10% by weight of pigment min.
VOC ASTM D 2369 and D 4017	1.25 lb/gal max.	1.25 lb/gal max.
Contrast Ratio (at 15 mils wft)	0.97	0.99

846.02.01 Manufacturers Certification. Provide a certification of analysis for each lot of traffic paint produced stating conformance to the requirements of this section. Report the formulation identification, traffic paint trade name, color, date of manufacturer, total quantity of lot produced, actual quantity of traffic paint represented, sampling method utilized to obtain the samples, and data for each sample tested to represent each lot produced.

846.03 ACCEPTANCE PROCEDURES FOR NON-SPECIFICATION DURABLE WATERBORNE PAVEMENT STRIPING PAINT. When non-specification paint is inadvertently incorporated into the work the Department will accept the material with a reduction in pay. The percentage deduction is cumulative based on its compositional properties, but will not exceed 60 percent. The Department will calculate the payment reduction on the unit bid price for the routes where the non-specification paint was used.

DURABLE WATERBORNE PAVEMENT STRIPING PAINT REDUCTION SCHEDULE						
Non-conforming Property	Resin	Color	Contrast	TiO_2	VOC	Heavy Metals Content
Reduction Rate	60%	10%	10%	10%	60%	60%

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SPECIAL NOTE FOR WATERBLASTING STRIPING REMOVAL

This Special Note will apply where indicated on the plans or in the proposal. Section references herein are to the Department's 2008 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Remove pavement striping, temporary or permanent, from asphalt or concrete pavement using ultra-high pressure water.

2.0 MATERIALS AND EQUIPMENT.

2.1 Truck Mounted Ultra-high Pressure Pump and Water Tank. Use a truck having a separate hydrostatic transmission capable of speed increments of ±1 foot per minute at operator's discretion. Use a pump capable of delivering a minimum of 30,000 psi to a bumper mounted deck containing an operator controlled rotating manifold that is speed variable up to at least 3,000 rpm and accepts interchangeable waterjet nozzles. Provide all necessary waterjet nozzle setups and patterns to ensure clean sufficient removal. Ensure the deck's discharge directs the water and removal material in a manner that is not hazardous to vehicles or pedestrians.

2.2 Water. Conform to Section 803.

3.0 CONSTRUCTION. Before starting work, provide the Engineer with a contractor work history of 2 projects where striping removal was completed acceptably for a similar type of pavement. If no history is available, complete 1,000 linear feet of striping removal and obtain the Engineer's approval before continuing.

Conduct striping removal under lane closures meeting the conditions of the MUTCD and Kentucky Standard Drawings and Specifications. Waterblast to remove temporary or permanent striping completely as the Engineer directs. Do not damage the pavement in any way and protect all joint seals. If damage is observed, stop the removal process until the operator can make changes and demonstrate acceptable striping removal. Repair any damage to the pavement. Vacuum all marking material and removal debris concurrently with the blasting operation.

4.0 MEASUREMENT. The Department will measure the quantity in linear feet. When the removal area's width exceeds 8 inches and a second pass is required, the Department will measure the length of the additional pass for Payment. The Department will not measure for payment additional passes for widths of 8 inches or less or passes to further eradicate markings. The Department will not measure repair of damaged pavement for payment and will consider it incidental to this item of work.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
----	Waterblast Stripe Removal	Linear Foot

The Department will consider payment as full compensation for all work required under this note.

January 1, 2008

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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 2008 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 severally 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

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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.
[2]Minimum Average Roll Values for tensile strength of sample material machine direction.
[3]Tensile Strength percentage retained after stated 1000 hr duration of exposure under ASTM D4355 testing. Based on nondegradable components exclusively.
[4]Maximum 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:

Code	Pay Item	Pay Unit
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

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 2008 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with 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 2008 Standard Specifications.

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 Granular Pile Core. 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.

2.4 Cohesive Pile Core. 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 6 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.

2.5 Structure Granular Backfill. Conform to Subsection 805.11

2.6 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843 as required in the plans.

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 granular or cohesive pile core, soil, granular or rock embankment, and structure granular backfill according to the applicable density requirements for the project. When constructing granular or rock embankments, use granular pile core for driven pile foundations and use cohesive pile core for pre-drilled pile or drilled shaft foundations. Place geotextile fabric, Type IV between cohesive pile core and structure granular backfill and granular or rock embankment.

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 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 or install shafts, 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.

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 removing adjacent forms, fill the excavation with structure granular backfill material to the level of the berm prior to placing beams for the bridge. For soil embankments, 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 structure granular backfill to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill 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 structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means the Engineer approves. 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 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. (embankments requiring rock with none present within project excavation limits will be constructed using granular embankment)

4.3 Granular Pile Core. 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 furnishing and placing 8-inch perforated underdrain pipe and will consider it incidental to the Granular pile core. The Department will not measure for payment any granular pile core that is necessary because the contractor elects to use granular or rock embankment when it is not specified in the plans.

4.4 Cohesive Pile Core. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204.

4.5 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.

When following construction sequence "A", as shown on the Standard Drawings, the Department will not measure structure excavation at the end bent for payment and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the 4-inch perforated underdrain pipe and will consider it incidental to the Structure Granular Backfill.

4.6 Geotextile Fabric. The Department will measure the quantities as specified in Section 214. The Department will not measure the quantity of fabric used for separating granular or rock embankment and cohesive pile core and will consider it incidental to cohesive pile core.

4.7 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.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
02223	Granular Embankment	Cubic Yards
20209EP69	Granular Pile Core	Cubic Yards
20210EP69	Cohesive Pile Core	Cubic Yards

69

02231	Structure Granular Backfill	Cubic Yards
02596, 02599	Geotextile Fabric, Type	See Section 214

The Department will consider payment as full compensation for all work required in this provision.

April 24, 2008

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

LABOR AND WAGE REQUIREMENTS
APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS

I. APPLICATION

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

II. NONDISCRIMINATION OF EMPLOYEES

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 (between forty and seventy); 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 (between forty and seventy). 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, disability or age (between forty and seventy), except that such notice or advertisement may indicate a preference, limitation, or specification based on religion, or national origin when religion, or national origin 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 (between forty and seventy), in admission to, or employment in any program established to provide apprenticeship or other training.

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

III. PAYMENT OF PREDETERMINED MINIMUM WAGES

1. These special provisions are supplemented elsewhere in the contract by special provisions which set forth certain predetermined minimum wage rates. The contractor shall pay not less than those rates.

2. The minimum wage determination schedule shall be posted by the contractor, in a manner prescribed by the Department of Highways, at the site of the work in prominent places where it can be easily seen by the workers.

IV. STATEMENTS AND PAYROLLS

1. All contractors and subcontractors affected by the terms of KRS 337.505 to 337.550 shall keep full and accurate payroll records covering all disbursements of wages to their employees to whom they are required to pay not less than the prevailing rate of wages. Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of one (1) year from the date of completion of this contract.

2. The payroll records shall contain the name, address and social security number of each employee, his correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions made and actual wages paid.

3. The contractor shall make his daily records available at the project site for inspection by the State Department of Highways contracting office or his authorized representative.

Periodic investigations shall be conducted as required to assure compliance with the labor provisions of the contract. Interrogation of employees and officials of the contractor shall be permitted during working hours.

Aggrieved workers, Highway Managers, Assistant District Engineers, Resident Engineers and Project Engineers shall report all complaints and violations to the Division of Contract Procurement.

The contractor shall be notified in writing of apparent violations. The contractor may correct the reported violations and notify the Department of Highways of the action taken or may request an informal hearing. The request for hearing shall be in writing within ten (10) days after receipt of the notice of the reported violation. The contractor may submit

records and information which will aid in determining the true facts relating to the reported violations.

Any person or organization aggrieved by the action taken or the findings established as a result of an informal hearing by the Division of Contract Procurement may request a formal hearing.

4. The wages of labor shall be paid in legal tender of the United States, except that this condition will be considered satisfied if payment is made by a negotiable check, on a solvent bank, which may be cashed readily by the employee in the local community for the full amount, without discount or collection charges of any kind. Where checks are used for payments, the contractor shall make all necessary arrangements for them to be cashed and shall give information regarding such arrangements.

5. No fee of any kind shall be asked or accepted by the contractor or any of his agents from any person as a condition of employment on the project.

6. No laborers shall be charged for any tools used in performing their respective duties except for reasonably avoidable loss or damage thereto.

7. Every employee on the work covered by this contract shall be permitted to lodge, board, and trade where and with whom he elects and neither the contractor nor his agents, nor his employees shall directly or indirectly require as a condition of employment that an employee shall lodge, board or trade at a particular place or with a particular person.

8. Every employee on the project covered by this contract shall be an employee of either the prime contractor or an approved subcontractor.

9. No charge shall be made for any transportation furnished by the contractor or his agents to any person employed on the work.

10. No individual shall be employed as a laborer or mechanic on this contract except on a wage basis, but this shall not be construed to prohibit the rental of teams, trucks or other equipment from individuals.

No Covered employee may be employed on the work except in accordance with the classification set forth in the schedule mentioned above; provided, however, that in the event additional classifications are required, application shall be made by the contractor to the Department of Highways and (1) the Department shall request appropriate classifications and rates from the proper agency, or (2) if there is urgent need for additional classification to avoid undue delay in the work, the contractor may employ such workmen at rates deemed comparable to rates established for similar classifications provided he has made written application through the Department of Highways, addressed to the proper agency, for the supplemental rates. The contractor shall retroactively adjust, upon receipt of the supplemental rates schedule, the wages of any employee paid less than the established rate and may adjust the wages of any employee overpaid.

11. 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 laborer or mechanic in any work-week in which he is employed on such work, to work in excess of eight hours in any calendar day or in excess of forty hours in such work-week unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such work-week. A laborer, workman or mechanic and an employer may enter into a written agreement or a collective bargaining agreement to work more than eight (8) hours a calendar day but not more than ten (10) hours a calendar day for the straight time hourly rate. This agreement shall be in writing and shall be executed prior to the employee working in excess of eight (8) hours, but not more than ten (10) hours, in any one (1) calendar day.

12. Payments to the contractor may be suspended or withheld due to failure of the contractor to pay any laborer or mechanic employed or working on the site of the work, all or part of the wages required under the terms of the contract. The Department may suspend or withhold payments only after the contractor has been given written notice of the alleged violation and the contractor has failed to comply with the wage determination of the Department of Highways.

13. Contractors and subcontractors shall comply with the sections of Kentucky Revised Statutes, Chapter 337 relating to contracts for Public Works.

Revised 2-16-95

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 (6) provides:
>
> No present or former public servant shall, within six (6) months of 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 the state in matters in which he was directly involved during 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, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved 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.
>
> KRS 11A.040 (8) states:
>
> A former public servant shall not represent a person in a matter before a state agency in which the former public servant was directly involved, 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, Room 136, Capitol Building, 700 Capitol Avenue, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Kentucky Equal Employment Opportunity Act of 1978

The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under ***Vendor Information, Standard Attachments and General Terms*** at the following address: **https://www.eProcurement.ky.gov**.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **finance.contractcompliance@ky.gov** or by phone at 502-564-2874.

General Decision Number: KY100027 09/24/2010 KY27

Superseded General Decision Number: KY20080027

State: Kentucky

Construction Type: Heavy

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.

HEAVY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	03/12/2010
1	03/19/2010
2	05/07/2010
3	05/28/2010
4	06/11/2010
5	07/09/2010
6	07/23/2010
7	08/06/2010
8	09/24/2010

BRIN0004-003 04/01/2010

BRECKENRIDGE COUNTY

	Rates	Fringes
BRICKLAYER	$ 27.47	12.53

BRKY0001-005 06/01/2009

BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, & TRIMBLE COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 24.11	9.97

BRKY0002-006 06/01/2009

BRACKEN, GALLATIN, GRANT, MASON & ROBERTSON COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 26.12	9.73

BRKY0007-004 06/01/2009

BOYD, CARTER, ELLIOT, FLEMING, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 26.82	15.30

BRKY0017-004 06/01/2009

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN, HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS, OWEN, SCOTT, WASHINGTON & WOODFORD COUNTIES:

	Rates	Fringes
BRICKLAYER ((Layout Men))	$ 24.36	9.97
BRICKLAYER	$ 24.11	9.97
Refractory (Refractory/Acid Brick/Glass)	$ 24.61	9.97

* CARP0064-001 07/01/2010

	Rates	Fringes
CARPENTER	$ 25.45	12.21
Diver	$ 37.64	10.23
PILEDRIVERMAN	$ 25.09	10.23

* CARP1031-008 06/01/2010

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN, HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS, OWEN, SCOTT & WOODWARD COUNTIES:

	Rates	Fringes
MILLWRIGHT	$ 23.35	14.10

CARP1031-009 06/01/2009

BOYD, CARTER, ELLIOTT, FLEMING, GREENUP, LEWIS, MASON, ROBERTSON & ROWAN COUNTIES:

	Rates	Fringes
MILLWRIGHT	$ 30.60	13.78

* CARP1031-010 06/01/2010

BRECKINRIDGE, BULLITT, CARROLL, GALLATIN, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES:

	Rates	Fringes
MILLWRIGHT	$ 24.40	16.52

CARP1066-004 09/01/2009

BRACKEN & GRANT COUNTIES:

	Rates	Fringes
MILLWRIGHT	$ 27.55	15.39

ELEC0212-008 11/30/2009

BRACKEN, GALLATIN , and GRANT COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 26.11	13.72

ELEC0212-014 01/01/2006

BRACKEN, GALLATIN & GRANT COUNTIES:

	Rates	Fringes
Sound & Communication Technician	$ 20.45	6.95

ELEC0317-012 06/01/2009

BOYD, CARTER, ELLIOT & ROWAN COUNTIES:

	Rates	Fringes
Electricians:		
Cable Splicer	$ 32.68	18.13
Electrician	$ 31.12	18.08

ELEC0369-007 05/26/2010

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	$ 29.27	13.08

ELEC0575-002 12/01/2009

FLEMING, GREENUP, LEWIS & MASON COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 30.79	11.88

ENGI0181-018 07/01/2010

	Rates	Fringes
Operating Engineer:		

GROUP 1	$ 25.35	13.00
GROUP 2	$ 22.93	13.00
GROUP 3	$ 23.31	13.00
GROUP 4	$ 22.67	13.00

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Conrete Pump; Skid Steer Machine with all Attachments; Switchman or Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points; & Whirley Oiler

GROUP 3 - All Off Road Material Handling Equipment, including Articulating Dump Trucks; Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steerman; Tamping Machine; Tractor (Under 50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where the length of the boom in combination with the length of the piling 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 06/01/2009

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) &

BRACKEN, GALLATIN, GRANT, HARRISON & ROBERTSON COUNTIES:

	Rates	Fringes
IRONWORKER		
Fence Erector	$ 23.55	16.72
Structural	$ 26.17	16.72

IRON0070-006 06/01/2010

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);

ANDERSON, BOYLE, BRECKINRIDGE, BULLITT, FAYETTE, FRANKLIN, GRAYSON, HARDIN, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE, WASHINGTON & WOODFORD COUNTIES:

	Rates	Fringes
IRONWORKER	$ 24.99	17.98

IRON0372-006 06/01/2009

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);

BRACKEN, GALLATIN, GRANT, HARRISON & ROBERTSON COUNTIES:

	Rates	Fringes
IRONWORKER		
Beyond 30-mile radius of Hamilton County, Ohio Courthouse	$ 26.45	16.70

Up to & including 30-mile
radius of Hamilton County,
Ohio Courthouse.....$ 26.20 16.70

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* IRON0769-007 06/01/2010

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);
BATH, BOYD, CARTER, ELLIOTT, GREENUP, LEWIS, MONTGOMERY & ROWAN COUNTIES:

	Rates	Fringes
IRONWORKER		
ZONE 1	$ 29.59	17.77
ZONE 2	$ 29.99	17.77
ZONE 3	$ 31.59	17.77

ZONE 1 - Up to 10 mi. radius of union hall, Ashland, Ky., 1643 Greenup Avenue
ZONE 2 - 10 to 50 mi. radius of union hall;
ZONE 3 - 50 mi. radius and beyond

LABO0189-003 07/01/2010

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	$ 20.61	10.00
GROUP 2	$ 20.86	10.00
GROUP 3	$ 20.91	10.00
GROUP 4	$ 21.51	10.00

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; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-008 07/01/2010

ANDERSON, BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 20.61	10.00
GROUP 2	$ 20.86	10.00
GROUP 3	$ 20.91	10.00
GROUP 4	$ 21.51	10.00

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; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-009 07/01/2010

BRECKINRIDGE & GRAYSON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 20.61	10.00
GROUP 2	$ 20.86	10.00
GROUP 3	$ 20.91	10.00
GROUP 4	$ 21.51	10.00

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; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger;

Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; 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 06/01/2010

BRACKEN, GALLATIN, GRANT, MASON & OWEN COUNTIES:

	Rates	Fringes
PAINTER (Heavy & Highway Bridges - Guardrails - Lightpoles - Striping)		
Bridge Equipment Tender and Containment Builder	$ 20.27	8.10
Brush & Roller	$ 22.85	8.10
Elevated Tanks; Steeplejack Work; Bridge & Lead Abatement	$ 23.85	8.10
Sandblasting & Water Blasting	$ 23.60	8.10
Spray	$ 23.35	8.10

PAIN0118-004 05/01/2010

ANDERSON, BRECKINRIDGE, BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES:

	Rates	Fringes
PAINTER		
Brush & Roller	$ 18.50	10.30
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning	$ 19.50	10.30

PAIN1072-003 12/01/2009

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS , and ROWAN COUNTIES

	Rates	Fringes
Painters:		
Bridges; Locks; Dams; Tension Towers; & Energized Substations	$ 28.15	12.38
Power Generating Facilities	$ 25.05	12.38

PLUM0248-003 06/01/2010

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
Plumber and Steamfitter	$ 31.37	15.23

PLUM0392-007 06/01/2008

BRACKEN, CARROLL (Eastern Half), GALLATIN, GRANT, MASON, OWEN & ROBERTSON COUNTIES:

	Rates	Fringes
Plumbers and Pipefitters	$ 28.39	14.30

* PLUM0502-003 08/01/2010

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	$ 30.50	15.13

SUKY2001-002 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

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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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)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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

PART IV

INSURANCE

INSURANCE

The Contractor shall carry the following insurance in addition to the insurance required by law:

1. Contractor's Public Liability Insurance not less than $100,000.00 for damages arising out of bodily injuries to or death to one person. Not less than $300,000.00 for damages arising out of bodily injuries to or death to two or more persons.

2. Contractor's Property Damages Liability Insurance. Not less than $100,000.00 for all damages arising out of injury or destruction of property in any one accident. Not less than $300,000.00 for all damages during the policy period.

3. Contractor's Protective Public Liability and Property Damage Insurance. The contractor shall furnish evidence with respect to operations performed for him by subcontractors that he carries in his own behalf for the above stipulated amounts.

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

   a. "policy contains no deductible clauses."

   b. "policy contains _____ (amount) deductible property damage clause but company will pay claim and collect the deductible from the insured."

5. WORKMEN'S COMPENSATION INSURANCE. The contractor shall furnish evidence of coverage of all his employees or give evidence of self-insurance by submitting a copy of a certificate issued by the Workmen's Compensation Board.

PART V

BID ITEMS

CONTRACT ID: 101309 PAGE: 1
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SECTION 0001	PAVING				
0010	00003	CRUSHED STONE BASE	6,365.000	TON		
0020	00069	CRUSHED AGGREGATE SIZE NO 3	29,050.000	TON		
0030	00190	LEVELING & WEDGING PG64-22	74.000	TON		
0040	00214	CL3 ASPH BASE 1.00D PG64-22	14,017.000	TON		
0050	00388	CL3 ASPH SURF 0.38B PG64-22	2,912.000	TON		
	SECTION 0002	ROADWAY				
0060	01000	PERFORATED PIPE-4 IN	176.000	LF		
0070	01811	STANDARD CURB AND GUTTER MOD	8,979.000	LF		
0080	02014	BARRICADE-TYPE III	12.000	EACH		
0090	02101	CEM CONC ENT PAVEMENT-8 IN	179.000	SQYD		
0100	02159	TEMP DITCH	5,099.000	LF		
0110	02200	ROADWAY EXCAVATION	20,712.000	CUYD		
0120	02261	FENCE-WOVEN WIRE	125.000	LF		
0130	02360	GUARDRAIL TERMINAL SECTION NO 1	2.000	EACH		
0140	02363	GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.000	EACH		
0150	02367	GUARDRAIL END TREATMENT TYPE 1	1.000	EACH		
0160	02369	GUARDRAIL END TREATMENT TYPE 2A	2.000	EACH		
0170	02381	REMOVE GUARDRAIL	1,666.000	LF		
0180	02391	GUARDRAIL END TREATMENT TYPE 4A	1.000	EACH		
0190	02429	RIGHT-OF-WAY MONUMENT TYPE 1	21.000	EACH		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 2
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE UNIT QUANTITY	UNIT PRICE	AMOUNT
0200	02432	WITNESS POST	5.000 EACH		
0210	02545	CLEARING AND GRUBBING (10.4 ACRES)	(1.00) LS		
0220	02562	SIGNS	160.000 SQFT		
0230	02585	EDGE KEY	405.000 LF		
0240	02599	FABRIC-GEOTEXTILE TYPE IV	161,712.000 SQYD		
0250	02650	MAINTAIN & CONTROL TRAFFIC	(1.00) LS		
0260	02651	DIVERSIONS (BY-PASS DETOURS)	(1.00) LS		
0270	02690	SAFELOADING	51.000 CUYD		
0280	02701	TEMP SILT FENCE	5,099.000 LF		
0290	02703	SILT TRAP TYPE A	13.000 EACH		
0300	02704	SILT TRAP TYPE B	13.000 EACH		
0310	02705	SILT TRAP TYPE C	57.000 EACH		
0320	02706	CLEAN SILT TRAP TYPE A	39.000 EACH		
0330	02707	CLEAN SILT TRAP TYPE B	39.000 EACH		
0340	02708	CLEAN SILT TRAP TYPE C	171.000 EACH		
0350	02709	CLEAN TEMP SILT FENCE	15,297.000 LF		
0360	02726	STAKING	(1.00) LS		
0370	03171	CONCRETE BARRIER WALL TYPE 9T	85.000 LF		
0380	05950	EROSION CONTROL BLANKET	1,398.000 SQYD		
0390	05952	TEMP MULCH	62,340.000 SQYD		
0400	05966	TOPDRESSING FERTILIZER	1.300 TON		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 3
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE UNIT QUANTITY	UNIT PRICE	AMOUNT
0410	05985	SEEDING AND PROTECTION	25,023.000 SQYD		
0420	06510	PAVE STRIPING-TEMP PAINT-4 IN	31,020.000 LF		
0430	06514	PAVE STRIPING-PERM PAINT-4 IN	29,000.000 LF		
0440	06530	PAVE STRIPING REMOVAL-4 IN	19,000.000 LF		
0450	06568	PAVE MARKING-THERMO STOP BAR-24IN	152.000 LF		
0460	06570	PAVE MARKING-PAINT CROSS-HATCH	4,854.000 SQFT		
0470	06574	PAVE MARKING-THERMO CURV ARROW	30.000 EACH		
0480	06578	PAVE MARKING-THERMO MERGE ARROW	3.000 EACH		
0490	06589	PAVEMENT MARKER TYPE V-MW	104.000 EACH		
0500	06591	PAVEMENT MARKER TYPE V-BY	208.000 EACH		
0510	08905	CRASH CUSHION TY VI CLASS CT	2.000 EACH		
0520	10020NS	FUEL ADJUSTMENT	39,045.000 DOLL	1.00	39,045.00
0530	10030NS	ASPHALT ADJUSTMENT	40,912.000 DOLL	1.00	40,912.00
0540	20601ES213	CLEAN TEMPORARY SILT DITCH	15,297.000 LF		
0550	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	2,138.000 LF		
0560	22664EN	WATER BLASTING EXISTING STRIPE	30,677.000 LF		
0570	23131ER701	PIPELINE VIDEO INSPECTION	2,830.000 LF		
0580	23274EN11F	TURF REINFORCEMENT MAT 1	1,775.000 SQYD		
	SECTION 0003	DRAINAGE			
0590	00440	ENTRANCE PIPE-15 IN	114.000 LF		
0600	00441	ENTRANCE PIPE-18 IN	90.000 LF		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 4
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE UNIT QUANTITY	UNIT PRICE	AMOUNT
0610	00470	CULVERT PIPE-48 IN	94.000 LF		
0620	00521	STORM SEWER PIPE-15 IN	2,033.200 LF		
0630	00522	STORM SEWER PIPE-18 IN	880.000 LF		
0640	00524	STORM SEWER PIPE-24 IN	1,881.000 LF		
0650	00526	STORM SEWER PIPE-30 IN	145.000 LF		
0660	01310	REMOVE PIPE	16.000 LF		
0670	01370	METAL END SECTION TY 1-15 IN	6.000 EACH		
0680	01391	METAL END SECTION TY 3-18 IN	2.000 EACH		
0690	01397	METAL END SECTION TY 3-48 IN	2.000 EACH		
0700	01459	CURB BOX INLET TYPE A MOD	50.000 EACH		
0710	01496	DROP BOX INLET TYPE 3	5.000 EACH		
0720	01541	DROP BOX INLET TYPE 10	1.000 EACH		
0730	01559	DROP BOX INLET TYPE 13G	2.000 EACH		
0740	01641	JUNCTION BOX-15 IN	2.000 EACH		
0750	01706	REMOVE CATCH BASIN	2.000 EACH		
0760	02483	CHANNEL LINING CLASS II	4.200 TON		
0770	02484	CHANNEL LINING CLASS III	54.900 TON		
0780	02600	FABRIC GEOTEXTILE TY IV FOR PIPE	7,387.600 SQYD	2.00	14,775.20
0790	08100	CONCRETE-CLASS A	10.790 CUYD		
0800	08150	STEEL REINFORCEMENT	344.700 LB		

SECTION 0004 BRIDGE

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 5
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE QUANTITY	UNIT	UNIT PRICE	AMOUNT
0810	02231	STRUCTURE GRANULAR BACKFILL	120.000	CUYD		
0820	02998	MASONRY COATING	398.000	SQYD		
0830	03299	ARMORED EDGE FOR CONCRETE	55.600	LF		
0840	08020	CRUSHED AGGREGATE SLOPE PROT	192.000	TON		
0850	08033	TEST PILES	121.000	LF		
0860	08046	PILES-STEEL HP12X53	660.000	LF		
0870	08094	PILE POINTS-12 IN	14.000	EACH		
0880	08100	CONCRETE-CLASS A	31.800	CUYD		
0890	08104	CONCRETE-CLASS AA	119.300	CUYD		
0900	08150	STEEL REINFORCEMENT	3,500.000	LB		
0910	08151	STEEL REINFORCEMENT-EPOXY COATED	13,971.000	LB		
0920	08257	HANDRAIL-PEDESTRIAN ALUMINUM	165.000	LF		
0930	08665	PRECAST PC BOX BEAM CB33-48	756.000	LF		
	SECTION 0005	SEWER				
0940	20424EC	CONNECT TO EXIST MANHOLE	1.000	EACH		
0950	21211ND	CUT & CAP-4 IN	2.000	EACH		
0960	23528EC	PVC FORCE MAIN-4 IN-INSTALL	2,658.000	LF		
0970	23529EC	GRAVITY SEWER-8 IN-INSTALL	941.000	LF		
0980	23530EC	BEND 90 DEG-4 IN-INSTALL	1.000	EACH		
0990	23531EC	BEND 45 DEG-4 IN-INSTALL	10.000	EACH		
1000	23532EC	INSTALL MANHOLE	4.000	EACH		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 6
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE UNIT QUANTITY	UNIT PRICE	AMOUNT
1010	23533EC	CLASS B CONCRETE CAP-INSTALL	40.000 LF		
1020	23534EC	CONCRETE ENCASEMENT-INSTALL	24.000 LF		
	SECTION 0006	LIGHTING			
1030	04740	POLE BASE	6.000 EACH		
1040	04780	FUSED CONNECTOR KIT	12.000 EACH		
1050	04793	CONDUIT-1 1/4 IN	700.000 LF		
1060	04811	JUNCTION BOX TYPE B	2.000 EACH		
1070	04820	TRENCHING AND BACKFILLING	650.000 LF		
1080	04832	WIRE-NO. 12	575.000 LF		
1090	04833	WIRE-NO. 8	1,460.000 LF		
1100	04940	REMOVE LIGHTING	(1.00) LS		
1110	04942	REMOVE STORE & REINSTALL POLE	6.000 EACH		
	SECTION 0007	WATERLINE			
1120	01076	STEEL ENCASEMENT PIPE-20 IN	156.000 LF		
1130	01097	DUCTILE IRON PIPE-10 IN	6.000 LF		
1140	03470	TIE-IN 10 IN	1.000 EACH		
1150	03543	BEND 11.25 DEG 16 IN	4.000 EACH		
1160	03545	BEND 22.50 DEG 6 IN	2.000 EACH		
1170	03548	BEND 22.50 DEG 12 IN	2.000 EACH		
1180	03552	BEND 22.50 DEG 16 IN	6.000 EACH		
1190	20150EC	TRANSFER SERVICE	4.000 EACH		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 7
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE QUANTITY	UNIT	UNIT PRICE	AMOUNT
1200	20329EC	INSTALL FIRE HYDRANT NEW	3.000	EACH		
1210	20329EC	INSTALL FIRE HYDRANT RELOCATED	3.000	EACH		
1220	20707ND	CUT AND PLUG 16 IN	3.000	EACH		
1230	20708ND	CUT AND PLUG 12 IN	3.000	EACH		
1240	20821ND	TEE 12 IN X 12 IN	1.000	EACH		
1250	20890ND	CUT AND CAP 10 IN	3.000	EACH		
1260	21109ND	RELOCATE SERVICE	1.000	EACH		
1270	21113ND	TIE-IN 16 IN	2.000	EACH		
1280	21114ND	CUT AND PLUG 6 IN	2.000	EACH		
1290	22800NN	REDUCER-16 IN X 10 IN	2.000	EACH		
1300	22954ED	DUCTILE IRON PIPE-12 IN-INSTALL	278.000	LF		
1310	22956ND	GATE VALVE-12 IN-INSTALL	2.000	EACH		
1320	22957ND	BEND 45 DEG-12 IN-INSTALL	7.000	EACH		
1330	23201EC	TEE-16 IN X 16 IN	3.000	EACH		
1340	23368EC	BEND 45 DEG-16 IN-INSTALL	8.000	EACH		
1350	23375EC	DUCTILE IRON PIPE-16 IN-INSTALL	1,106.000	LF		
1360	23515EC	DUCTILE IRON PIPE-6 IN-INSTALL	121.000	LF		
1370	23516EC	GATE VALVE-16 IN-INSTALL	7.000	EACH		
1380	23517EC	GATE VALVE-6 IN-INSTALL	1.000	EACH		
1390	23518EC	BEND 45 DEG-6 IN-INSTALL	2.000	EACH		
1400	23523EC	TAPPING SLEEVE-12 X 16 IN-INSTALL	1.000	EACH		

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
FRANKFORT, KY 40622

CONTRACT ID: 101309 PAGE: 8
COUNTY: BULLITT LETTING: 11/19/10
PROPOSAL: FD04 015 0480 001-003 CALL NO: 311

LINE NO	ITEM	DESCRIPTION	APPROXIMATE UNIT QUANTITY	UNIT PRICE	AMOUNT
1410	23524EC	STEEL ENCASEMENT PIPE-30 IN-INSTALL	223.000 LF		
1420	23525EC	PVC PIPE REMOVAL-12 IN-INSTALL	1,047.000 LF		
1430	23526EC	PVC PIPE REMOVAL-10 IN-INSTALL	2,337.000 LF		
1440	23997EC	TEE-16 X 6 IN	1.000 EACH		
1450	23998EC	UCI PIPE REMOVAL-6 IN	82.000 LF		
1460	23999EC	DPW PIPE REMOVAL-16 IN	61.000 LF		
1470	24000EC	SAFELOAD AND ABANDON A.C. WM-6 IN	1,149.000 LF		
	SECTION 0008	MOBILIZATION / DEMOBILIZATION			
1480	02568	MOBILIZATION (NO MORE THAN 5%)	LUMP		
1490	02569	DEMOBILIZATION (AT LEAST 1.5%)	LUMP		
		TOTAL BID			