



CALL NO. 301

CONTRACT ID. 191232

MUHLENBERG COUNTY

FED/STATE PROJECT NUMBER FD04 SPP 089 0062 016-018

DESCRIPTION EVERLY BROTHERS BLVD (US 62)

WORK TYPE ASPHALT SURFACE WITH BRIDGE

PRIMARY COMPLETION DATE 10/1/2021

LETTING DATE: August 23,2019

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN DAYLIGHT TIME August 23,2019. Bids will be publicly announced at 10:00 AM EASTERN DAYLIGHT TIME.

PLANS AVAILABLE FOR THIS PROJECT.

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

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PART I
SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 02

CONTRACT ID - 191232

FD04 SPP 089 0062 016-018

COUNTY - MUHLENBERG

PCN - DE08900621932

FD04 SPP 089 0062 016-018

EVERLY BROTHERS BLVD (US 62) (MP 16.471) WIDEN US 62 FROM WALMART TO US 431 (MP 17.930), A
DISTANCE OF 01.50 MILES.ASPHALT SURFACE WITH BRIDGE SYP NO. 02-08506.00.

GEOGRAPHIC COORDINATES LATITUDE 37:17:20.00 LONGITUDE 87:07:10.00

COMPLETION DATE(S):

COMPLETED BY 10/01/2021

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

JOINT VENTURE BIDDING

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

UNDERGROUND FACILITY DAMAGE PROTECTION

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

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

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

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

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

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to kytc.projectquestions@ky.gov. The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

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

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

HARDWOOD REMOVAL RESTRICTIONS

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

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

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

ACCESS TO RECORDS

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

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

April 30, 2018

SPECIAL NOTE FOR RECIPROCAL PREFERENCE

RECIPROCAL PREFERENCE TO BE GIVEN BY PUBLIC AGENCIES TO RESIDENT BIDDERS

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the electronic bidding software. Submittal of the Affidavit should be done along the bid in Bid Express.

April 30, 2018

ASPHALT MIXTURE

Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

INCIDENTAL SURFACING

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.

FUEL AND ASPHALT PAY ADJUSTMENT

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

ASPHALT PAVEMENT RIDE QUALITY CATEGORY A

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

OPTION A

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

MATERIAL TRANSFER VEHICLE (MTV)

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

DIVISION OF TRAFFIC OPERATIONS
RECOMMENDATION FOR PICKUP OF ITEMS TO BE INSTALLED
ON TRAFFIC SIGNALS/LIGHTING

Item Number: 2-8506.00
 County: MUHLENBURG
 Description: US 431/ KY 1031 @ US 62

| Cabinets | | Master code | |
|-----------------|-----------|--|--|
| 1 | T-01-0010 | Pole Mounted 336 Cabinet | |
| 1 | T-01-0105 | ATC Controller | |
| 1 | T-01-0106 | 1C w/Maxtime (this should go with item ATC controller) | |
| 1 | T-01-0510 | Isolator, Model 242 (for ped detector and railroad) | |
| 8 | T-01-0600 | Loop Detector, Model 222 | |
| 8 | T-01-0700 | Load Switches | |
| Signals | | | |
| 12 | T-02-0009 | Siemens 3 Section Signal | |
| 4 | T-02-0090 | Pedestrian signal housing | |
| 4 | T-02-0300 | LED Module 12" red arrow | |
| 8 | T-02-0310 | LED Module 12" yellow arrow | |
| 8 | T-02-0330 | LED Module 12" red ball | |
| 8 | T-02-0340 | LED Module 12" yellow ball | |
| 8 | T-02-0350 | LED Module 12" green ball | |
| 4 | T-02-0365 | LED Countdown Pedestrian Module | |
| Special items | | | |
| 1 | T-02-0504 | Router (this includes power supply/antenna/cabling) | |
| 4 | T-06-0710 | Ped Detector Pole Mount FSA Box | |
| 4 | T-06-0730 | Ped Button w/o Plunger | |
| 4 | T-17-0015 | 9 X 15 Countdown Ped Sign DBL Sided | |
| Poles | | | |
| 4 | T-04-0030 | Steel Strain Pole 32 foot | |
| Send copies to: | | | |

Electrical Contractor Name _____
 Electrical Contractor Supervisor _____ Contact number for Supervisor _____
 Project Engineer _____ Contact number for Project Engineer _____
 Project Engineer attests that the mentioned contractor is the actual electrical contractor on this project
 Signature of Project Engineer or Designee _____

SPECIAL NOTE FOR FOLD AND FORM PVC PIPE LINERS PIPE REHABILITATION BY THERMOFORMED (FOLD AND FORM) PIPE METHOD

DESCRIPTION OF WORK

The work specified under this section provides for the rehabilitation of an existing culvert pipe using PVC Fold and Form trenchless technology. The process consists of installing a thermoformed PVC pipe liner inside an existing culvert (Host Pipe) from inlet to outlet as described in the following sections. When installed the liner will be a seamless, joint-less, solid wall PVC pipe liner that tightly conformed to the interior contours of the original host pipe. The liner shall be continuous from inlet to outlet with no seams or joints. In most cases required service connections will be reconnected using closed circuit television and remotely controlled cutters.

REFERENCED DOCUMENTS

This specification references ASTM standards and other related standards, which are made a part hereof by reference and shall be the latest edition thereof.

ASTM-F1504

ASTM-E831: Coefficient of Linear Thermal Expansion

ASTM-D638: Tensile Strength and Tensile Modulus

ASTM-D790: Flexural Strength and Flexural Modulus

ASTM-D792: Specific Gravity

ASTM-D256: IZOD Impact

CONSTRUCTION

PRE-INSTALLATION

Host Pipe Preparation

The host pipe shall be inspected and cleaned prior to culvert lining. Any cleaning or clearing of pipes shall be included in the item "Ditching and Shouldering" or "Clean Pipe Structure".

Prior to inserting the PVC liner, each pipe should be inspected to verify any connecting pipes and also to determine if additional work will be needed to prepare the host pipe for the PVC liner. Any work necessary to prepare the host pipe shall be incidental to PVC pipe liners.

LINER INSTALLATION

Pre Heating

Prior to insertion of the liner into the host pipe the Contractor shall pre-heat the liner in the manner prescribed by the manufacturer's installation instructions. The heated liner must be pliable enough to be pulled into the host pipe with as little resistance as possible.

Pipe Liner Insertion

The liner pipe shall be inserted into the culvert through existing catch basins or culvert inlet or outlets. Insertion of the liner into the host pipe will be accomplished by pulling the liner into the host pipe according to the manufacturer's recommendations.

Stress Relief

After the liner has been inserted into the host pipe, the Contractor shall relieve any stress imparted to the liner during the insertion in a manner prescribed in the manufacturer's installation instructions.

Processing

The Contractor shall supply suitable heat source equipment. The equipment shall be capable of delivering steam through the lining section to uniformly raise the temperature of the PVC material to effect forming of the liner pipe.

Suitable monitors shall be installed to gauge steam temperatures and temperatures at the input and exhaust ends of the liner. Steam monitoring methods and forming period shall be recommended by the liner manufacturer.

After forming the liner shall be cooled using compressed air or a mixture of compressed air and water. Cooling shall be deemed complete when the temperature of the exhaust air or air water mixture has remained constantly below 110°F for a minimum of 20 minutes.

Pipe Liner Trimming

After installation the ends of the PVC liner shall be cut off and the ends folded over the host pipe or pressed flush against the headwall.

Connecting pipes

The exact number and location of pipe connections shall be determined from the pre-lining inspection. It shall be the Contractor's responsibility to accurately locate all existing pipe connections. The Contractor shall reconnect all pipe connections to the pipe liner.

All existing service connections shall be reinstated by remotely controlled robotic device or other methods approved by the Engineer.

Pipe reconnections shall be smooth and circular in nature. The opening shall be smooth and conform to the inside shape and size of the original connection. Trial cuts should be repaired per the pipe liner manufacturer's recommendations not be at no cost to the Department.

DEFECT REPAIR OR REPLACEMENT

Any defects, which in the judgment of the Department and the pipe liner manufacturer that will affect the integrity or strength of the liner, shall be repaired or the pipe liner replaced at the Contractor's expense per the pipe liner manufacturers recommendations. All repairs or replacement of defective work shall be completed to the full satisfaction of the Department.

PAYMENT

Payment for the work included in this section will be paid by the linear foot of pipe lined. Work incidental to the lining process such as, by-pass pumping, traffic control, pipe preparation, and other activities necessary to line the pipe shall not be paid for directly but shall be considered incidental.

SPECIAL NOTE

For Tree Removal

**Muhlenberg County
Widen US-62 from Wal-Mart to US-431
Item No. 2-8506**

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

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

SPECIAL NOTE FOR PIPELINE INSPECTION

1.0 DESCRIPTION. The Department will perform visual inspections on all pipe on the project. A video inspection will be required on projects having more than 250 linear feet of storm sewer and/or culvert pipe and on routes with an ADT of greater than 1,000 vehicles. Conduct video inspections on all pipe located under the roadway and 50 percent of the remaining pipe not under the roadway. Storm sewer runs and outfall pipes not under the roadway take precedence over rural entrance pipes. Contractors performing this item of work must be prequalified with the Department in the work type J51 (Video Pipe Inspection and Cleaning). Deflection testing shall be completed using a mandrel in accordance with the procedure outlined below or by physical measurement for pipes greater than 36 inches in diameter. Mandrel testing for deflection must be completed prior to the video inspection testing. Unless otherwise noted, Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

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

2.1 INSPECTION FOR DEFECTS AND DISTRESSES

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

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

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

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

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

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

3.0 MANDREL TESTING. Mandrel testing will be used for deflection testing. For use on Corrugated Metal Pipe, High Density Polyethylene Pipe, and Polyvinyl Chloride Pipe,

use a mandrel device with an odd number of legs (9 minimum) having a length not less than the outside diameter of the mandrel. The diameter of the mandrel at any point shall not be less than the diameter specified in Section 3.6. Mandrels can be a fixed size or a variable size.

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

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

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

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

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

3.6 AASHTO Nominal Diameters and Maximum Deflection Limits.

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

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

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

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

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

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

4.2 Record and submit all data.

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

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

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

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

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

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

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

Special Note for Bridge Demolition, Renovation and Asbestos Abatement

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

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



Matthew G. Bevin
Governor

COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Greg Thomas
Secretary

Asbestos Inspection Report

To: Robert Hoagland

District: Central Office

Date: July 16, 2019

Conducted By: O'Dail Lawson

Report Prepared By: O'Dail Lawson

Project and Structure Identification

Project Number: Muhlenberg 02-8506.00

Structure ID: 089B00100N

Structure Location: US 62 over CSX RR and Little Cypress Creek

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

Inspection Date: June 26, 2019

Results and Recommendations

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

It is recommended that this report accompany the 10-Day Notice of Intent for Demolition (DEP7036 Form) which is to be submitted to the Kentucky Division of Air Quality prior to abatement, demolition, or renovation of any building or structure in the Commonwealth.



| | |
|-------------------------------------|---|
| <i>MRS, INC.</i> | <i>MRS, Inc. Analytical Laboratory Division</i> |
| 332 West Broadway / Suite # 902 | (502) 495-1212 |
| Louisville, Kentucky - 40202 - 2133 | Fax: (502) 491-7111 |

BULK SAMPLE ASBESTOS ANALYSIS

| | | | |
|--------------|----------------------|----------|---|
| Analysis N # | <u># 907058</u> | Address: | <u>Muhlenberg-02-8506 089B00100N</u> |
| Client Name: | <u>KYTC</u> | | <u>US 62 Over CSX RR & Little Cypress</u> |
| Sampled By: | <u>O'Dail Lawson</u> | | <u>Creek</u> |

| Sample ID | Color | Layered | Fibrous | % FIBROUS ASBESTOS | | | | % NON-ASBESTOS FIBERS | | | |
|-----------|--------|---------|---------|--------------------|---------|-------------|--------|-----------------------|------------|------------|------------|
| | | | | Chrysotile | Amosite | crocidolite | Others | Cellulose | Fiberglass | Syn. Fiber | Other/Mat. |
| # 100-1 | Black | Yes | No | | | | None | | | | 100% |
| # 100-2 | Blue | Yes | No | | | | None | 2% | | | 98% |
| # 100-3 | Yellow | Yes | No | | | | None | | | | 100% |
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Methodology : EPA Method 600/R-93-116
 Date Analyzed : 5-Jul-19
 Analyst : Winterford Mensah

Reviewed By: *Winterford Mensah*
Signature

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

AIHA # 102459

AIHA #1 02459

Chain of Custody Record

Kentucky Transportation Cabinet
200 Mero Street, 5th Floor West
Frankfort, Kentucky 40622
(502) 564-7250 fax (502) 564-5655



O'Dail Lawson odail.lawson@ky.gov KYTC
 Address: 200 Mero Street Frankfort KY
 Phone: 502-564-7250 Fax: 502-564-5655
 PO#:
 Client Information KY TRANS CABINET
 Results Code: ND = None Detected
 FTID = Filter Tampering or Damaged
 N/A = Not Applicable
 Project or Subject Reference **Muhlenberg 02-8506**
 Samplers (signature): *[Signature]*

US-62 over *CS RR Aug*
Little Cypress Creek.

| Sample ID | Sample Description | Collected | | Analysis Requested | Grab/Comp. | No. of Cont. | Cont. Type | Preservative |
|-----------|--------------------|-----------|-------|--------------------|------------|--------------|------------|--------------|
| | | Date | Time | | | | | |
| 100-1 | Joint Compounding | 6/26/19 | 12:20 | Asbestos bulk | Rubber | blach | | N/A |
| 100-2 | REFLECTIVE PAINT | ↓ | ↓ | ↓ | PAINT | blach | | |
| 100-2 | Sealant | ↓ | ↓ | ↓ | Yellow | Sealant | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Relinquished By: _____ Date/Time: _____
 Received By: *Heather Abrecht* Date/Time: *7/23/19*
 Relinquished By: _____ Date/Time: _____
 Received at Lab By: _____ Date/Time: _____

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

Certification Number: ETC-AIR-041619-00415

O'Dail Lawson

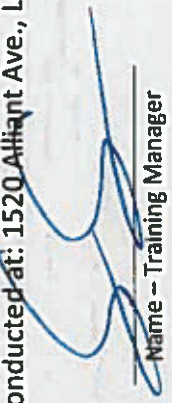
has on 04-16-2019, attended and successfully completed the requirements and passed the examination with a score of 70% of better on the entitled course.

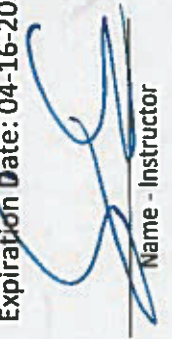
ASBESTOS INSPECTOR REFRESHER

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

Conducted at: 1520 Alliant Ave., Louisville, KY

Expiration Date: 04-16-2020


Name - Training Manager


Name - Instructor



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

RIGHT OF WAY CERTIFICATION

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

| | | | | |
|-------------------------------------|-----------------|--------------------------|-------------------------|-----------------------------------|
| <input checked="" type="checkbox"/> | Original | <input type="checkbox"/> | Re-Certification | RIGHT OF WAY CERTIFICATION |
|-------------------------------------|-----------------|--------------------------|-------------------------|-----------------------------------|

| ITEM # | COUNTY | PROJECT # (STATE) | PROJECT # (FEDERAL) |
|-----------|------------|------------------------|---------------------|
| 2-8506.00 | Muhlenberg | 1100 FD04 089 8360401R | N/A |

PROJECT DESCRIPTION

Widen US 62 from Wal-Mart to US 431.

No Additional Right of Way Required

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

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

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

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

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

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

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

| Total Number of Parcels on Project | 71 | EXCEPTION (S) Parcel # | ANTICIPATED DATE OF POSSESSION WITH EXPLANATION |
|---|----|------------------------|--|
| Number of Parcels That Have Been Acquired | | 049 - CSX | Submitted revised offer based on plan change requested by CSX. |
| Signed Deed | 68 | | |
| Condemnation | 2 | | |
| Signed ROE | | | |

Notes/ Comments (Use Additional Sheet if necessary)
The two condemnations, Parcels 15 and 44, have right of entry through an IOJ.

| LPA RW Project Manager | | Right of Way Supervisor | |
|------------------------|------------------|-------------------------|------------------|
| Printed Name | | Printed Name | Jennifer K Cox |
| Signature | | Signature | 2019.07.12 |
| Date | | Date | 07:08:46 -05'00' |
| Right of Way Director | | FHWA | |
| Printed Name | | Printed Name | |
| Signature | 2019.07.12 | Signature | |
| Date | 07:26:19 -05'00' | Date | |

UTILITIES AND RAIL CERTIFICATION NOTE

**Muhlenberg County
2-8506
US62/US431**

GENERAL PROJECT NOTE ON UTILITY PROTECTION

Water & Sewer, is included in the roadway contact.

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

N/A

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

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

N/A

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

AT&T Will complete the relocation work 5/1/2020

Atmos will complete their work by 2/1/2020

Kentucky Utilities will Complete their work by 3/1/2020

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

The City of Central City has included the relocation of the Water& Sewer facilities in the road way contact.

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

Minimal Rail Involved (See Below)

Rail Involved (See Below)

See special notes for Rail Road protection in the proposal.

UTILITIES AND RAIL CERTIFICATION NOTE

Muhlenberg County
2-8506
US62/US431

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

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

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

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-

UTILITIES AND RAIL CERTIFICATION NOTE

| |
|---|
| <p style="text-align: center;">Muhlenberg County 2-8506 US62/US431</p> |
|---|

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.

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

AREA UTILITIES CONTACT LIST

| <u>Utility Company/Agency</u> | <u>Contact Name</u> | <u>Contact Information</u> |
|-------------------------------|---------------------|----------------------------|
| AT&T | Mike Wilson | 270-825-7808 |
| City Of Central City | Eric Harris | 270-483-9985 |
| Atmos Energy | Chase Downing | 270-685-8128 |



SPECIAL NOTES FOR PROTECTION OF RAILROAD INTEREST

CSX TRANSPORTATION, INC.

I. AUTHORITY OF RAILROAD ENGINEER AND STATE ENGINEER:

- A. *The authorized representative of the Railroad Company, hereinafter referred to as Railroad Engineer, shall have final authority in all matters affecting the safe maintenance of Railroad operations and property.*
- B. *The authorized representative of the State, hereinafter referred to as the Engineer, shall have authority over all other matters as prescribed herein and in the Project Specifications.*

II. NOTICE OF STARTING WORK:

- A. *The Contractor shall not commence any work on Railroad rights of way until he has complied with the following conditions:*
 - 1. Given the Railroad written notice, with copy to the Engineer who has been designated to be in charge of the work, **at least ten (10) days in advance** of the date he proposes to begin work on Railroad rights of way. The notice must refer to Railroad Agreement with the State by the date of the Agreement. **If flagging service is required, such notice shall be submitted at least thirty (30) days in advance** of the date scheduled to commence work. The Railroad's Contact information is on the Summary Sheet.
 - 2. Obtain written authorization from the Railroad to begin work on Railroad rights of way, such authorization to include an outline of specific conditions with which he must comply.
 - 3. Obtain written approval from the Railroad of Railroad Protective Insurance Liability coverage as required by paragraph 14 herein.
 - 4. Furnish a schedule for all work within the Railroad rights of way as required by paragraph 7, B, 1.
- B. *The Railroad's written authorization to proceed with the work shall include the names, addresses, and telephone numbers of the Railroad's representatives who are to be notified as hereinafter required. Where more than one representative is designated, the area of responsibility of each representative shall be specified.*

III. INTERFERENCE WITH RAILROAD OPERATIONS:

- A. *The Contractor shall so arrange and conduct his work that there will be no interference with Railroad operations, including train, signal, telephone and telegraphic services, or damage to the property of the Railroad Company or to poles, wires, and other facilities of tenants on the rights of way of the Railroad Company. The Contractor shall store materials so as to prevent trespassers from causing damage to trains or Railroad property and shall not use Railroad property without written permission from the Railroad. Whenever work is to affect the operations or safety of trains, the method of doing such work shall first be submitted to the Railroad Engineer for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor which requires flagging service or inspection service (watchman) shall be deferred by the Contractor until the flagging protection required by the Railroad is available at the job site.*
- B. *Should conditions arising from, or in connection with the work, require that immediate and unusual provisions be made to protect train operations and property of the Railroad, the Contractor shall make such provisions. If in the judgment of the Railroad Engineer, or his representative, such provisions are insufficient, the Railroad Engineer may require or provide such provisions, as he deems necessary at Contractor's cost and expense. In any event, such unusual provisions shall be at the Contractor's expense and without cost and/or time to the Railroad or the State.*

IV. TRACK CLEARANCES

- A. *The minimum track clearances to be maintained by the Contractor during construction are shown on the Project Plans. However, before undertaking any work within Railroad rights of way, or before placing any obstruction over any track, the Contractor shall:*
1. Notify the Railroad's representative **at least 72 hours in advance** of the work.
 2. Receive assurance from the Railroad's representative that arrangements have been made for flagging service as necessary.
 3. Receive permission from the Railroad's representative to proceed with the work.
 4. Ascertain that the State Engineer has received copies of notice to the Railroad and of the Railroad's response thereto, and has approved the contractor's methods.

V. CONSTRUCTION PROCEDURES

A. General:

1. Construction work on Railroad property shall be:
 - a) Subject to the inspection and approval of the Railroad.
 - b) In accord with the Railroad's written outline of specific conditions.
 - c) In accord with the Railroad's general rules, regulations and requirements including those relating to safety, fall protection and personal protective equipment, which the Contractor shall obtain from the Railroad.
 - d) In accord with all Special Notes, Summaries, and Addendums.
2. The Railroad requires a submission of construction procedure that meets the requirements of these Special Notes and attachments. The Railroad's **submittal review period is thirty (30) days. Resubmissions will be reviewed within (30) days.**
3. All requirements of the *Construction Submission Criteria* shall be met. Requirements in addition to those in the *Construction Submission Criteria* are listed below in this document:

B. Excavation:

1. The sub grade of an operated track shall be **maintained with edge of berm at least 15'0" from centerline of track and not more than 24 inches below top of rail.** Contractor will not be required to make existing section meet this specification if substandard, in which case the existing section will be maintained.
2. Additionally, the Railroad Engineer may require installation of orange construction fencing for protection of the work area located on Railroad right of way.

C. Excavation of Structures:

1. The Contractor will be required to take special precaution and care in connection with excavating and shoring pits, and in driving piles, or sheeting for footings adjacent to tracks to provide adequate lateral support for the tracks and the loads which they carry, without disturbance of track alignment and surface, and to avoid obstructing track clearances with working equipment, tools or other material. The procedure for doing such work, including need of and plans for shoring, shall first be submitted, with the stamp of an Engineer in the State of Kentucky, and approved by

the Engineer and the Railroad Engineer, but such approval shall not relieve the Contractor from liability.

2. Additionally, a walkway with handrail protection may be required as noted in Section XI herein.

D. Demolition, Erection, Hoisting

1. Railroad tracks and other railroad property must be protected from damage during the procedure. No crane or equipment may be set on the rails or track structure and no material may be dropped on Railroad property.
2. Loads shall not be supported while any trains are passing if that piece of equipment has the capacity to **foul a 50' envelope.**
3. The Railroad may require the Contractor to install filter fabric over the track and ballast to prevent any concrete dust or other construction debris from fouling the ballast. This will be determined during actual construction activities by the Railroad or its representatives. Fabric should extend at least 25 feet beyond the outside edges of the bridge. Fabric will remain in place until all construction activities are complete.
4. Temporary construction clearance: Ensure all falsework, bracing, or forms have a minimum vertical clearance of 23 feet above the top of the highest rail and a minimum horizontal clearance of 12 feet measured perpendicular to the centerline of the nearest track.

E. Blasting:

1. The Contractor shall obtain advance written approval of the Railroad Engineer and the Engineer for use of explosive on or adjacent to Railroad property. The request for permission to use explosives shall include a detailed blasting plan. If permission for use of explosives is granted, the Contractor will be required to comply with the following:
 - a) No blasting shall be done without the presence of an authorized representative of the Railroad. **At least 10 days advance notice** to the person designated in the Railroad's notice of authorization to proceed (see Section II.B above) will be required to arrange for the presence of an authorized Railroad representative and such flagging as the Railroad may require.

2. The Railroad representative will:
 - a) Determine the approximate location of trains and advise the Contractor the approximate amount of time available for the blasting operation and clean-up.
 - b) Have the authority to order discontinuance of blasting if, in his opinion, blasting is too hazardous or is not in accord with these Special Notes.

F. Maintenance of Railroad Facilities:

1. The Contractor will be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from his operations and provide and maintain any erosion control measures as required. The Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard specifications for road and bridge construction, including either (1) silt fence; (2) berm or temporary ditches; (3) sediment basin; (4) aggregate checks; and (5) channel lining. The Contractor will promptly repair eroded areas with Railroad rights of way and to repair any other damage to the property of the Railroad or its tenants at the Contractor's expense.
2. All maintenance and repair of damages due to the Contractor's operations shall be done at the Contractor's expense.

G. Storage of Materials and Equipment:

1. Materials and equipment shall not be stored where they will interfere with Railroad operations, nor on the rights of way of the Railroad Company without first having obtained permission from the Railroad Engineer, and such permission will be with the understanding that the Railroad Company will not be liable for damage to such material and equipment from any cause and that the Railroad Engineer may move or require the Contractor to move, at the Contractor's expense, such material and equipment.
2. All grading or construction machinery that is left parked near the track unattended by a watchman shall be effectively immobilized so that it cannot be moved by unauthorized persons. The Contractor shall protect, defend, indemnify and save Railroad, and any associated, controlled or affiliated corporation, harmless from and against all losses, costs, expenses, claim or liability for loss or damage to property or the loss of life or personal injury, arising out of or incident to the Contractor's failure to immobilize grading or construction machinery.

H. *Cleanup:*

1. Upon completion of the work, the Contractor shall remove from within the limits of the Railroad rights of way, all machinery, equipment, surplus materials, falsework, rubbish or temporary buildings of the Contractor, and leave said rights of way in a neat condition satisfactory to the Railroad Engineer or his authorized representative.

VI. **DAMAGES:**

- A. *The Contractor shall assume all liability for any and all damages to his/her work, employees, equipment and materials caused by Railroad traffic.*
- B. *Any cost incurred by the Railroad for repairing damages to its property or to property of its tenants, caused by or resulting from the operations of the Contractor, shall be paid directly to the Railroad by the Contractor.*

VII. **FLAGGING SERVICES:**

A. *When Required:*

1. Flagging services will not be provided until the contractor's insurance has been reviewed & approved by the Railroad.
2. Under the terms of the agreement between the Department and the Railroad, the **Railroad has sole authority to determine the need for flagging** required to protect its operations. In general, the requirements of such services will be whenever the Contractor's personnel or equipment are likely to be, working on the Railroad's rights of way, or across, over, adjacent to, or under a track, or when such work has disturbed or is likely to disturb a railroad structure or the railroad roadbed or surface and alignment of any track to such extent that the movement of trains must be controlled by flagging. If any element (workers, equipment, tools, scaffolding, etc.) may exist or fall within 50 -feet of the edge of track, a flagman is necessary.
3. Normally, the Railroad will assign one flagman to a project; but in some cases, more than one may be necessary, such as yard limits where three-(3) flagmen may be required. However, if the Contractor works within distances that violate instructions given by the Railroad's authorized representative or performs work that has not been scheduled with the Railroad's authorized representative, a flagman or flagmen may be required until the project has been completed.

B. Scheduling and Notification:

1. Not later than the time that approval is initially requested to begin work on Railroad rights of way, Contractor shall furnish to the Railroad and the Department a schedule for all work required to complete the portion of the project within Railroad rights of way and arrange for a job site meeting between the Contractor, the Department, and the Railroad's authorized representative. Flagman or Flagmen may not be provided until the job site meeting has been conducted and the Contractor's work scheduled.
2. The Contractor will be required to give the Railroad representative **at least 10 working days of advance written notice** of intent to begin work within Railroad rights of way. If it is necessary for the Railroad to advertise a flagging job for bid, it **may take up to 30-days to obtain service**. Once begun, when work is suspended at any time for any reason, the Contractor will be required to give the Railroad representative **at least 72 hours in advance** before resuming work on Railroad rights of way. Such notice shall include sufficient details of the proposed work to enable the Railroad representative to determine if flagging will be required. If such notice is in writing, the Contractor shall furnish the Engineer a copy; if notice is given verbally it shall be confirmed in writing with copy to the Engineer. If flagging is required, no work shall be undertaken until the flagman, or flagmen is present at the job site. It **may take up to 30 days to obtain flagging initially** from the Railroad. When flagging begins the flagman is usually assigned by the Railroad to work at the project site on a continual basis until no longer needed and may be unable to be called for on a spot basis. If flagging becomes unnecessary and is suspended, it **may take up to 30 days to again obtain flagging services** from the Railroad. Due to labor agreements, it is necessary to give **5 working days notice before flagging service may be discontinued** and responsibility for payment stopped.
3. If, after the flagman is assigned to the project site, emergencies arise which require the flagman's presence elsewhere, and then the Contractor shall delay work on Railroad rights of way until such time as the flagman is again available. Any additional costs resulting from such delay shall be borne by the Contractor and not the Department or Railroad.
4. When demobilizing, the Contractor shall contact the flagman to avoid unnecessary flagging charges. This communication shall be documented.

C. *Payment:*

1. **The Cabinet will be responsible for paying the Railroad directly for any and all costs of flagging,** which may be required to accomplish the construction. **The Contractor shall adhere to the Special Note for Railroad Flagging, if applicable, and may be charged for flagging in excess of the allowable days, per said Special Note.**
2. The estimated cost of flagging is listed on the Summary Sheet. The charge to the Cabinet by the Railroad will be the actual cost based on the rate of pay for the Railroad's employees who are available for flagging service at the time the service is required.
3. Work by a flagman (M/W) in excess of 8 hours per day or 40 hours per week or on rest days, but not more than 16 hours a day will result in overtime pay at 1 ½ times the appropriate rate. Work by a flagman (M/W) in excess of 16 hours per day will result in overtime pay at 2 times the appropriate rate. Flagman (M/W) working in excess of 16 hours must receive a minimum of 5 hours of rest between shifts or their next shift of work is paid at the overtime rate of 2 times the appropriate rate. If work is performed on a holiday, the flagging rate is 2 ½ times the normal rate.

Work by a flagman (T&E) in excess of 8 hours per day or 40 hours per week, but not more than 12 hours a day will result in overtime pay at 1 ½ times the appropriate rate. After a 12 hour work day the flagman (T&E) must be provided with 12 hours of rest. Flagman (T&E) who work six days consecutive days must receive two days off.

Flagman's work day begins and ends at his reporting location.
4. Railroad work involved in preparing and handling bills will also be charged to the Contractor. Charges to the Department by the Railroad shall be in accordance with applicable provisions of Subchapter B, Part 140, Subpart I and Subchapter G, Part 646, Subpart B of the Federal-Aid Policy Guide issued by the Federal Highway Administration on December 9, 1991, including all current amendments. Flagging costs are subject to change. The above estimates of flagging cost are provided for information only and are not binding in any way.

D. Verification:

1. The Contractor and Project Engineer will review and sign the Railroad flagman's time sheet, attesting that the flagman was present during the time recorded. Flagman may be removed by Railroad if form is not signed. If flagman is removed, the Contractor will not be allowed to re-enter the Railroad rights of way until the issue is resolved. Any complaints concerning flagman or flagmen must be resolved in a timely manner. If need for flagman or flagmen is questioned, please contact the Railroad's Representative listed on the Project Summary Sheet. All verbal complaints must be confirmed in writing by the Contractor within 5 working days with copy to the Highway Engineer. All written correspondence should be addressed to the Railroad's Representative listed on the Project Summary Sheet.
2. The Railroad flagman assigned to the project will be responsible for notifying the Project Engineer upon arrival at the job site on the first day (or as soon thereafter as possible) that flagging services begin and on the last day that he performs such services for each separate period that services are provided. The Project Engineer will document such notification in the project records. When requested, the Project Engineer will also sign the flagman's diary showing daily time spent and activity at the project site.

VIII. HAUL ACROSS RAILROAD:

- A. Where the plans show or imply that materials of any nature must be hauled across a Railroad, unless the plans clearly show that the State has included arrangements for such haul in its agreement with the Railroad, the Contractor will be required to make all necessary arrangements with the Railroad regarding means of transporting such materials across the Railroad. The Contractor will be required to bear all costs incidental, including flagging, to such crossings whether services are performed by his own forces or by Railroad personnel.*
- B. No crossing may be established for use of the Contractor for transporting materials or equipment across the tracks of the Railroad Company unless a license agreement or right of entry is granted and executed for its installation, maintenance, necessary watching and flagging thereof and removal, all at the expense of the Contractor. **The approval process for an agreement normally takes 90-days.***

IX. WORK FOR THE BENEFIT OF THE CONTRACTOR:

- A. *All temporary or permanent changes in wire lines on the Railroad or other facilities which are considered necessary to the project are shown on the plans; included in the force account agreement between the State and the Railroad or will be covered by appropriate revisions to same which will be initiated and approved by the State and/or the Railroad.*
- B. *Should the Contractor desire any changes in addition to the above, then he shall make separate arrangements with the Railroad for same to be accomplished at the Contractor's expense.*

X. COOPERATION AND DELAYS:

- A. *It shall be the Contractor's responsibility to arrange a schedule with the Railroad for accomplishing stage construction involving work by the Railroad or tenants of the Railroad. In arranging his schedule he shall ascertain, from the Railroad, the lead time required for assembling crews and materials and shall make due allowance therefore.*
- B. *Train schedules cannot be provided to the Contractor. It is the Contractor's responsibility to contact the Railroad in order to arrange "Track Time." This "Track Time" will be an agreed upon prearranged time period (duration) that the Railroad will, without undue burden, schedule no train traffic to facilitate the Contractor's work on or near Railroad right-of-way. This track time must be arranged during the submission review process.*
- C. *No charge or claims of the Contractor against either the Department or the Railroad will be allowed for hindrance or delay on account of railroad traffic; any work done by the Railroad or other delay incident to or necessary for safe maintenance of Railroad traffic or for any delays due to compliance with these Special Notes.*
- D. *The Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.*
- E. *The Railroad does not assume any responsibility for work performed by others in connection with the Project. No claims of the Contractor against the Railroad for any inconvenience, delay, or additional cost incurred by the Contractor on account of operations by others shall be filed.*

XI. TRAINMAN'S WALKWAYS:

- A. *Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than ~~12~~¹⁰ feet from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while Railroad's protective service is provided shall be removed before the close of each day. If there is any excavation near the walkway, a handrail, with **12'-0" minimum clearance from centerline of track**, shall be placed.*

XII. GUIDELINES FOR PERSONNEL ON RAILROAD RIGHTS OF WAY:

- A. *All persons shall wear hard hats and reflective vest. Appropriate eye and hearing protection must be used. Working in shorts is prohibited. Shirts must cover shoulders, back and abdomen. Working in tennis or jogging shoes, sandals, boots with high heels, cowboy and other slip on type boots is prohibited. High top (6-inch or more) safety-toe shoes with laces, oil-resistant soles, and a distinct separation between heel and sole are required.*
- B. *No one is allowed within **25' of the centerline of the track** without specific authorization from the flagman.*
- C. *All persons working near track when train is passing are to look out for dragging bands, chains and protruding or shifting cargo.*
- D. *No one is allowed to cross tracks without specific authorization from the flagman.*
- E. *All work within **25' of track must stop when train is passing**.*
- F. *No steel tape or chain will be allowed to cross or touch rails without permission.*

XIII. GUIDELINES FOR EQUIPMENT ON RAILROAD RIGHTS OF WAY:

- A. *No crane or boom equipment will be allowed to set up to work or park within **boom distance plus 15' of centerline of track** without specific permission from Railroad Engineer.*
- B. *No crane or boom equipment will be allowed to foul track or lift a load over the track without flag protection and track time.*
- C. *All employees will stay with their machines when crane or boom equipment is pointed toward track.*
- D. *All cranes and boom equipment under load will stop work while a train is passing (including pile driving).*

- E. *Swinging loads must be secured to prevent movement while train is passing.*
- F. *No loads will be suspended above a moving train.*
- G. *No equipment will be allowed within **50' of centerline of track** without specific authorization of the flagman.*
- H. *Trucks, tractors or any equipment will not touch ballast line without specific permission from railroad official and flagman.*
- I. *No equipment or load movement **within 50' or above a standing train or other equipment** without specific authorization of the flagman.*
- J. *All operating equipment within **50' of track must halt operations when a train is passing**. All other operating equipment may be halted by the flagman if the flagman views the operation to be dangerous to the passing train.*
- K. *All equipment, loads and cables are prohibited from touching rails.*
- L. *While clearing and grubbing, no vegetation will be removed from railroad embankment with heavy equipment without specific permission from the Railroad Engineer and flagman.*
- M. *No equipment or materials will be parked or stored on Railroad's property unless specific permission is granted from the Railroad Engineer.*
- N. *All unattended equipment that is left parked on Railroad property shall be effectively immobilized so that it cannot be moved by unauthorized persons.*
- O. *All cranes and boom equipment will be turned away from track after each work day or whenever unattended by an operator.*

XIV. INSURANCE:

- A. *In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the Contractor will be required to carry insurance of the following kinds:*
 - 1. *Commercial General Liability coverage at their sole cost and expense with limits of not less than **\$5,000,000** in combined single limits for bodily injury and/or property damage per occurrence, and such policies shall name the Railroad as an additional insured.*
 - 2. *Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than **\$1,000,000**, which insurance must contain a waiver of subrogation against the Railroad and its affiliates.*

3. Commercial automobile liability insurance with limits of not less than **\$1,000,000** combined single limit for bodily injury and/or property damage per occurrence, and such policies shall name the Railroad as an additional insured.
4. Railroad Protective Liability (RPL) insurance with limits of not less than **\$5,000,000** combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of **\$10,000,000**, which insurance shall satisfy the following additional requirements:
 - a. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance – Insurance Services Office (ISO) Form CG 00 35.
 - b. The Railroad must be the named insured on the Railroad Protective Insurance Policy
 - c. Name and Address of the Contractor must be shown on the Declarations page.
 - d. Description of operations must appear on the Declarations page and must match the Project description, including project or contract identification numbers.
 - e. Terrorism Risk Insurance Act (TRIA) coverage must be included.
 - f. Authorized endorsements must include:
 - (i). Pollution Exclusion Amendment – CG 28 31, unless using form CG 00 35 version 96 and later.
 - g. Authorized endorsements may include:
 - (i). Broad form Nuclear Exclusion – IL 00 21
 - (ii). 30-day Advance Notices of Non-renewal or cancellation
 - (iii). Required State Cancellation Endorsement
 - (iv). Quick Reference or Index – CL/IL 240
 - h. Authorized endorsements may not include:
 - (i). A Pollution Exclusion Endorsement except CG 28 31
 - (ii). An Endorsement that excludes TRIA coverage
 - (iii). An Endorsement that limits or excludes Professional Liability coverage
 - (iv). A Non-Cumulation of Liability or Pyramiding of Limits Endorsement

- (v). A Known Injury Endorsement
- (vi). A Sole Agent Endorsement
- (vii). A Punitive or Exemplary Damages Exclusion
- (viii). A 'Common Policy Conditions' Endorsement
- (ix). Policies that contain any type of deductible
- (x). Any endorsement that is not named in Section 4 (f) or (g) above that the Railroad deems unacceptable

- 5. All insurance companies must be A. M. Best rated A- and Class VII or better.
- 6. Such additional or different insurance as the Railroad may require.

B. Additional Terms:

- 1. Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance, and all notices and correspondence regarding the insurance policy to the contact listed on the Project Summary Sheet.
- 2. The Contractor may not begin work on the Project until it has received the Railroad's written approval or the required insurance.

C. Insurance policies shall follow the requirements of Subchapter G, Part 646, Subpart A of the Federal-Aid Policy Guide issued by the Federal Highway Administration on December 9, 1991, including all current amendments.

D. If any part of the work is sublet, similar insurance and evidence thereof in the same amounts as required of the Prime Contractor shall be provided by or in behalf of the subcontractor to cover his operations. Endorsements to the Prime Contractor's policies specifically naming subcontractors and describing their operations will be acceptable for this purpose.

*E. All insurance herein before specified shall be carried until all work required to be performed under the terms of the contract has been satisfactorily completed within the limits of the rights of way of the Railroad as evidenced by the formal acceptance by the Department. Insuring Companies may cancel insurance by permission of the Department and Railroad or on **thirty (30) days written notice** to the Department and Railroad Insurance Contacts as listed on the Project Summary Sheet.*

XV. FAILURE TO COMPLY:

- A. These Special Notes are supplemental and amendatory to the current version of the Kentucky Department of Highways' Standard Specifications for Road and Bridge Construction and amendments thereof, and where in conflict therewith, these Special Notes shall govern.*
- B. In the event the Contractor violates or fails to comply with any of the requirements of these Special Notes:*
1. The Railroad Engineer may require that the Contractor vacate Railroad property.
 2. The Engineer may withhold any and all monies due the Contractor on pay estimates.
 3. Any such orders shall remain in effect until the Contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Engineer.

XVI. PAYMENT FOR COST OF COMPLIANCE:

- A. No separate payment will be made for any extra cost incurred on account of compliance with these Special Notes. All such cost shall be included in prices bid for other items of the work as specified in the payment items.*



Kentucky Transportation Cabinet
Division of Right of Way & Utilities

TC 69-008
08/2010
Page 1 of 2

SUMMARY FOR KYTC PROJECTS THAT INVOLVE A RAILROAD

Date: 6/13/2019 (enter using M/d/yyyy format)

This project actively involves the below listed railroad company. This Project Summary provides an abbreviated listing of project specific railroad data. The detailed needs of the specified railroad company are included in the Special Notes for Protection of Railroad Interest in the proposal package. By submitting a bid, the contractor attests that they have dutifully considered and accepted the provisions as defined in both documents.

GENERAL ROAD PROJECT INFORMATION (This section must be provided by KYTC)

County: Muhlenberg
Federal Number: N/A
State Number: FD04 089 83604 01U
Route: US 62
Project Description: Widen US 62 from Wal-Mart to US 431
Item Number: 02-8506.00 **Highway Milepost:** 015-017

GENERAL RAIL INFORMATION (The below sections must be provided by Railroad Company)

Rail Company Name: CSX Transportation, Inc.
AAR-DOT# (if applicable): 347 086X **Railroad Milepost:** 00D 179.42
Freight: Train Count (6am to 6pm): 0 **Train Count (6pm to 6am):** 1 **Train Count (24 hr total):** 1 **Max Speed:** 10 mph
Passenger: Train Cnt. (6am to 6pm): 0 **Train Cnt. (6pm to 6am):** 0 **Train Cnt. (24 hr total):** 0 **Max Speed:** N/A mph
(This information is necessary to acquire the necessary insurances when working with Railroad Right of Way)

INSURANCE REQUIREMENTS

The named insured, description of the work and designation of the job site to be shown on the Policy are as follows:

- (a) Named Insured: CSX Transportation, Inc.
 - (b) The project description should be as indicated in the General Road Project Information section.
 - (c) The designation of the jobsite is the route, Milepost, and AAR-DOT# listed above.
-

FLAGGING INFORMATION

Flagging Estimate:

KYTC will be responsible for paying all flagging costs. Contractor shall adhere to the Special Note for Railroad Flagging, if applicable.

Hourly Rate:

\$1,342.00 per day based on a 12 hour day effective as of the date of this document.

Work by a flagman in excess of 8 hours per day or 40 hours per week, but not more than 12 hours a day will result in overtime pay at 1 1/2 times the appropriate rate. Work by a flagman in excess of 12 hours per day will result in overtime pay at 2 times the appropriate rate. If work is performed on a holiday, the flagging rate is 2 1/2 times the normal rate.

Forecasted Rate Increases:

Rates will increase to \$0.00 per hour based on a 0 hour day effective _____ (enter using M/d/yyyy format).

RAILROAD CONTACTS

(to be provided by Railroad Company)

General Railroad Contact:

Troy Creasy
CSX Transportation, Inc.
Project Manager - Public Projects
4900 Old Osborne Turnpike, Suite 200
Richmond, VA 23231
(Phone) 804-226-7718
(Email) Troy_Creasy@csx.com

Regional Representative (Roadmaster):

Wayne Roberts
775 North Kentucky Ave
Madisonville, KY 42431

(Phone) 270-643-5007
(Email) Wayne_Roberts@CSX.com

Insurance contact:

CSX Corporation
Insurance Department

(Phone) _____
(Email) insurancedocuments@csx.com

Railroad Designer Contact:

Contractor or In-House Employee? Consultant

Larry Shaw, PE
Sr. Project Manager
Benesch
201 N. Illinois St., 16th Floor South Tower
Indianapolis, IN 46204
(Phone) 317-610-3241
(Email) LShaw@benesch.com

Railroad Construction Contact:

Contractor or In-House Employee? Consultant

Wayne Bolen, PE
Sr. Project Manager
Benesch
201 E Fifth Street, Suite 1900
Cincinnati, OH 45202
(Phone) 859-250-5483
(Email) WBolen@benesch.com

KENTUCKY TRANSPORTATION CABINET CONTACTS

(to be provided by KYTC)

KYTC Railroad Coordinator:

Allen Rust, PE
Div. of Right of Way & Utilities
Kentucky Transportation Cabinet
200 Mero Street, 5th Floor East
Frankfort, Kentucky 40622
(Phone) 502-782-4950
(Email) allen.rust@ky.gov

KYTC Construction Procurement Director:

Rachel Mills, Director
Div. of Construction Procurement
Kentucky Transportation Cabinet
200 Mero Street, 3rd Floor West
Frankfort, Kentucky 40622
(Phone) 502-782-5152
(Email) Rachel.Mills@ky.gov

KYTC Construction Director:

Ryan Griffith, Director
Div. of Construction Procurement
Kentucky Transportation Cabinet
200 Mero Street, 3rd Floor West
Frankfort, Kentucky 40622
(Phone) 502-782-5127
(Email) ryan.griffith@ky.gov



The project specific information provided herein is valid as of the date indicated. However, the specific information may be subject to change due to the normal business operations of all parties. The terms and conditions defined here, and in the bid proposal in its entirety, are inclusive and constant.

APPENDIX

CSX Transportation

CONSTRUCTION

SUBMISSION CRITERIA

Public Projects Group

Jacksonville, FL

Date Issued: April 14, 2015

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INTRODUCTION

The intent of this document is to guide outside agencies and their Contractors when performing work on, over, or with potential to impact CSXT property (ROW). Work plans shall be submitted for review to the designated CSXT Engineering Representative for all work which presents the potential to affect CSXT property or operations; this document shall serve as a guide in preparing these work plans. All work shall be performed in a manner that does not adversely impact CSXT operations or safety; as such, the requirements of this document shall be strictly adhered to, in addition to all other applicable standards associated with the construction. Applicable standards include, but are not limited to, CSXT Standards and Special Provisions, CSXT Insurance Requirements, CSXT Pipeline Occupancy Criteria, as well as the governing local, county, state and federal requirements. It shall be noted that this document and all other CSXT standards are subject to change without notice, and future revisions will be made available at the CSXT website: www.csx.com.

I. DEFINITIONS

1. *Agency* – The project sponsor (i.e., State DOT, Local Agencies, Private Developer, etc.)
2. *AREMA* – American Railway Engineering and Maintenance-of-Way Association – the North American railroad industry standards group. The use of this term shall be in specific reference to the AREMA Manual for Railway Engineering.
3. *Construction Submission* – The Agency or its representative shall submit six (6) sets of plans, supporting calculations, and detailed means and methods procedures for the specific proposed activity. All plans, specifications, and supporting calculations shall be signed/sealed by a Professional Engineer as defined below.
4. *Controlled Demolition* – Removal of an existing structure or subcomponents in a manner that positively prevents any debris or material from falling, impacting, or otherwise affecting CSXT employees, equipment or property. Provisions shall be made to ensure that there is no impairment of railroad operations or CSXT’s ability to access its property at all times.
5. *Contractor* – The Agency’s representative retained to perform the project work.
6. *Engineer* – CSXT Engineering Representative or a GEC authorized to act on the behalf of CSXT.
7. *Flagman* – A qualified CSXT employee with the sole responsibility to direct or restrict movement of trains, at or through a specific location, to provide protection for workers.
8. *GEC* – General Engineering Consultant who has been authorized to act on the behalf of CSXT.
9. *Horizontal Clearance* – Distance measured perpendicularly from centerline of any track to the nearest obstruction at any elevation between TOR and the maximum vertical clearance of the track.
10. *Professional Engineer* – An engineer who is licensed in State or Commonwealth in which the project is to occur. All plans, specifications, and supporting calculations shall be prepared by the Licensed Professional Engineer and shall bear his/her seal and signature.
11. *Potential to Foul* – Work having the possibility of impacting CSXT property or operations; defined as one or more of the following:
 - a. Any activity where access onto CSXT property is required.
 - b. Any activity where work is being performed on CSXT ROW.
 - c. Any excavation work adjacent to CSXT tracks or facilities, within the Theoretical Railroad Live Load Influence Zone, or where the active earth pressure zone extends within the CSXT property limits.
 - d. The use of any equipment where, if tipped and laid flat in any direction (360 degrees) about its center pin, can encroach within twenty five feet (25’-0”) of the nearest track centerline. This is based upon the proposed location of

- the equipment during use, and may be a function of the equipment boom length. Note that hoisting equipment with the potential to foul must satisfy the 150% factor of safety requirement for lifting capacities.
- e. Any work where the scatter of debris, or other materials has the potential to encroach within twenty five feet (25'-0") of the nearest track centerline.
 - f. Any work where significant vibration forces may be induced upon the track structure or existing structures located under, over, or adjacent to the track structure.
 - g. Any other work which poses the potential to disrupt rail operations, threaten the safety of railroad employees, or otherwise negatively impact railroad property, as determined by CSXT.
12. *ROW – Right of Way*; Refers to CSXT Right-of-Way as well as all CSXT property and facilities. This includes all aerial space within the property limits, and any underground facilities.
 13. *Submission Review Period* - a minimum of thirty (30) days in advance of start of work. Up to thirty (30) days will be required for the initial review response. Up to an additional thirty (30) days may be required to review any/all subsequent submissions or resubmission.
 14. *Theoretical Railroad Live Load Influence Zone* – A 1 horizontal to 1 vertical theoretical slope line starting at bottom corner of tie.
 15. *TOR – Top of Rail*. This is the base point for clearance measurements. It refers to the crown (top) of the steel rail; the point where train wheels bear on the steel rails.
 16. *Track Structure* – All load bearing elements which support the train. This includes, but is not limited to, the rail, ties, appurtenances, ballast, sub-ballast, embankment, retaining walls, and bridge structures.
 17. *Vertical Clearance* – Distance measured from TOR to the lowest obstruction within six feet (6'-0") of the track centerline, in either direction.

II. GENERAL SUBMISSION REQUIREMENTS

- A. A construction work plan is required to be submitted by the Agency or its Contractor, for review and acceptance, prior to accessing or performing any work with Potential to Foul.
- B. The Agency or its representative shall submit six (6) sets of plans, specifications, supporting calculations, and detailed means and methods procedures for the specific proposed work activity.
- C. Construction submissions shall include all information relevant to the work activity, and shall clearly and concisely explain the nature of the work, how it is being performed, and what measures are being taken to ensure that railroad property and operations are continuously maintained.
- D. All construction plans shall include a map of the work site, depicting the CSXT tracks, the CSXT right of way, proposed means of access, proposed locations for equipment and material staging (dimensioned from nearest track centerline), as well as all other relevant project information. An elevation drawing may also be necessary in order to depict clearances or other components of the work.
- E. Please note that CSXT will not provide pricing to individual contractors involved in bidding projects. Bidding contractors shall request information from the agency and not CSXT.
- F. The Contractor shall install a geotextile fabric ballast protection system to prevent construction or demolition debris and fines from fouling ballast. The geotextile ballast protection system shall be installed and maintained by the Contractor to the satisfaction of the Engineer.
- G. The Engineer shall be kept aware of the construction schedule. The Contractor shall provide timely communication to the Engineer when scheduling the work such that the Engineer may be present during the work. The Contractor's schedule shall not dictate the work plan review schedule, and flagging shall not be scheduled prior to receipt of an accepted work plan.

H. At any time during construction activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

I. Blasting will not be permitted to demolish a structure over or within CSXT's right-of-way. When blasting off of CSXT property but with Potential to Foul, vibration monitoring, track settlement surveying, and/or other protective measures may be required as determined by the Engineer.

J. Blasting is not permitted adjacent to CSXT right-of-way without written approval from the Chief Engineer, CSXT.

K. Mechanical and chemical means of rock removal must be explored before blasting is considered. If written permission for the use of explosives is granted, the Agency or Contractor must submit a work plan satisfying the following requirements:

1. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Agency or Contractor.
2. Electronic detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
3. No blasting shall be done without the presence of an authorized representative of CSXT. Advance notice to the Engineer is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.
4. Agency or Contractor must have at the project site adequate equipment, labor and materials, and allow sufficient time, to clean up debris resulting from the blasting and correct any misalignment of tracks or other damage to CSXT property resulting from the blasting. Any corrective measures required must be performed as directed by the Engineer at the Agency's or Contractor's expense without any delay to trains. If Agency's or Contractor's actions result in the delay of any trains including passenger trains, the Agency or Contractor shall bear the entire cost thereof.
5. The Agency or Contractor may not store explosives on CSXT property.
6. At any time during blasting activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

III. HOISTING OPERATIONS

A. All proposed hoisting operations with Potential to Foul shall be submitted in accordance with the following:

1. A plan view drawing shall depict the work site, the CSXT track(s), the proposed location(s) of the lifting equipment, as well as the proposed locations for picking, any intermediate staging, and setting the load(s). All locations shall be dimensioned from centerline of the nearest track. Crane locations shall also be dimensioned from a stationary point at the work site for field confirmation.
2. Computations showing the anticipated weight of all picks. Computations shall be made based upon the field-verified plans of the existing structure. Pick weights shall account for the weight of concrete rubble or other materials attached to the component being removed; this includes the weight of subsequent rigging devices/components. Rigging components shall be sized for the subsequent pick weight.
3. All lifting equipment, rigging devices, and other load bearing elements shall have a rated (safe lifting) capacity that is greater than or equal to 150% of the load it is carrying, as a factor of safety. Supporting calculations shall be furnished to verify the minimum capacity requirement is maintained for the duration of the hoisting operation.

4. Dynamic hoisting operations are prohibited when carrying a load with the Potential to Foul. Cranes or other lifting equipment shall remain stationary during lifting. (i.e., no moving picks).
5. For lifting equipment, the manufacturer's capacity charts, including crane, counterweight, maximum boom angle, and boom nomenclature is to be submitted.
6. A schematic rigging diagram must be provided to clearly call out each rigging component from crane hook to the material being hoisted. Copies of catalog or information sheets shall be provided to verify rigging weights and capacities.
7. For built-up rigging devices, the contractor shall submit the following:
 - i. Details of the device, calling out material types, sizes, connections and other properties.
 - ii. Load test certification documents and/or design computations bearing the seal and signature of a Professional Engineer. Load test shall be performed in the configuration of its intended use as part of the subject demolition procedure.
 - iii. Copies of the latest inspection reports of the rigging device. The device shall be inspected within one (1) calendar year of the proposed date for use.
8. A detail shall be provided showing the crane outrigger setup, including dimensions from adjacent slopes or facilities. The detail shall indicate requirements for bearing surface preparation, including material requirements and compaction efforts. As a minimum, outriggers and/or tracks shall bear on mats, positioned on level material with adequate bearing capacity.
9. A complete written narrative that describes the sequence of events, indicating the order of lifts and any repositioning or re-hitching of the crane(s).

IV. DEMOLITION PROCEDURE

- A. The Agency or its Contractor shall submit a detailed procedure for a controlled demolition of any structure on, over, or adjacent to the ROW. The controlled demolition procedure must be approved by the Engineer prior to beginning work on the project.
- B. Existing Condition of structure being demolished:
 1. The Contractor shall submit as-built plans for the structure(s) being demolished.
 2. If as-built plans are unavailable, the Contractor shall perform an investigation of the structure, including any foundations, substructures, etc. The field measurements are to be made under the supervision of the Professional Engineer submitting the demolition procedure. Findings shall be submitted as part of the demolition means and methods submittal for review by the Engineer.
 3. Any proposed method for temporary stabilization of the structure during the demolition shall be based on the existing plans or investigative findings, and submitted as part of the demolition means and methods for review by the Engineer.
- C. Demolition work plans shall include a schematic plan depicting the proposed locations of the following, at various stages of the demolition:
 1. All cranes and equipment, calling out the operating radii.
 2. All proposed access and staging locations with all dimensions referenced from the center line of the nearest track.
 3. Proposed locations for stockpiling material or locations for truck loading.
 4. The location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions.
 5. Note that no crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.
- D. Demolition submittal shall also include the following information:
 1. All hoisting details, as dictated by Section III of this document.
 2. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure.

The proposed time frames for all critical subtasks (i.e., torch/saw cutting various portions of the superstructure or substructure, dismantling splices, installing temporary bracing, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.

3. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.
 4. Design and supporting calculations shall be prepared, signed, and sealed by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review. A guardrail will be required to be installed in a track in the proximity of temporary bents or shoring towers, when located within twelve feet (12'-0") from the centerline of the track. The guardrail will be installed by CSXT forces, at the expense of the Agency or its contractor.
- E. Girders or girder systems shall be stable at all times during demolition. Temporary bracing shall be provided at the piers, abutments, or other locations to resist overturning and/or buckling of the member(s). The agency shall submit a design and details of the proposed temporary bracing system, for review by the Engineer. Lateral wind forces for the temporary conditions shall be considered in accordance with AREMA, Chapter 8, Section 28.6.2. The minimum lateral wind pressure shall be fifteen pounds per square foot (15 psf).
- F. Existing, obsolete, bridge piers shall be removed to a minimum of three feet (3'-0") below the finished grade, final ditch line invert, or as directed by the Engineer.
- G. A minimum quantity of twenty five (25) tons of CSXT approved granite track ballast may be required to be furnished and stockpiled on site by the Contractor, or as directed by the Engineer.
- H. The use of acetylene gas is prohibited for use on or over CSXT property. Torch cutting shall be performed utilizing other materials such as propane.
- I. CSXT's tracks, signals, structures, and other facilities shall be protected from damage during demolition of existing structure or replacement of deck slab.
- J. Demolition Debris Shield
1. On-track or ground-level debris shields (such as crane mats) are prohibited for use by CSXT.
 2. Demolition Debris Shield shall be installed prior to the demolition of the bridge deck or other relevant portions of the structure. The demolition debris shield shall be erected from the underside of the bridge over the track area to catch all falling debris. The debris shield shall not be the primary means of debris containment.
 - i. The demolition debris shield design and supporting calculations, all signed/sealed by a Professional Engineer, shall be submitted for review and acceptance.
 - ii. The demolition debris shield shall have a minimum design load of 50 pounds per square foot (50 psf) plus the weight of the equipment, debris, personnel, and all other loads.
 - iii. The Contractor shall verify the maximum particle size and quantity of the demolition debris generated during the procedure does not exceed the shield design loads. Shield design shall account for loads induced by particle impact; however the demolition procedure shall be such that impact forces are minimized. The debris shield shall not be the primary means of debris containment.
 - iv. The Contractor shall include installation/removal means and methods for the demolition debris shield as part of the proposed Controlled Demolition procedure submission.
 - v. The demolition debris shield shall provide twenty three feet (23'-0") minimum vertical clearance, or maintain the existing vertical clearance if the existing clearance is less than twenty three feet (23'-0").
 - vi. Horizontal clearance to the centerline of the track should not be reduced unless approved by the Engineer.
 - vii. The Contractor shall clean the demolition debris shield daily or more frequently as dictated either by the approved design parameters or as directed by the Engineer.
- K. Vertical Demolition Debris Shield
1. This type of shield may be required for substructure removals in close proximity to CSXT track and other facilities, as determined by the Engineer.
 2. The Agency or its Contractor shall submit detailed plans with detailed calculations, prepared, signed, and sealed by a Professional Engineer, of the protection shield.

V. ERECTION PROCEDURE

- A. The Agency or its Contractor shall submit a detailed procedure for erection of a structure with Potential to Foul. The erection procedure must be approved by the Engineer prior to beginning work on the project.
- B. Erection work plans shall include a schematic plan depicting the following, at all stages of the construction:
1. All proposed locations of all cranes and equipment, calling out the operating radii.
 2. All proposed access and staging locations with all dimensions referenced from the center line of the nearest track.
 3. All proposed locations for stockpiling material or locations for truck loading.
 4. The location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions.
- C. No crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.
- D. For erection of a structure over the tracks, the following information shall be submitted for review and acceptance by the Engineer, at least thirty (30) days prior to erection:
1. As-built beam seat elevations – field surveyed upon completion of pier/abutment construction.
 2. Current Top of Rail (TOR) elevations – field measured at the time of as-built elevation collection.
 3. Computations verifying the anticipated minimum vertical clearance in the final condition which accounts for all deflection and camber, based upon the current TOR and as-built beam seat elevations. The anticipated minimum vertical clearance shall be greater than or equal to that which is indicated by the approved plans. Vertical clearance (see definitions) is measured from TOR to the lowest point on the overhead structure at any point within six feet (6'-0") from centerline of the track. Calculations shall be signed and sealed by a Professional Engineer.
- E. Girders or girder systems shall be stable at all times during erection. No crane may unhook prior to stabilizing the beam or girder.
1. Lateral wind forces for the temporary conditions shall be considered in accordance with AREMA, Chapter 8, Section 28.6.2. The minimum lateral wind pressure shall be fifteen pounds per square foot (15 psf).
 2. Temporary bracing shall be provided at the piers, abutments, or other locations to resist overturning and/or buckling of the member(s). The agency shall submit a design and details of the proposed temporary bracing system, for review by the Engineer.
 3. Temporary bracing shall not be removed until sufficient lateral bracing or diaphragm members have been installed to establish a stable condition. Supporting calculations, furnished by the Professional Engineer, shall confirm the stable condition.
- F. Erection procedure submissions shall also include the following information:
1. All hoisting details, as dictated by Section III of this document.
 2. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical subtasks (i.e., performing aerial splices, installing temporary bracing, installation of diaphragm members, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.
 3. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.
 4. A guardrail will be required to be installed in a track in the proximity of temporary bents or shoring towers, when located within twelve feet (12'-0") from the centerline of the track. The guardrail will be installed by CSXT forces, at the expense of the Agency or its Contractor.
 5. Design and supporting calculations prepared by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review.

VI. TEMPORARY EXCAVATION AND SHORING

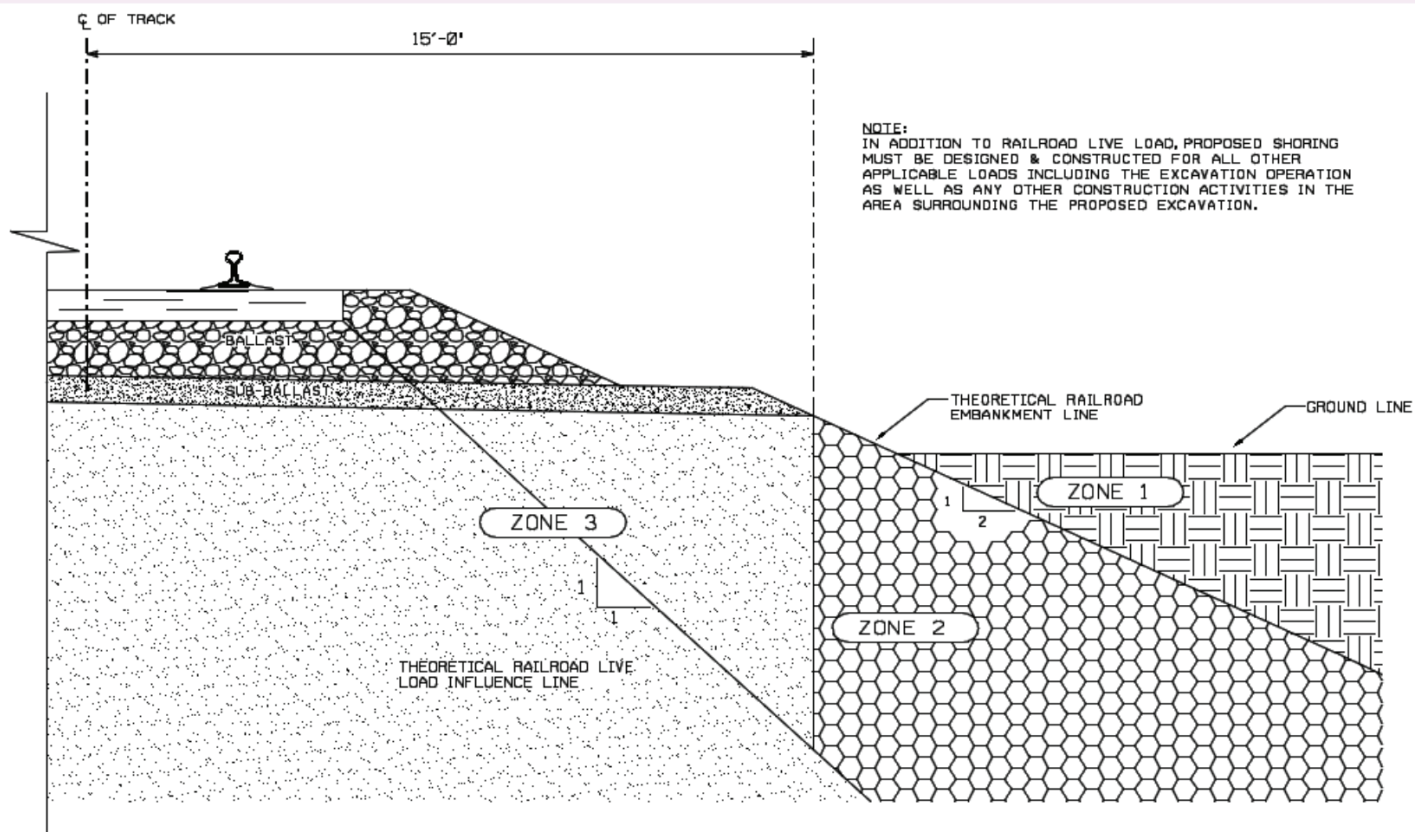
- A. The Agency or its Contractor shall submit a detailed design and procedure for the installation of a sheeting/shoring system adjacent to the tracks. Shoring protection shall be provided when excavating with Potential to Foul, or as otherwise determined by CSXT. Shoring shall be provided in accordance with the AREMA, except as noted below.
- B. Shoring may not be required if all of the following conditions are satisfied:
1. The excavation does not encroach within the Theoretical Live Load Influence Zone. Please refer to Figure 1.

2. The track structure is situated on level ground, or in a cut section, and on stable soil.
 3. The excavation does not adversely impact the stability of a CSXT facility (i.e., signal bungalow, drainage facility, undergrade bridge, building, etc), or the stability of any structure on, over, or adjacent to CSXT property with potential to foul.
 4. Shoring is not required by any governing federal, state, local or other construction code.
- C. Shoring is required when excavating the toe of an embankment. Excavation of any embankment which supports an active CSXT track structure without shoring will not be permitted.
- D. Trench boxes are not an acceptable means of shoring. Trench boxes are prohibited for use on CSXT property or within the Theoretical Railroad Live Load Influence Zone.
- E. Shoring shall be a cofferdam-type, which completely encloses the excavation. However, where justified by site or work conditions, partial cofferdams with open sides away from the track may be permissible, as determined by the Engineer.
- F. Cofferdams shall be constructed using interlocking steel sheet piles, or when approved by the Engineer, steel soldier piles with timber lagging. Wales and struts shall be included when dictated by the design.
- G. The use of tiebacks can be permissible for temporary shoring systems, when conditions warrant. Tiebacks shall have a minimum clear cover of 6'-0", measured from the bottom of the rail. Upon completion of the work, tiebacks shall be grouted, cut off, and remain in place.
- H. All shoring systems on, or adjacent to CSXT right-of-way, shall be equipped with railings or other fall protection, compliant with the governing federal, state or local requirements. Area around pits shall be graded to eliminate all potential tripping hazards.
- I. Interlocking steel sheet piles shall be used for shoring systems qualifying one or more of the following conditions:
1. Within 18'-0" of the nearest track centerline
 2. Within the live load influence zone
 3. Within slopes supporting the track structure
 4. As otherwise deemed necessary by the Engineer.
- J. Sheet piles qualifying for one or more of the requirements listed in Section VI.I (above) of this document shall not be removed. Sheet piles shall be left in place and cut off a minimum of 3'-0" below the finished grade, the ditch line invert, or as otherwise directed by the Engineer. The ground shall be backfilled and compacted immediately after sheet pile is cut off.
- K. The following design considerations shall be considered when preparing the shoring design package:
1. Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, eight feet six inches (8'-6") wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in *AREMA Manual for Railway Engineering*, Chapter 8, Part 20.
 2. Allowable stresses in materials shall be in accordance with AREMA Chapter 7, 8, and 15.3.
 3. A minimum horizontal clearance of ten feet (10'-0") from centerline of the track to face of nearest point of shoring shall be maintained, provided a twelve feet (12'-0") roadbed is maintained with a temporary walkway and handrail system.
 4. For temporary shoring systems with Potential to Foul, piles shall be plumb under full dead load. Maximum deflection at the top of wall, under full live load, shall be as follows:
 - i. One-half (1/2) inch for walls within twelve feet (12'-0") of track centerline (Measured from centerline of the nearest track to the nearest point of the supporting structure).
 - ii. One (1) inch for walls located greater than twelve feet (12'-0") from track centerline
- L. Shoring work plans shall be submitted in accordance with Section II of this document, as well as the following additional requirements:
1. The work plan shall include detailed drawings of the shoring systems calling out the sizes of all structural members, details of all connections. Both plan and elevation drawings shall be provided, calling out dimensions from the face of shoring relative to the nearest track centerline. The elevation drawing shall also show the height of shoring, and track elevation in relation to bottom of excavation.
 2. Full design calculations for the shoring system shall be furnished.
 3. A procedure for cutting off the sheet pile, backfilling and restoring the embankment.


VII. TRACK MONITORING


- A. When work being performed has the potential to disrupt the track structure, a work plan must be submitted detailing a track monitoring program which will serve to monitor and detect both horizontal and vertical movement of the CSXT track and roadbed.
- B. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. CSXT reserves to the right to modify the survey locations and monitoring frequency as necessary during the project.
- C. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Engineer for analysis.
- D. If any movement has occurred as determined by the Engineer, CSXT will be immediately notified. CSXT, at its sole discretion, shall have the right to immediately require all contractor operations to be ceased, have the excavated area immediately backfilled and/or determine what corrective action is required. Any corrective action required by CSXT or performed by CSXT including the monitoring of corrective action of the contractor will be at project expense.


FIGURE 1: Theoretical Live Load Influence Zone



NORMAL REQUIREMENTS FOR SHORING ADJACENT TO TRACK

- 

ZONE 1 - EXCAVATIONS ABOVE AND OUTSIDE OF THE THEORETICAL RAILROAD EMBANKMENT LINE - DO NOT NORMALLY REQUIRE SHORING TO PROTECT RAILROAD ROADBED, SHORING MAY BE REQUIRED FOR OTHER REASONS.
- 

ZONE 2 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 2 REQUIRE SHORING, BUT THE SHORING MAY NORMALLY BE PULLED AFTER THE EXCAVATION HAS BEEN BACKFIELD.
- 

ZONE 3 - EXCAVATIONS WHOSE BOTTOMS EXTEND INTO ZONE 3 WILL NORMALLY REQUIRE THE SHORING TO BE LEFT IN PLACE AND CUT-OFF 3' BELOW BASE OF RAIL. SHORING MUST BE DESIGNED FOR COOPER E80 LIVE LOAD

Central City, Muhlenberg County, KY
KYTC Project No. FD04 089 83604 01U
CSXT Milepost: 00D-179.42
CSXT OP No.: KY0275

EXHIBIT D

CONTRACTOR'S ACCEPTANCE

To and for the benefit of the *Company*, ("*Company*") and to induce the *Company* to permit Contractor on or about *Company's* property for the purposes of performing work in accordance with the Agreement dated _____, 20__, between the Commonwealth of Kentucky Transportation Cabinet, Department of Highways and the *Company*, Contractor hereby agrees to abide by and perform all applicable terms of the Agreement, including, particularly Exhibits B and C as included herein.

Contractor: _____

By: _____

Name: _____

Title: _____

Date: _____

SPECIAL NOTE FOR RAILROAD FLAGGING

Unless otherwise noted, Section references herein are to the Department's Standard Specifications for Road and Bridge Construction. All applicable portions of the Department's Standard Specifications apply unless specifically modified herein.

- 1. DESCRIPTION.** It is estimated this project will require 200 days of railroad flagging. Guidelines for determining when flagging protection will be needed are included in the Special Provisions for Protection of Railroad Interest. The Daily Rate for this project will be \$1,000.00
- 2. DEFINITION OF FLAGGING.** The particular Railroad(s) involved in this project will define when flagging is required (see Summary for KYTC Projects That Involve a Railroad and Special Provisions for Protection of Railroad Interest) and the number of flaggers needed. At least 2 weeks notice is required before flagging will be provided, but it could take up to 30 days. It will remain the Contractor's responsibility to schedule work including any down time (such as winter) so as to minimize the use of flagging services. The Department retains no responsibility for coordinating flagging services between the Railroad and the Contractor.
- 3. REDUCTION AND EXTENSION OF RAILROAD FLAGGING TIME.** Based upon the Kentucky Standard Specifications, any changes in contract time for this project will be by change order. If the nature of the work in the change order necessitates additional use of railroad flagging services, then that shall be identified in that change order and the number of calendar days for railroad flagging services shall be increased. By signing the change order, the contractor waives all rights to any future request to change the number of days of railroad flagging associated with the work in that change order. Since the number of days involves the cost to the Department and not the Contractor, the number of days of railroad flagging shall not be reduced.
- 4. MEASUREMENT.** The Department will keep track of calendar days that railroad flagging is performed. This will include any day that any railroad flagger charges a minimum of 5 hours of onsite flagging. Except that from April 1st thru November 30th this will not include days where the Contractor cannot perform at least 5 hours of the work that necessitates railroad flagging due to weather, seasonal, or temperature limitations of the Specifications, or other conditions beyond the control of the Contractor as judged by the Engineer. From Dec 1st thru March 30th any day that any railroad flagger charges a minimum of 5 hours of onsite flagging then a calendar day of railroad flagging will be counted; without regard to weather, seasonal or temperature limitations of the Specifications. The Engineer will furnish the Contractor bi-weekly statements showing the number of railroad flagging days charged for the period. The Contractor acknowledges acceptance of, and agreement with, all bi-weekly statements unless the Contractor submits a written protest containing supporting evidence for a change within 14 calendar days of receiving the bi-weekly statement.

If the number of calendar days of railroad flagging has exceeded 200 days, then the Contractor will be charged for each day that additional flagging is needed multiplied by the Daily Rate. This will be in addition to any liquidated damages or other reimbursements that the contract or the Kentucky Standard Specifications may require. This charge will continue, based upon actual flagging use, until Formal Acceptance.

If upon Formal Acceptance the total number of calendar days that railroad flagging is performed is less than 200 days no additional monies will be given to the Contractor.

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

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

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

PROTECTION OF EXISTING UTILITIES

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

PREQUALIFIED UTILITY CONTRACTORS

Some utility owners may require contractors that perform relocation work on their respective facilities as a part of the road contract be prequalified or preapproved by the utility owner. Those utility owners with a prequalification or preapproval requirement are as follows:

No contractors are required to be prequalified or preapproved by the utility owner(s) to perform utility relocation work under this contract.

The bidding contractor needs to review the above list and choose from the list of approved subcontractors at the end of these general notes as identified above before bidding. When the list of approved subcontractors is provided, only subcontractors shown on the following list(s) will be allowed to work on that utility as a part of this contract.

When the list of approved subcontractors for the utility work is not provided in these general notes, the utility work can be completed by the prime contractor. If the prime contractor chooses to subcontract the work, the subcontractor shall be prequalified with the KYTC Division of Construction Procurement in the

work type of “Utilities” (I33). Those who would like to become prequalified may contact the Division of Construction Procurement at (502) 564-3500. Please note: it could take up to 30 calendar days for prequalification to be approved. The prequalification does not have to be approved prior to the bid, but must be approved before the subcontract will be approved by KYTC and the work can be performed.

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

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

SUBMITTALS AND CORRESPONDENCE

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

ENGINEER

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

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

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

NOTICE TO UTILITY OWNERS OF THE START OF WORK

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

UTILITY SHUTDOWNS

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

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

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

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

or corporation stop and/or capping or plugging the tap, digging down on a sewer tap at the main and plugging or capping the tap, digging down on a service line or lateral at a location shown on the plans or agreeable to the engineer and capping or plugging, or performing any other work necessary to abandon the service or lateral to satisfactorily accomplish the final utility relocation.

STATIONS AND DISTANCES

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

RESTORATION

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

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

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

MATERIAL

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

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

No materials are being supplied by the utility owner(s). All materials are to be supplied by the contractor per bid item descriptions, utility specifications and utility plans.

SECURITY OF SUPPLIED MATERIALS

If any utility materials are to be supplied by the utility owner, it will be the responsibility of the utility contractor to secure all utility owner supplied materials after delivery to the project site. The utility

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

Standard Water Bid Item Descriptions

W AIR RELEASE VALVE This bid item description shall apply to all air release valve installations of every size except those defined as “Special”. This item shall include the air release valve, main to valve connecting line or piping, manhole, vault, structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release valve would a separate bid item be established. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

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

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

W DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of water main under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

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

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

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

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

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

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

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

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

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

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

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

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

W FLUSHING ASSEMBLY This item shall include the flushing device assembly, service line, meter box and lid, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the

flushing device at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

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

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

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

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

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

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

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

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

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

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

This item shall be paid EACH (EA) when complete.

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

W PLUG EXISTING MAIN This item shall include the specified plug, concrete blocking and/or anchoring, labor, equipment, excavation, backfill, and restoration required to install the plug in an existing in-service main that is to remain at the location shown on the plans or as directed in accordance with the specifications. Any and all plugs on all existing in-service mains shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

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

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

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

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

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

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

W SERVICE SHORT SIDE This bid item description shall apply to all service line installations of every size up to and including 2 inch internal diameter, except those service bid items defined as "Special". This item includes installation of the specified piping material of the size specified on plans, encasement of 2 inches or less internal diameter (if required by plan or specification), main tap, tapping saddle (if required), corporation stop, coupling for connecting the new piping to the surviving existing piping, labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and

ready for use. This bid item is to pay for service installations where both ends of the service connection are on the same side of the public roadway, or when an existing service crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service line is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the service crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

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

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

W TAPPING SLEVE AND VALVE SIZE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready for use in accordance with

the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

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

Size 2 = All live tapped main sizes greater than 8 inches

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

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

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

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

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

W VALVE CUT-IN This bid description is for new cut-in valve installations of all sizes where installation is accomplished by cutting out a section of existing main. This item shall include cutting the existing pipe, supplying the specified valve, couplings or sleeves, valve box, concrete pad around valve box (when required in specifications or plans), labor, equipment, and materials to install the valve at the locations shown on the plans, or as directed by the engineer, complete and ready for use. Any pipe required for installation shall be cut from that pipe removed or supplied new by the contractor. No separate payment will be made for pipe required for cut-in valve installation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

Section 01 100

SUMMARY OF WORK

1.0 WORK COVERED BY CONTRACT DOCUMENTS

The Work to be performed involves the installation of a relocated treated water pipeline and appurtenances as part of the Highway 62 widening project, located in Central City, Kentucky (Muhlenberg Co.), all as described by the Contract Drawings and Specifications.

2.0 CONTRACTOR'S DUTIES

2.1 Construction and Related Activities

The Contractor shall provide and pay for all labor, materials, equipment, machinery, tools, superintendence, insurance, bonds, shipping, sampling and testing, utilities, and other costs required for a complete and functioning water line installation.

2.2 Taxes

The Contractor shall pay all required sales taxes, payroll taxes, consumer and use taxes, and other taxes relating to the work of the project.

2.3 Notices

The Contractor shall provide all required notices, including notices to utility owners of intent to excavate in the vicinity of their utilities, notices to property owners of intent to enter their property for construction purposes, notices regarding the interruption of any utility service, as well as other notices required by the plans and contract documents.

2.4 Laws

Contractor shall fully comply with all applicable laws, ordinances, rules, regulations, orders and other legal requirements, and shall bear the cost of such compliance.

2.5 Character of Workmen

Contractor shall employ workman and foremen with sufficient knowledge of and experience in the type of work proposed to assure satisfactory performance. Workman shall maintain a professional demeanor and appearance at all times on the project. Any workman on the project who performs work in an incompetent manner, or acts in a disorderly or intemperate manner shall be removed from the project, and may not be employed on any portion of the project unless approved by the Owner.

2.6 Notice of Discrepancies

If discrepancies or ambiguities are found in the plans, specifications, contract documents or in any communication to the contractor, the contractor shall immediately notify the Engineer in writing. Do not proceed with the affected work until clarification is received.

2.7 Inspection

Provide at all times, access to the work for inspection by representatives of the Owner, the Engineer, and regulatory authorities having jurisdiction over the project.

2.8 CONTRACTOR'S USE OF PREMISES

Muhlenberg County is the site of all work on this Project.

- a. **RIGHTS-OF-WAY AND EASEMENTS:** The owner has legal authority to construct these facilities on property owned by the Owner, within easements on private property, and on existing public rights-of-way and will provide any other required permanent and construction easements for the pipeline. Access to the site of the work is the responsibility of the Contractor. Contractor shall confine his operations to right-of-ways, easements and property obtained by the Owner for construction of the project, or to areas secured by the Contractor for his use. Contractor shall take precautions to minimize disruption to existing properties.
- b. **LOCATION OF TEMPORARY FACILITIES:** Contractor's Field offices, Sub-Contractors' Field Offices, Material Storage Buildings, Material and Equipment Storage Yards, and parking areas for all project workers shall be provided by the Contractor, and located in areas approved by the Engineer. Stored materials, regardless of their location shall be protected by the Contractor from damage, theft or degradation at all times.
- c. **DAMAGE TO EXISTING PROPERTY:** The Contractor will be held responsible for any damage to existing structures, work, materials, or equipment because of his operations and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of, and at no additional cost to, the Owner. Stored materials, regardless of their location shall be protected by the Contractor from damage, theft or degradation at all times.

The Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.

3.0 EXISTING FACILITIES

3.1 Existing Utilities

The existing water distribution system (**Central City Water**) will be in continuous operation during the construction of the Project. Contractor shall avoid disturbing existing water facilities, and any other utilities or structures encountered in the work, except as necessary for construction operations. Contractor shall give at least 48 hours prior notice to the Owner, or to any utility or other entity, of any necessary disruptions to service, or work affecting active lines. The Contractor shall be responsible for any necessary damage repair resulting from his installation work

The Contractor will be responsible for any manual locating of existing waterlines during the work as necessary, with only general locating guidance by the Owner. Contractor shall cooperate with Owners personnel in continuing operation of existing facilities.

3.2 Existing Connecting Streets, Roads and Highways

Any damage to a public facility and/or any access road into the project site by construction traffic generated by this project shall be the responsibility of the Contractor. All streets and roads shall be kept open to normal traffic and in a reasonable state of repair. The Contractor shall arrange with the appropriate authority to perform repairs himself or to have the said authority perform them. Any damages to public roads shall be considered a matter of the Contractor's or his suppliers public liability, and needed repairs shall be made as required by the public entity having authority over the road. Contractor shall provide adequate barricades, warning signs, flagmen, lights, etc., for construction operations hazardous to traffic and public safety.

4.0 PARTIAL OWNER OCCUPANCY

The **Owner and/or the Central City Water** may, at his discretion, place into service any or all portions of the completed work prior to final completion of all work on the project. Placing a portion of the work in service before final completion does not relieve the contractor of his obligation to complete all work associated with that portion of the line (i.e. clean-up, surface restoration, etc.), to perform maintenance for the required period, or to provide warranty for that portion of the work. If a portion of the work that is

placed in service prior to final project completion and acceptance is, in the opinion of the Engineer, complete and ready for acceptance, the Contractor may request that the warranty period for that portion of the work begin at the time it is placed in service, providing that such request is made in writing within seven days of the date of being placed in service. If the request is not made within the required time, the warranty period for that portion of the work will begin upon final acceptance of the Project.

5.0 TEMPORARY FACILITIES

- a. **CONTRACTOR'S OFFICE AT SITE OF WORK:** Contractor will not be required to provide temporary office facilities, but may do so if desired.
- b. **PARKING:** The Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with this Contract, as required to avoid any need for such personnel to park personal vehicles in locations where they may interfere with public traffic, Owner's operations, or construction activities. Securing the use of property for parking areas as necessary for the Contractor's operations shall be the full responsibility of the Contractor.
- c. **SANITARY FACILITIES:** The Contractor shall provide and maintain sanitary facilities for the use of his employees or any other persons on the job site, as may be required to comply with the regulations of state and local departments of health.
- d. The Contractor shall prepare and install one project sign as shown herein, shall maintain the sign in good repair for the project duration, and shall remove and dispose of the sign upon completion of the work.

6.0 TEMPORARY UTILITIES & SERVICES

- a. **WATER:** Water for any purpose will be paid for by the Contractor.
- b. **POWER:** Power for lighting, temporary office facilities, operation of the Contractor's plant or equipment, or for any other use by the Contractor shall be provided by the Contractor at his sole cost and expense. The contractor will be responsible for all necessary arrangements with the utility company.
- c. **HEAT:** All heat necessary for the protection or completion of the work, operation of the Contractor's plant or equipment, or for any other use by the Contractor shall be provided by the Contractor at his sole cost and expense.
- d. **TELEPHONE SERVICE:** The Contractor shall make all necessary arrangements with the telephone utility, and pay all charges therefore, for telephones in his offices at the site, if desired.
- e. **SANITARY SEWER:** The Contractor may make use of portable toilet facilities at his sole cost and expense.

7.0 WORKING HOURS

The Contractor may work on this project during the daylight hours, Monday through Friday, except legal holidays, when weather conditions permit. If the Contractor wishes to work at other times, he may do so if approved by the Engineer and if the request to do so is made at least 48 hours in advance.

END OF SECTION 01-100

Section 01 200

SUBMITTALS

1.0 PROGRESS MEETINGS

The Contractor shall provide a representative to attend regular monthly Commission meetings and Progress meetings to report on project progress and to respond to questions from the Commission and the public. The Contractor shall attend other project related meetings from time to time as designated by the Engineer.

2.0 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

2.1 General

Submit six copies of all required shop drawings to the Engineer for approval. Do not proceed with work involving any material, supply or method subject to review until approved submittals are received. Allow two weeks for Engineer's review.

2.2 Submittal Requirements

Submittals shall fully describe the item, material, or construction method proposed, and shall be free of extraneous materials. Submittals shall be adequate to fully document compliance with all requirements of the specifications. Any proposed deviation from the specifications, and the reason therefor shall be noted on the submittal.

By submitting a particular item, material or method, the Contractor states his intention to use that item, material or method exclusively in the work. Once approved, the Contractor may not change items, materials or methods without resubmitting shop drawings. The Engineer reserves the right to reject a re-submittal solely on the basis of maintaining continuity in the work.

Engineer's review of the submittal does not relieve the Contractor of his responsibility to fully comply with all requirements of the Contract Documents.

Shop drawings returned for correction or rejected shall be revised and resubmitted until final approval is granted. No claim will be allowed for damages or time extension because of delays in the work resulting from rejection of submittals not conforming to the specifications.

2.3 Items Requiring Review

Shop drawing submittal and review are required for, but not limited to, the following items (except where such items are supplied by the owner):

- a. PVC/Ductile iron pipe, fittings, meters and hydrants.
- b. Pipe Certifications and Test Results.
- c. All valves (gate, air release, etc.)
- d. Aggregates used as bedding or backfill (source and gradation).
- e. Concrete mix designs.
- f. Reinforcing steel details and placement.
- g. Precast concrete items.
- h. Access hatch and covers.
- i. Tracer wire.
- j. Tracer wire splice kit material.
- k. Pipeline markers.
- l. Casing Pipe.
- m. Casing End Seals & Spacers
- n. Mechanical Joint Restraints

3.0 OPERATING AND MAINTENANCE MANUALS

Furnish four copies of manuals of instruction for operation and maintenance of the following items (except where such items are supplied by the owner):

- a. Valves (all types)
- b. Master Meter

Manuals shall include, as applicable, a parts list, exploded or sectional views, recommended maintenance program, internal piping and wiring details, operating procedures, complete description of the item including manufacturer (including address and telephone number), model number, style, options, etc., and name, address and telephone number of a local supplier or parts distributor.

4.0 CLOSEOUT

Before final payment on the project, deliver to the Engineer the following items.

1. Notarized release of liens from all subcontractors, equipment and material suppliers.
2. Written warranties and guarantees.
3. Disinfection testing results as outlined in Section 02-400.
4. As-built drawings. (Separate from those notes and measurements made by the resident inspector.)

END OF SECTION 01-200

Section 02 100

WATER LINE GENERAL REQUIREMENTS

1.0 GENERAL

1.1 SCOPE OF WORK

The water lines and appurtenances required on this contract shall be furnished in full compliance with the contract specifications and contract drawings.

Work to be performed under the unit price items, described subsequently herein, shall include for each item all excavation (including rock excavation, if any) the removal of existing pavements, curb and gutter, sidewalks, driveways, brush and timber, structures and piping to be relocated or abandoned; also sheeting, diking, well pointing, bailing, dewatering; the furnishing, placing and removal of bulkheads, the restoration of any utilities, parkways, trees, shrubbery, culverts, fences and other items disturbed by construction operations; backfilling, removal and disposal of excess or waste excavated materials; and testing.

The cost of all such work and the cost of other work necessary for the complete water line installation shall be included in the unit price pay items provided.

1.2 STANDARDS

Where materials and methods are indicated in the Specifications as being in conformance with a standard specification (i.e. AWWA, ASTM, etc.) it shall refer in all cases to the latest edition of the specification or standard, and shall include all interim revisions. Listing of a standard specification without further reference shall indicate that the particular material or method shall conform to the referenced specification.

2.0 WORK INCIDENTAL TO CONSTRUCTION

Work to be performed under this heading includes all the work designated as "incidental to construction" and other work required by the plans, specifications or contract documents in order to fully complete the work on the project, but not provided with a specific pay item in the bid form or specifically set out or described in detail. The contractor shall perform such work, and the contractor shall include all charges for the work in the bid items provided. No claim for additional compensation based upon work that could be reasonably foreseen as being required to complete the project not being described in the contract documents will be considered.

2.1 PUBLIC AND PRIVATE UTILITIES

Where any utilities, such as water, sewer, telephone, power, oil or gas transmission, or any other, either public or private are encountered, the contractor shall provide adequate protection for them and will be held responsible for any damage to such utility from his operations. When it is apparent that construction operations may damage the integrity of any utility conduit or pole, or the support of any structure, the contractor shall notify the utility owner of this possibility and shall take such steps as may be required to provide temporary bracing or support of the affected conduit, pole or structure.

The cost of any bracing or support of conduits, poles or structures encountered in the work shall be included in the cost of water main construction.

When, in order to carry out the work, a pole, conduit or structure is required to be removed or relocated, the contractor shall be responsible for making all arrangements with the utility owner for such removal or relocation. All costs for such relocation or removal shall be born by the contractor unless it could not be reasonably foreseen that such work would be required.

All damage to utilities resulting from the contractors operations shall be repaired at the contractor's expense. Where it is the policy of the utility to perform their own repairs to damaged utilities, the contractor shall cooperate fully with the utility and bear the costs of such repairs.

2.2 EXISTING WATER, SEWER AND DRAIN FACILITIES

In some instances, existing water, sewer or drains may be encountered along the line of work. In all such cases, the contractor shall perform his operations in such manner that the service will not be interrupted, and shall, at his expense, make temporary provisions to maintain such services.

Where it is necessary to cut, remove and/or replace existing storm sewers and drain tiles, the Contractor shall make specific arrangements to maintain the flow of water and shall not place permanent bulkheads in any conduit. Temporary earth dams may be used to confine and/or channel the flow and shall be removed upon completion of the crossing.

The Contractor shall receive no extra compensation for replacement of drains encountered or for relaying same at a new grade or line. Where existing water mains are encountered in the work they shall be maintained in operation to the extent that water service is not interrupted.

2.3 EXISTING GAS, ELECTRIC AND OTHER FACILITIES

Where existing gas mains are encountered, the Contractor shall arrange with the Gas Utility for any necessary location and marking.

The Contractor will give adequate notice to the Gas Utility to allow their location of gas lines ahead of the proposed construction with paint or stakes. The Contractor will be required to expose the gas mains prior to dynamiting and excavation, where crossing pipeline installations. Track drill operations will be ceased short of the gas main and will resume on the other side of the main. The material under the gas line will be removed with hand drills and/or jack hammers. The Contractor shall contact the Gas Utility for restrictions on blasting in the vicinity of the gas line, and comply therewith.

Before backfilling a trench in which a gas main has been exposed, the Contractor shall notify the Gas Utility to inspect the exposed main and perform any protective measures deemed necessary.

The forgoing provisions pertaining to gas lines shall apply to all natural gas, petroleum and other fuel pipelines.

Where existing underground electric or telephone facilities are encountered, the Contractor shall take the necessary measures to work around the facilities or arrange with the Electric Company or Telephone Company for any necessary relaying. Repairs made necessary by damage to any facilities by the Contractor shall be charged to the Contractor.

2.4 DEWATERING

The Contractor shall perform all pumping, well pointing, ditching and any other necessary procedure to keep the excavation clear of groundwater, storm water, or sewage during the progress of the work and until the completed work is safe from injury.

The Contractor shall maintain dewatering operations such that no groundwater, storm water, or sewage will be allowed to build up over any concrete and/or masonry at manholes or structures for a period of 6 hours. This time period will be adjusted by the Engineer should temperature and curing conditions warrant.

All water pumped or drained from the work shall be disposed of in a manner satisfactory to the Engineer without damage to adjacent property or to other work under construction. The contractor shall not dispose of storm or surface water through sanitary sewerage facilities.

It shall be the Contractor's responsibility to take all necessary precautions to protect all construction against flooding and/or flotation from hydrostatic uplift.

All dewatering procedures and maintenance thereof shall be considered an incidental part of pipe laying and construction operations and no separate payment will be allowed therefor.

Dewatering operations for structure construction shall be such that the groundwater or surface water is not being pulled over, around, or through the freshly placed concrete or masonry. The use of multiple pumps in the trench may be required. When required to protect the freshly placed concrete and/or masonry, timber or plywood forms will be positioned around in the concrete or masonry so that the dewatering operations will not cause a separation of cement and aggregate. The cost of these dewatering and/or protection procedures shall be considered incidental to construction and merged into the appropriate bid items.

2.5 BARRICADES AND WARNING SIGNS

The Contractor shall furnish, erect, and maintain such barricades, fences, lights, and danger signals and take other precaution measures that will insure the protection of persons, property and the work.

2.6 MAINTENANCE AND ACCESS OF TRAFFIC

Portions of the work are located in developed areas requiring the access for fire and other departments to be provided for; at least one free lane shall be available for all traffic. Contractors are to arrange operations in these areas to meet these requirements and secure approval of operating procedures from potentially affected Central City Street Department, Muhlenberg County Road Department and the Kentucky Highway Department as appropriate in Kentucky.

Where water lines are constructed under paved roadway surfaces, within public right-of-ways, the Contractor will restore the asphalt or crushed stone pavement and/or shoulders between shoulder lines. It shall be the responsibility of the Contractor, upon completion of the installation, to regrade the street to the template that existed prior to construction. This regrading shall be satisfactory to the entity owning the road.

The Contractor shall further be responsible for the maintenance of disturbed streets until re-paving operations have been completed.

The Contractor shall restore all curbs, gutters, sidewalks, ramps and private driveways or parking lots. This work shall be considered as incidental to the construction of the proposed water line and, therefore, no additional compensation will be allowed for the restoration of these items.

The Contractor shall also be required to restore, at his own expense, all pavements disturbed by his operations where the water line was not constructed under the pavements. He shall further be required to replace at his own expense all pavements disturbed in the correction of water line deficiency discovered after restorations have been completed.

3.0 MATERIAL AND EQUIPMENT

Materials, products and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and handling. Provide suitable temporary weather tight storage facilities as may be required for materials or equipment that will be damaged by storage in the open. Protect from damage all materials delivered at the site. Do not use damaged material in the work.

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the respective manufacturers unless directed otherwise by the provisions of these Specifications.

4.0 SPECIAL CONDITIONS

The Contractor's attention is called to the special conditions (i.e. road crossings, construction in road right-of-way, etc.) indicated on the Plans. The Plans and Specifications reflect the type of construction that is anticipated in the various locations requiring special attention, but it shall be the responsibility of the

Contractor to contact the various agencies including the State Highway Department, the Gas Company, Telephone Company, Corps of Engineers, and other utilities and/or entities involved when working in areas where they will be concerned, and for coordinating construction with their requirements in such a way to avoid conflicts, damage or interruptions in service.

- (a) The Contractor shall perform his work in such a manner that normal service on existing water lines and service to customers is maintained to the maximum extent possible. Such service shall be disrupted only at times and in such a manner as approved by the owner of the utility.
- (b) The Contractor shall submit a work schedule to the Engineer for approval prior to beginning work. The schedule shall establish the planned sequence of line installation, and property restoration for the project.
- (c) The Contractor shall maintain access to businesses and residences to the maximum extent possible.
- (d) Easement Restrictions - The Contractor shall exercise due care in staying within the right of way and easements obtained for the proposed construction, and will be held strictly accountable for violations thereof. Any additional access to, or use of private property must be arranged by the Contractor, at his expense, by negotiation with the property owner involved.

5.0 TESTING

The Specifications for materials designate the testing applicable for materials incorporated in the work. Testing shall be done by the manufacturer in accordance with the applicable ASTM specification. Manufacturer shall furnish the Engineer with three (3) certified copies for the test results.

The Owner may, at his option, elect to have an independent testing laboratory test materials to be furnished for incorporation in the work. Such testing, when done, shall be in accordance with provisions of the Specifications for Materials.

Acceptance testing for installed water line will be limited to visual inspection, disinfection testing, pressure testing and evaluation of the installed performance of the line unless directed otherwise by the Engineer.

6.0 SUBMITTALS

Submittals for this work include, but are not limited to, those items listed in Section 01-200. Provide at least six copies of each submittal, and allow two weeks for Engineer's review. Such submittals are to be approved by Engineer prior to incorporation of any materials into the work.

7.0 WARRANTY

The work to be performed under this Contract shall be guaranteed against defects in materials or workmanship for a period of one year following the date of formal acceptance of the project. In the event defects in materials or workmanship should appear, the Contractor shall promptly make the necessary correction. When the defects are not of an emergency nature, the Contractor will be notified and will be given a period of two weeks in which to make the necessary corrections. Should the defect be of an emergency nature, which in the opinion of the Owner or the Engineer requires immediate correction, the Contractor will be notified and requested to make the necessary repair immediately. Should this be impractical, or if the Contractor should fail to respond to the request for corrective action within the specified period, the Owner may proceed to have the defects corrected and shall bill the Contractor for all charges in connection therewith including labor, materials, and equipment rental. Such charges may be deducted from amounts due the Contractor if any of the Contractor's money has been withheld. In the event the Contractor fails, refused, or neglects to pay the Owner, the Surety shall be liable for such charges,

8.0 MAINTENANCE OBLIGATION

The Contractor shall be fully responsible for maintenance of any and all portions of the work that he performs under this Contract for a period of 30 days. This maintenance obligation shall begin upon formal

acceptance of the project and is intended to place a limit upon the Contractor's responsibility for normal maintenance required for the routine operation of the system. This 30 day obligation shall not be construed as relieving the Contractor of the responsibility for maintenance or repair work resulting from defective materials or workmanship during the warranty period.

9.0 PROJECT CLOSEOUT

The premises and the job site shall be maintained in a reasonably neat and orderly condition and kept free from an accumulation of waste materials and rubbish during the entire construction period. Remove crates, cartons and other flammable waste materials or trash from the work areas at the end of each working day.

When the Contractor requests a final inspection, Engineer will inspect the work for completeness in accordance with the Contract Documents. Any deficiencies shall be promptly corrected by the contractor.

Final acceptance cannot be made until the Contractor furnishes to the Owner a notarized certification in a form suitable to the Owner that all labor and material costs for the work have been paid by the Contractor and that there are no liens against the work.

Payment in full of the final Application for Payment shall constitute acceptance of the work by the Owner subject to conditions of the Contract Documents.

END OF SECTION 02-100

Section 02 200

WATER MAIN MATERIALS

1.0 GENERAL

All materials to be incorporated in the project shall be first quality, new and undamaged material conforming to all applicable portions of these Specifications.

2.0 CONCRETE

2.1 Cement- Cement shall be Portland cement of a brand approved by the Engineer and shall conform to "Standard Specifications for Portland Cement", Type 1, ASTM Designation C150, latest revision. Cement shall be furnished in undamaged 94 pound, one cubic foot sacks, and shall show no evidence of lumping.

2.2 Concrete Fine Aggregate- Fine aggregate shall be clean, hard uncoated natural sand conforming to ASTM Designation C33, latest revision, "Standard Specifications for Concrete Aggregate".

2.3 Concrete Coarse Aggregate- Coarse aggregate shall consist of clean, hard, dense particles of stone or gravel conforming to ASTM Designation C33, latest revision, "Standard Specifications for Concrete Aggregate". Aggregate shall be well graded between 1-1/2" and #4 sieve sizes.

2.4 Water- Water used in mixing concrete shall be clean and free from organic matter, pollutants and other foreign materials.

2.5 Ready Mix Concrete- Ready-mix concrete shall be secured only from a source approved by the Engineer, and shall conform to ASTM Designation C94, latest revision, "Specifications for Ready-Mix Concrete". Before any concrete is delivered to the job site, the supplier must furnish a statement of the proportions of cement, fine aggregate and coarse aggregate to be used for each mix ordered, and must receive the Engineer's approval of such proportions.

2.6 Class "A" Concrete- Class "A" concrete shall have a minimum compressive strength of 4000 pounds per square inch in 28 days and shall contain not less than 6 sacks of cement per cubic yard. Class A concrete shall be air-entrained.

2.7 Class "B" Concrete- Class "B" concrete shall have a minimum compressive strength of 2000 pounds per square inch in 28 days and shall contain no less than 4 sacks of cement per cubic yard.

2.8 Metal Reinforcing- Reinforcing bars shall be intermediate grade steel conforming to ASTM Designation A615, latest revision "Standard Specifications for Billet Steel Bars for Concrete Reinforcement". Bars shall be deformed with a cross sectional area at all points equal to that of plain bars of equal nominal size.

3.0 CRUSHED STONE

Crushed stone for pipe bedding and/or backfill shall meet the quality requirements of ASTM D692 and the grading requirements referenced on the plans.

4.0 WATER PIPE

4.1 PVC Water Pipe

PVC pipe for water shall be manufactured in accordance with ASTM D2241 and have NSF approval. The pipe shall be Class 200 polyvinyl chloride plastic (PVC 1120) SDR-21. The following tests shall be run for each machine on each size and type of pipe being produced, as specified below:

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

Acetone Test (Extrusion Quality Test): Once per shift in accordance with ASTM D2152. There shall be not flaking, peeling, cracking, or visible deterioration on the inside or outside surface after completion of the tests.

Quick Burst Test: Once per 24 hours in accordance with ASTM 5199.

| <u>SDR</u> | <u>Pressure Rating</u> | <u>Minimum Bursting Pressure, PSI</u> |
|------------|------------------------|---------------------------------------|
| 21 | 200 | 800 |

Impact Tests: 6" and smaller, once each 2 hours in accordance with ASTM D2444.

Wall Thickness and Outside Dimensions Test: Once per hour in accordance with ASTM D2122.

Bell Dimensions Test: Once per hour in accordance with ASTM D3139.

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

Furnish a certificate from the pipe manufacturer stating that he is fully competent to manufacture PVC pipe of uniform texture and strength and in full compliance with these specifications and further stating that the company has manufactured such pipe for a continuous period of at least ten years. In addition the manufacturer's equipment and quality control facilities must be adequate to ensure that each extrusion of pipe is uniform in texture, dimensions, and strength. Also furnish a certificate from the manufacturer certifying that the pipe furnished for this project meets the requirements of these Specifications.

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

The pipe shall be furnished in laying lengths of 20'. The Contractor's methods of storing and handling the pipe shall be approved by the Engineer. Pipe shall be fully supported as recommended by the manufacturer. Stringing pipe along the proposed route in excess of one day's work will not be allowed.

Certain information shall be marked on each piece of pipe. At the least, this shall consist of:

- Nominal Size
- Type of material
- SDR or class
- Manufacturer
- NSF Seal of Approval

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

Restrained joint PVC pipe shall meet all other requirements for PVC pipe set forth above, plus having a positive means of restraining the pipeline joint against separation due to internal pressure. The joint restraint system shall be equal to CertainTeed Certa-Lok Yelomine pipe systems.

4.2 Ductile Iron Water Pipe

Ductile iron pipe shall meet the requirements of ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51 and shall be NSF approved. All ductile iron pipe shall have a minimum pressure rating as specified on the Drawings. All ductile iron pipe shall be cement lined with an asphalt coating on the exterior of the line. In standard buried installation, ductile iron pipe shall be supplied with push-on type joints with SBR rubber, or other gasket material suitable for continuous service in a buried potable water pipeline. Pipe which will be exposed (e.g. above grade, or in vaults or buildings) shall have flanged joints. Pipe size, pressure class, NSF seal, and manufacturer's name shall be clearly marked on the exterior of each pipe joint.

All ductile iron pipe shall have Underwriter's Laboratories, Inc. approval and shall be approved by the National Sanitation Foundation for potable water use. All ductile iron pipe and fittings shall be manufactured in the United States. All pipe for any one project shall be made by the same manufacturer.

Restrained joint pipe and fittings shall meet all other requirements for ductile iron pipe and fittings set forth above, plus having a positive means of restraining the pipeline joint against separation due to internal pressure. The joint restraint system shall be equal to American Ductile Iron Pipe Flex-Ring system or US Pipe TR Flex system.

4.3 HIGH DENSITY POLYETHYLENE PIPE

High Density Polyethylene pipe shall be as manufactured by Driscopipe. High density polyethylene (HDPE) pipe shall comply with AWWA C906. Materials used in the manufacture of HDPE pipe and fittings shall be made from a PE 3408 high density polyethylene resin meeting cell classification 345434C per ASTM D3350; and meeting Type III, Class C, Category 5, Grade P34 per ASTM D1238.

HDPE watermain (potable water) pipe and fittings shall be rated at 200 psi at 73°F and shall conform to Standard Dimension Ratio (SDR) 9. HDPE encasement pipe shall be rated at 51 psi at 73°F and shall conform to Standard Dimension Ratio (SDR) 17.

All fittings and transition fittings shall be approved by the pipe manufacturer for use with the pipe. HDPE pipe shall be joined by heat fusion welding. All equipment used in the heat fusion welding process shall be certified by the pipe manufacturer, and all fusion equipment operators shall be trained and certified in its operation.

5.0 FITTINGS

All fittings shall be cast gray iron or ductile iron, cement lined, bituminous coated, manufactured in accordance with AWWA/ANSI Standards A21.10 and A21.11, latest revision, unless otherwise indicated or directed. Minimum pressure rating shall be 250 psi. Unless indicated otherwise on the Drawings, mechanical joint fittings shall be used.

6.0 RESILIENT SEAT GATE VALVES

Gate valves shall be iron body, resilient rubber seat type valves with non-rising stems. Three inch and smaller valves may be bronze body. Resilient seat gate valves shall have a bronze stem nut cast integrally with the cast iron valve disc. The valve shall be capable of being installed and operated in either direction and shall be furnished with mechanical joint ends. Valves shall be suitable for installation in an approximately vertical position in buried pipe lines. Stem seal shall consist of O-ring seals. All valves shall open to the left (counter-clockwise), and shall be provided with 2" square operating nut. All underground gate valves which have nuts deeper than 30' below the valve box top shall have extended stems with nuts located within one foot of the valve box cap.

Valves (3-inch & Larger) shall be for working pressures up to 250 psi and shall be equal to latest specifications of AWWA C-509 in all respects. Valves shall be equal to US Pipe Metroseal 250 or Mueller A-2360.

7.0 BRASS BALL VALVE (If Needed)

Ball Valves (2-inch & Smaller) shall be equal to Ford B-1177 and supplied with the brass adapter Ford C87-77. All components shall be manufactured in the United States of America.

8.0 TAPPING SLEEVES AND VALVES

Tapping sleeves shall consist of a mechanical joint tapping sleeve equal to Mueller H-615 (for non-PVC tapped pipe) or Ford FAST-xxx-x-MJ Style (for PVC tapped pipe). Tapping valves shall conform to all applicable specifications for resilient seat gate valves. All components shall be manufactured in the United States of America.

9.0 VALVE BOX FRAMES AND COVERS

Valves box frames and covers shall be made of heavy cast iron and shall meet the requirements of ASTM A-48, class 30, and shall be three-piece, 5 1/4" diameter barrel, screw type construction.

All casting shall be made accurately to the required dimensions and shall be sound, smooth, clear and free of blemished or other defects. Defective castings which have been plugged or otherwise treated to remedy defects shall be rejected. Contract surfaces of frames and covers are to be machined so that they rest securely in the frames with no rocking. The cover shall be in contact with the frame for the entire perimeter.

The valve box frames and covers shall be equal to Russco B-129. The Cover shall be marked "Water".

10.0 SERVICE CLAMPS AND CORPORATION STOPS (If Needed)

Service clamps shall be used for all taps made to the water line, and the service clamps and accessories shall be lead free. Service clamps shall be all bronze construction with neoprene gasket, equal to Ford S70 Series. Corporation stops shall include a quick nut assembly, the corporation stop shall be Ford F1000-3G-NL Grip Joint or approved equal and the pack joint coupling shall be Ford C44-33-G-NL or approved equal. All components shall be manufactured in the United States of America.

11.0 STEEL CASING PIPE

Where noted on the Drawings or required by these Specifications, roadway crossings shall be made utilizing carrier pipe within a casing pipe. Sizes of carrier pipe and casing pipe shall be as noted on the Drawings.

Casing joints shall be of fully welded, leak proof construction. The steel casing pipe shall have a minimum yield strength of 35,000 psi and shall have the minimum wall thickness of 0.25 inches for 12" nominal diameter and smaller pipe. Casing pipe larger than 12" shall have a wall thickness corresponding to ASTM standards for Standard Weight steel pipe. Steel casing pipe shall be coated with a quick drying asphalt gilsonite paint. Pipe shall be welded according to AWWA Standard C206-91 unless otherwise specified.

12.0 PIPELINE DETECTION WIRE

Pipeline detection wire shall be No. 12 solid copper insulated wire. The wire shall be attached to the top of the installed pipe with duct tape prior to backfilling, and the detection wire shall be spliced to seal out moisture. The splicing kit shall be or equal to 3M direct Bury Splice Kit (DBY). Completed sections of detection wire shall be periodically checked for continuity by the Contractor. The Contractor is responsible for the continuity of the wire sections, and shall take measures during construction to insure a working final product. If, upon completion of the continuity test, a section of wire fails, the Contractor shall make corrective measures and the test will be repeated until satisfactory results are obtained.

Precast concrete valve rings, with an embedded copper locator pin, will serve as a wire terminal point for testing and locating.

13.0 WATER SERVICE LINES (If Needed)

Service lines from the watermain to the meter shall be high-density polyethylene tubing "copper tube size" equal to Driscopipe, suitable for 200 psi working pressure. Detection wire as described above shall be attached to all far side service tubing connections. The wire shall begin at the meter box and terminate at the corporation stop with a water tight wire cap.

14.0 LARGE FLUSHING HYDRANT

Large Flushing Hydrants, where specified, shall be equal to Mueller A-423 (Super Centurion 250) with 5-1/4" NST outlet. All components shall be manufactured in the United States of America.

15.0 SMALL FLUSHING (POST) HYDRANT (If Needed)

Small Flushing (Post) Hydrants, where specified, shall be 3" nominal shoe diameter with 2 1/2" NST outlet equal to M&H Hydrant Style 33 or approved equal. All components shall be manufactured in the United States of America.

16.0 CASING END SEALS & SPACERS

Casing end seals shall be heavy-duty rubber seals (Model ESW) as manufactured by CCI Pipeline Systems or approved equal. Casing Spacers shall be of heavy-duty two-piece stainless steel as manufactured by CCI Pipeline Systems (Model CSS-center restrained) or approved equal.

17.0 VALVE MARKERS

Plastic blue valve markers shall be TriView marker as manufactured by Rhino with owner's name and phone number imprinted on the marker. The 54 inch TriView markers shall be anchored by a 6 foot, 1.2 lb (2" dia. max.) steel U-channel. The U-channel shall be driven into the ground 2 feet with 48 inches left above ground to allow for the TriView marker to be installed over the top and fastened at the base.

18.0 PRECAST VALVE BOXES & OTHER ITEMS

Precast concrete valve rings shall be 24-inches in diameter and 4-inches thick. Each ring shall be equipped with an embedded copper locator test pin, which will serve as a detection wire terminal point for locating nonmetallic pipelines.

Precast concrete items shall meet all requirements of ASTM C478. All concrete used in precast items shall have a compressive strength of at least 4,500 psi at 28 days

19.0 AIR RELEASE VALVE (If needed)

Automatic air release valves shall be designed to allow a quantity of air to escape out of the orifice when air accumulates at high points in the water line. The air release valve shall be equipped with a vent line to atmosphere as shown in the Standard Details. Valves shall be tested for service to pressures of 300 psi and shall be made of cast iron housings. Valves shall be equal to APCO 200 A.

END OF SECTION 02-200

Section 02-227

WASTE MATERIAL DISPOSAL

1.0 SCOPE

This section covers the disposition of waste material as required by demolition, trenching and excavation operations.

2.0 MATERIALS

All waste materials shall be the property of the Contractor and shall be disposed of by the Contractor at no additional cost to the Owner.

3.0 EXECUTION

All waste materials classified as such by these specifications shall be removed completely from the project right-of-way to the satisfaction of the Engineer and the affected landowner.

No waste material may be disposed of by burial or burning within the pipeline right-of-way. Burning of brush or burial of excavated rock on adjacent lands may be acceptable if arrangements are made with the affected landowners, all applicable laws are complied with, all necessary permits are obtained, and the Contractor provides the Owner with written documentation of the landowner's acceptance of the disposal method and release from liability.

END OF SECTION 02 227

Section 02-300

WATER MAIN CONSTRUCTION

1.0 PRELIMINARY WORK

1.1 Location of Lines

The roads along which lines are to be laid, and the general location of the proposed lines is indicated on the plans. The Contractor shall install the proposed lines and appurtenances in the locations indicated on the plans, except where field conditions are encountered which warrant relocation. Any field relocation of the pipelines and appurtenances shall be approved by the Engineer's Representative at the time of construction. In no event shall any improvements be installed outside of properties, easements or right-of-way secured by the Owner for the Project.

1.2 Locations and Protection of Underground Utilities

Prior to trenching, excavating, or disturbing the ground surface in any manner, the Contractor shall determine, insofar as possible, the actual location of all underground utilities in the vicinity of the proposed construction and shall clearly mark their locations so that they may be avoided by equipment operators. Where such utility lines appear to lie in the path of construction, they shall be uncovered in advance to determine the exact location and depth, and to avoid damage due to Contractor's operations. Existing facilities shall be protected during construction, or removed and replaced in equal condition as necessary.

Should any existing utility line or service be damaged during, or as a result of the Contractor's operations, the Contractor shall take such emergency measures as may be necessary to minimize damage and shall immediately notify the utility involved. The Contractor shall then repair the damage to the satisfaction of the utility or shall pay the utility for making the repairs. In all cases, the restoration or repair shall be such that the repaired item will be in as good or better condition as before the damage occurred.

1.3 Removal of Obstructions

The Contractor shall be responsible for the removal, safeguarding and replacement of fences, walls, structures, culverts, street signs, billboards, shrubs, mailboxes, or other obstructions which must be moved to facilitate construction. Such obstructions must be restored to at least their original condition.

1.4 Clearing and Grubbing

The contractor shall be responsible for cutting, removing and disposing of all trees, brush, stumps, roots, and weeds within the construction area. Disposal shall be by means of chippers, landfills, or other approved methods not in conflict with State or local ordinances.

Avoid cutting or damage to trees not in the construction area. The Contractor will be responsible for the replacement of trees, shrubs, etc. unnecessarily damaged or removed.

1.5 Crops and Livestock

Any agricultural crop or product, or any livestock that is injured, damaged, lost or destroyed by the construction operations shall be the responsibility of the Contractor. The Contractor shall take precautions to avoid or minimize such damage, and shall compensate the owner of the crop or livestock for any loss that may result from construction operations.

2.0 EXCAVATION

2.1 General

The Contractor shall perform all required excavation and backfilling incidental to the installation of the water line, valves, services, and other appurtenances under this contract. Excavation shall be carried to the depths indicated on the Drawings or as necessary to permit the proper installation of pipe, bedding, structures or appurtenances. Care shall be taken to provide a firm, undisturbed, uniform surface in the bottoms of trenches and excavations. Where the excavation exceeds the required depth, the Contractor shall bring the excavation to proper grade through the use of an approved incompressible backfill material (generally crushed stone or fill concrete, depending upon the nature of the item to be placed thereon). In the event that unstable soil conditions are encountered at the bottom of the excavation, the Engineer may direct the Contractor to continue the excavation to firm soil, or to provide a suitable special foundation.

The Contractor shall take such precautions as may be necessary to avoid endangering personnel, pavement, adjacent utilities or structures, etc. through cave-ins, slides, settlement or other soil disturbance resulting from his operations.

The Contractor shall be responsible for storage of excavated materials, disposal of surplus excavated material, trench dewatering and other and other operations incidental to excavation and backfilling operations.

2.2 Trenching and Excavation Safety

The Contractor shall be responsible for safe trenching and excavating operations. The Contractor's responsibilities in this regard include complying with all OSHA requirements regarding trench and excavation safety, providing a person knowledgeable in excavation operations and safety (a Competent Person as defined by OSHA) to supervise all trenching and excavation activities, providing all required equipment and supplies to safely complete the work, continuously monitor soil conditions and make adjustments in the trenching and excavation methods (e.g. lay back trench sides, provide shoring, etc.) where necessary to provide for safe working conditions, guarding or barricading open trenches and excavations, and other considerations to insure safety. Providing for the safety of the workers and others in the vicinity of the construction operations takes precedence over all other considerations. Any damage to property, injury or loss of life resulting from trench or excavation failure shall be the sole responsibility of the Contractor.

2.3 Classification of Excavation

Excavation shall be unclassified and the cost of excavation shall be merged into the price per foot for the water main. No distinction will be made between rock and soil excavation, and no claim for additional payment will be considered if based upon the type or character of material encountered.

2.4 Pavement Removal

Where existing paved streets, roads, parking lots, drives or sidewalks must be disturbed during construction of the project, the Contractor shall take the necessary steps to minimize damage. Permanent type pavement shall be sawed in a straight line before removal, and care shall be taken during excavation to avoid damage to adjacent pavement. Where trucks or other heavy equipment must cross curbs or sidewalks, such areas shall be suitably protected.

2.5 Trench Excavation

Trenches shall be excavated in a neat and workmanlike manner, maintaining proper alignment except where necessary to make deviations to miss obstructions. Trenching for the installation of water distribution piping shall be such that the pipe will have a minimum cover of thirty (30) inches. The bottom of the trench must be shaped by hand and bell holes must be dug so that the full length of pipe is resting on sound trench bottom. Blocking shall not be used. In some cases, more than 30 inches of cover will be necessary to cross under existing utilities, obstructions, etc., or where the completed grade will be below

the grade at the time of construction. This additional depth, when required, shall be merged into the unit bid price for water main construction.

Trenches shall be opened far enough in advance of pipe laying to reveal obstructions, but in general shall not include more than 300 feet of continuous open trench at any time. The Contractor will be required to follow up trenching operations promptly with pipe laying, backfill and clean-up, and in the event of failure to do so, may be prohibited from opening additional trench until such work is completed.

The Contractor shall plan his operations so as to cause a minimum of inconvenience to property owners and to traffic. No road, street or alley may be closed unless absolutely necessary, and then only if the following conditions are met:

1. Permit is secured from appropriate State, County or Municipal authorities having jurisdiction.
2. Fire, police and other emergency services providers are notified before the road is closed.
3. Suitable detours are provided and clearly marked.

No driveway shall be cut or blocked without first notifying the occupants of the property. Every effort shall be made to schedule the blocking of drives to suit the occupant's convenience, and in no case shall a driveway be blocked overnight.

The Contractor shall furnish and maintain barricades, signs, flashing lights, and other warning devices as necessary for the protection of public safety. Flagmen shall be provided as required on heavily traveled streets to help avoid traffic jams or accidents.

Trench width shall be held to a minimum consistent with proper working space for the assembly of pipe. Maximum trench width up to a point one foot above the top of pipe shall be limited to the outside diameter of the pipe plus 16". Boulders, large stones, shale and rock shall be removed to provide clearance of 6" below and on each side of the pipe.

Trench walls shall be kept as nearly vertical as possible with due consideration to soil conditions encountered and when necessary, sheeting or bracing shall be provided to protect life and property.

Where unsuitable soil conditions are encountered at the trench bottom, the Contractor shall remove the additional material as may be directed by the Engineer and replace the excavated material with approved backfill.

The Contractor shall excavate by hand wherever necessary to protect existing structures or utilities from damage or to prevent overdepth excavation in the trench subgrade.

Excavated material shall be stored safely away from the edge of the trench and in such a way as to avoid encroachment of private property.

2.6 Excavation for Structures

Excavation for air release valve installations, metering pits or other appurtenances shall be only as large as may be required for the structure or appurtenance, and for working room around it. In soil, excavation shall generally extend to the outer limits of the structure plus working space at the bottom, and shall slope outward as such an angle as may be required to insure stability of the excavated face. In rock, excavation shall be carried to a point at least 12 inches outside the structure, or as required to achieve proper placement of the backfill. No rock shall be placed or left within 12 inches of the finished structure.

Care shall be taken as the excavation approaches the desired grade to avoid overdepth excavation and provide a firm and undisturbed soil surface on which footings, slabs or foundations are to be placed. Should the Contractor excavate below the desired grade level, the excavation shall be brought to grade by the use of fill concrete at the expense of the Contractor. The use of tamped earth refill beneath foundations, footings or slabs will not be acceptable.

Where structures rest partially or completely upon rock, the rock shall be excavated to a point 6 inches below the bottom elevation of the proposed structure, and crushed stone refill shall be used to bring the excavation back to grade.

Should the material found at the desired subgrade appear to be unstable or otherwise unsuitable for support of the structure, the condition shall be immediately called to the attention of the Engineer. The Engineer may direct that the unsuitable material be removed and replaced with concrete, or that the foundation design be modified to accommodate the conditions encountered. In any event, work in the area affected by the unstable subgrade shall not proceed until the matter is resolved by the Engineer.

2.7 Rock Excavation

Where rock excavation is encountered in trenches, the excavation shall be carried to a depth of at least 6 inches below the bottom of the proposed pipe. The rock shall also be removed to a width of at least 6 inches beyond the pipe on each side so that no rock is left within 6 inches of the outside wall of the pipe. Where rock is excavated in the bottom of the trench, the trench shall be brought back to grade by the use of crushed stone which shall be compacted to form a stable base for the pipe laying operation. If approved in advance by the Engineer, clean excavated soil that is free from rocks may be used in lieu of crushed stone as bedding.

The Contractor shall exercise all necessary precautions in blasting operations. Suitable blasting mats shall be provided and utilized as required. Blasting shall be done only by experienced personnel with all required training and certifications. Careless shooting, resulting in the ejection of stones or other debris during blasting shall be corrected immediately by the Contractor. The Contractor shall be responsible for any personal injury or property damage that results his from blasting.

No blasting shall be done unless the Contractor shall have taken out the necessary insurance to fully protect the Owner from all possible damages resulting from the blasting operations. The blasting shall be done in accordance with all recognized safety precautions and in accordance with regulations of authorities having jurisdiction. In addition, the Contractor shall exercise the necessary care to safeguard the stores of blasting materials on the jobsite.

Where rock is encountered in the immediate vicinity of gas mains, telephone cables, building footings, gasoline tanks, or other hazardous areas, the Contractor shall remove the rock in a manner that will insure protection of these structures. Care shall be taken in the blasting operations to see that the pipe or other structures previously installed are not damaged by blasting. In general, blasting shall not be done within 25 feet of an existing pipeline or structure.

2.8 Disposal of Surplus Excavated Material

Excavated material that is unsuitable or unnecessary for backfilling shall be disposed of by the Contractor. Disposal may be by landfill, or other legal means. Where material is disposed of on private property, the Contractor is responsible for obtaining permission in writing from the property owner and for restoration of the disposal site to the property owner's satisfaction.

2.9 Subsurface Obstructions

In excavating, backfilling and laying pipe, do not remove, disturb or damage other pipe, conduit or structures without the approval of the Engineer. If necessary, the Contractor shall sling, shore up and maintain such structures in operation, and within a reasonable time shall repair any damage done thereto. Repairs to these facilities shall be made to the satisfaction of the Engineer.

The Contractor shall give sufficient notice to the interested utility of his intention to remove or disturb any other pipe, conduit, etc., and shall abide by their regulations governing such work. In the event that subsurface items are damaged in the prosecution of the work, the Contractor shall immediately notify the proper authorities and shall be responsible for any loss to persons or property caused by the damage.

When pipes or conduits providing service to adjoining buildings are broken during the progress of the work overnight or for needlessly long periods during the day, will not be tolerated, and the Owner reserves the

right to make repairs at the Contractor's expense without prior notification. Should it become necessary to move the position of a pipe, conduit, or structure, it shall be done by the Contractor in strict accordance with instructions given by the Engineer or the utility involved.

The Owner or Engineer will not be liable for any claim made by the Contractor based on underground obstructions being different than that indicated on the Plans. Where ordered by the Engineer, the Contractor shall uncover subsurface obstructions in advance of construction so that the method of avoiding same may be determined before pipe laying reaches the obstructions.

The Contractor shall be governed by instructions of the Kentucky Transportation Cabinet and/or County Road Department regarding the laying of pipe along and/or within State/County Roadways.

2.10 Special Conditions

Special care must be exercised in excavation under or near State Highways, railroads, or other areas as designated on the Drawings in order to avoid or minimize delays or injuries resulting therefrom. Where it is necessary to cross beneath state highways, railroads, or other designated areas, the Contractor shall make such installations as shown on the Drawings and/or as directed by the Department of Highways or the Railroad.

The Contractor's attention is also called to the special conditions associated with the proximity of the Owner's existing water distribution system in relation to improvements indicated on the Plans. Some of the proposed improvements will be constructed adjacent to and/or may encounter existing water lines that must remain in service until the successful testing and completion of the proposed improvements. The Contractor is reminded of paragraph 2.1 of Section 02-100, and the Contractor is urged to use the most appropriate construction measures to produce a suitable finished product while maintaining the integrity of the existing infrastructure.

3.0 INSTALLATION OF WATER LINE AND APPURTENANCES

3.1 General

The Contractor shall use only experienced men in the final assembly of pipe in the trench,, and all pipe shall be laid in accordance with these Specifications and the recommended practice of the pipe manufacturer. Trench bottoms shall be carefully prepared and shall be free of water.

Care shall be exercised to insure that pipe of the proper strength or classification meeting the specifications in every respect is provided at the site of pipe laying operations. Recommended tools, equipment, lubricant and other accessories needed for proper assembly or installation of the pipe shall be provided at the site of work. Any damaged or defective pipe discovered during the pipe laying operations shall be discarded and removed from the site of the pipe laying operations.

The Contractor shall exercise care in the storage and handling of pipe, both on the storage yard and at the site of laying operations. Suitable clamps, slings, or other lifting devices shall be provided for handling large-diameter pipe and fittings.

Pipe may be assembled at grade and lowered into the trench provided that no more than 10 joints are lowered at one time, and the pipe is inspected after it is lowered into the trench to assure that no decoupling of joints occurs.

Bell holes for bell and spigot and mechanical joint pipe shall be dug in the trench to allow entire length of pipe barrel to be bedded and to allow proper jointing of pipe. Alignment of pipe shall be as true as possible in order to avoid air pockets. When work is suspended either for the night or for any other reason, open ends of the pipe shall be securely plugged to prevent the entrance of foreign materials. Dead ends of the pipe and unused branches of crosses, tees, valves, etc., shall be closed with plugs suitable to the type of pipe in use.

Cutting of pipe shall be done in a neat, workmanlike manner without damage to pipe, coatings and linings and so that a smooth end remains at right angles to the axis of the pipe.

3.2 Removal of Water

The Contractor shall be responsible for handling run-off, ground water, and sewage in such a way as to maintain trenches and excavations in a dry condition until the work is completed. Pumps, piping, well points, labor, fuel, and other facilities necessary to control, intercept, remove and/or dispose of water shall be provided by the Contractor at his own expense. Water removed from trenches or holes shall be discharged to natural drains in such a way as to avoid danger or damage to adjacent property owners or sewers. No Pipe shall be laid with water in the bells.

Where the Contractor fails, refuses, or neglects to control water in trenches or other excavations, and corrective work is deemed by the Engineer to be necessary as a consequence thereof, such work shall be at the Contractor's expense.

3.3 Polyvinyl Chloride Pipe (Class 200 PVC)

Installation of polyvinyl chloride pipe shall conform to ASTM 2321 and AWWA C900, latest revision. Pipe shall be bedded in clean, uniform soil or compacted granular material and compacted granular material to a point 8" over pipe. Blocking shall not be used to bring the pipe to grade. Whenever it is necessary to cut a joint of pipe in order to fit the trench conditions, the cutting may be made with either hand or mechanical saws or plastic pipe cutters. The cut shall be square and perpendicular to the pipe axis. The cut end shall be beveled as specified by the pipe manufacturer. Assemble all joints by fully seating spigot into bell.

3.4 Ductile Iron Pipe

Installation of ductile iron pipe shall conform to AWWA C150 & C151, latest revision. Pipe shall be bedded and backfilled in conformance with the details shown on the Plans. Blocking shall not be used to bring the pipe to grade. The trench shall be backfilled as indicated on the Drawings so as to achieve a Class III laying condition. Whenever it is necessary to cut a joint of pipe in order to fit the trench conditions, the cutting shall be made in a suitable pipe fabrication shop with mechanical saws. The cut shall be square and perpendicular to the pipe axis. The cut end shall be beveled as specified by the pipe manufacturer. Assemble all joints by fully seating spigot into bell, using an approved gasket lubricant.

Restrained joint ductile iron pipe shall be installed in full conformance with the pipe manufacturer's recommendations. Backfill to 12 inches above restrained joint pipe shall be with granular material (crushed limestone aggregate) to assure maximum friction between the pipe wall and backfill. Should soil conditions be encountered that would require restrained joint pipe to be encased in polyethylene for corrosion protection, an increased length of restrained joint pipe may be required. The Contractor shall ascertain the need for polyethylene encasement from the Engineer sufficiently in advance to allow for installation of the appropriate length of restrained joint pipe.

3.5 Installation of Fittings

Fittings in pipe lines shall be firmly secured to prevent the fitting from being blown off the line when under pressure. When connections are made between the new work and existing mains, the connections shall be made using specials and fittings to suit the actual conditions.

All tees, caps, plugs, bends or other fittings subjected to unbalanced forces tending to pull the joints apart shall be protected with concrete thrust blocks. Thrust blocks shall be provided in accordance with details shown on Drawings, and must bear against an undisturbed trench face. Thrust blocks must be used unless written permission is obtained from the engineer to use special locked-joint fittings, anchoring fittings, or pipe clamps with tie rods.

Fittings shall be placed in locations indicated on Drawings or designated by Engineer and shall be installed in accordance with provisions of these Specifications. Joints shall be as designated under Section 2, Materials.

Before being placed in trench, all fittings shall be subjected to inspection by Engineer; and any defective, unsound or damaged fittings shall be rejected and Contractor shall remove at once from work area.

3.6 Installation of Valves, Valve Boxes

Valves shall be placed in the locations indicated on the Plans or at locations designated by the Engineer. All Valves shall be set vertically. Before being placed in the trench, all valves shall be carefully examined by the Contractor and engineer to see that they are in good working order.

Over each valve shall be placed a valve box. All valves which, when properly set, have operating nuts deeper than 24" below the top of the valve box shall have extension stems with operating nuts located within one foot of the valve box cap.

The valve box shall not come in contact with valve at any point. Backfill around boxes shall be tamped to maintain centered and plumbed alignment of box. The finished valve box installation shall allow a standard valve wrench to be seated on the operating nut and removed easily without contacting the valve box.

Box shall be installed with top set flush with finished surface in paved areas and 1 inch above natural ground level in unpaved areas.

4.0 BACKFILL

4.1 General

Backfilling shall be carried out as expeditiously as possible, but shall not be undertaken until the Engineer's representative has been given the opportunity to observe the work. The Contractor must carry out all backfilling operations with due regard to: the protection of pipes, structures and appurtenances; the use of prescribed backfill materials; and procedures to obtain the desired degree of compaction. No equipment may be used which will result in damage to or misalignment of the pipe.

4.2 Acceptable Backfill Material

All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, or other material that in the opinion of the Engineer is unsuitable. From eight inches above the top of the pipe to within six inches of finished grade in unpaved areas, backfill may contain stones up to six inches in their greatest dimension, unless otherwise specified. Backfill containing rock must contain enough soil to fill voids between rocks.

When backfill material is not specified on Project Plans or elsewhere in these Specifications, Contractor may backfill with the excavated material provided material consists of loam, clay, sand, gravel, or other materials than, in opinion of Engineer, are suitable for backfilling.

Backfilling shall not be done in freezing weather and it shall not be made with frozen material. No fill shall be made where material already in trench is frozen. Backfill shall not be made with material which, in Engineer's opinion, is too wet.

Where crushed stone backfill is required the crushed stone shall be No. 57 size as designated by Kentucky Department of Transportation Standards for crushed stone used in road surfacing.

4.3 Backfilling Under Pipe in Rock

Where trench is excavated in rock or shale, a 6" space below pipe shall be backfilled with approved bedding material (#9 or #11 pipe bedding, or uniform soil meeting the approval of the Engineer) to form a cushion for pipe and appurtenances.

4.5 Backfilling Over Pipe

Backfill over pipe may be placed by means of front end loaders, bulldozers or other suitable mechanical equipment provided that the pipe is not damaged or misaligned.

4.6 In Areas Subject to Vehicular Traffic

Where excavation is made through pavement, curbs, driveways, sidewalks, road shoulders, or other areas subject to vehicular traffic or supporting permanent structures, or where such areas, items or structures are undercut by excavation, entire backfill shall be crushed stone (No. 57). Crushed stone shall be carefully placed to achieve maximum density.

Where excavation is made through permanent pavements, backfill shall be placed as described above to subgrade elevation only. Remainder of backfill shall be crushed stone placed as directed to finished pavement grade to serve as temporary pavement.

The last 6 inches of backfill shall be compacted dense grade aggregate to stabilize trench cut.

From time that backfilling is complete until time permanent pavement surface is replaced or, in absence of pavement replacement, until job is accepted, Contractor shall, at direction of Engineer, water streets, roads, etc., to settle dust where excessive dust has, in opinion of Engineer, been caused by Contractor's operations. If Contractor refuses Owner shall, after 24 hours written notice through Engineer, be permitted to proceed with such work with cost to be billed to Contractor.

In Areas Not Subject to Vehicular Traffic- Where excavation is made in areas not subject to vehicular traffic or supporting permanent structures and where settlement is allowable, Contractor may backfill with approved excavated material using acceptable mechanical methods. Backfill material shall be brought up to the original ground level and shall then be mounded over to provide for additional settlement. Compaction of this backfill material will not be required, however, the Contractor shall exercise care to confine the mound to the area immediately over the trench and shall be responsible for bringing in such additional fill material as may be required from time to time during the one year warranty period to fill in areas where excessive settlement has occurred, and to re-seed these areas.

5.0 COMPLETING INSTALLATION OF LINES, STRUCTURES, ETC.

5.1 General

The Contractor shall not, without the permission of the Engineer, remove from the line of work any earth excavated therefrom which may be suitable for backfilling or surfacing until the excavation has been refilled and surfaced.

As soon as the backfilling of any excavation is completed and when in areas of existing development, the contractor must at once begin the removal of all surplus dirt except that actually necessary to provide for the settlement of the fill. He shall also remove all the pipe and other material placed or left on the street by him except material needed for the replacement of paving, and the street shall be opened up and made passable for traffic. Following the above work, the repairing and complete restoration of the street surfaces, bridged, crossings, and all places affected by the work shall be done as promptly as possible. All excavated material shall be cleared from adjacent street surfaces, gutters, sidewalks, parkways, railroads, grass plots, yards etc., and the whole work shall be left in tidy and acceptable condition. Contractor will be required to re-grass lawns or natural grounds where trenches are excavated in these locations or where Contractor has damaged lawns or natural grounds by his operations.

The engineer shall be sole authority in determining time in which rough and final clean-up shall be performed. Rough clean-up shall consist of removal of large rocks, grading of excess backfill material over pipe line or removal of said material, opening of any drainage device, restoration of any street or roadway to condition so that traffic may safely and conveniently use street or roadway, restoration of pedestrian ways to condition where pedestrians may safely and conveniently use same. Rough clean-up shall, in general, be prosecuted no later than 1 day after pipe laying and backfilling or no farther behind

pipe laying operations than 1000 feet; whichever time limit is shortest shall govern. Final clean-up consisting of pavement replacement, sidewalk replacement, removal of small rocks, hand raking with seeding, strawing, etc., of lawns and natural grounds, adjusting grade of ground over pipeline, property repair, and other items shall be prosecuted as soon as is practical after pipe has been laid and backfilled.

5.2 Final Grading and Seeding

Final Grading and Seeding shall be in compliance and equal to the Erosion Control requirements set forth in the Kentucky Transportation Cabinet's (KYTC) Standard Specifications, Section 212. Other final clean-up requirements and payment measurement for various land uses is defined in Technical Specification 02-500, Section 3.0.

The Contractor shall perform permanent seeding and final grading for areas where grass growth was damaged or destroyed by the Contractor's operation, and this work shall only be done during the period of September 1 thru April 30, unless specifically waived by the Owner. Between installation and final grading, the affected area must be stabilized by other practical methods to prevent erosion and protect the exposed areas. In areas of established lawns no rock shall be left in the top 6" of soil and the finished grade shall be equivalent to that which existed before construction began. In all cases, lawn and pasture areas shall be left neat and in a condition so that mowing is as easy and convenient as before construction began. The lawn areas and other areas disturbed by the Contractor's activities shall have ground cover restored to a condition satisfying the affected landowner and Owner.

Final Grading and Seeding requirements are as indicated below:

1. Placement of Topsoil: Where warranted and requested, topsoil shall be spread after grading and shaping of the area to receive the material is completed and seeding and protection operations are ready to begin. Spread and lightly compact the topsoil to uniform depth of approximately 6 inches over areas specified by the Owner or Engineer. Topsoil should not be placed on slopes steeper than 3:1.
2. Seed Mixture for Permanent Seeding: For permanent seeding on slopes 3:1 or less, a Type 1 seed mix shall be applied at a minimum rate of 100 pounds per acre. For steeper slopes, apply a Type 3 mix as specified in the KYTC Standard Specification 212.03.03.

| | |
|------------------|-----------------------------|
| Seed Mix Type 1: | 30% Kentucky 31 Tall Fescue |
| | 20% Creeping Red Fescue |
| | 35% Hard Fescue |
| | 10% Ryegrass, Annual |
| | 5% White Dutch Clover |
3. Procedure for Permanent Seeding: Prepare a seedbed and incorporate a minimum of 100 pounds of nitrogen, 100 pounds of phosphate, 100 pounds of potash, and 3 tons of agricultural limestone per acre. Add additional fertilizer and agricultural limestone as needed. Do not apply dry agricultural Limestone when it may generate a traffic hazard. Remove all rock in the top 6" of the soil, and all dirt clods over 4 inches in diameter shall be removed from the surface of the seedbed. All seeding shall be mechanically tracked into the seedbed, utilizing a power seeder, Harley rake, cultipacker, or other approved device. For all slopes 3:1 or greater, ensure that tracking is performed up and down and not across. Seed and mulch to produce a uniform vegetation cover using the seeding rates as indicated to each application. Mulch with clean, weed free straw. Place straw 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. For the periods of March 1 through May 15 and from September 1 through November 1, the Owner will allow the option of using hydromulch at minimum rate of 1,500 pounds per acre in place of straw with tackifier. Regardless of materials used, ensure the protective cover holds until seeding is acceptably established.
4. Maintenance of Seeded Areas during Warranty Period: From the time seeding and protection work begins until the date the project is declared complete (i.e. Warranty Expiration), keep all seeded areas in good condition at all times. Promptly repair any damage to seeded areas or to mulch materials as directed.

5.3 Pavement Replacement

In roadway or driveway areas as soon as the pipe has been installed, the trench shall be backfilled as specified and the surface replaced as indicated below:

1. Asphalt Highway or Roadways

This item of pavement restoration shall conform to the details included in the Contract Drawings. The leveling course, binder course and the surface course shall be furnished and placed in accordance with Kentucky Department of Transportation Standard Specifications.

2. Asphalt Driveway and Parking Lot Replacement.

Asphalt Driveways and Parking Lots shall be replaced equal to that existing prior to construction and shall consist of no less than 2 inches of surface course conforming to the Kentucky Department of Transportation Standard Specifications.

3. Crushed Stone Roadway Replacement or Driveway Replacement

Crushed Stone Roadways and Pavement shall be replaced to that existing prior to construction but in no case less than 6 inches in depth.

5.4 Dust Control

From time that backfilling is complete until time permanent pavement surface is replaced or, in absence of pavement replacement, until the job is accepted, Contractor shall, at direction of Engineer, water streets, roads, etc. to settle dust where excessive dust has, in opinion of Engineer, been caused by Contractor's operations. If Contractor refuses or delays unnecessarily to obey direction of Engineer, the Owner shall, after 24 hours written notice through engineer, be permitted to proceed with such work with cost to be billed to Contractor.

5.5 Sodding or Sprigging

Where shown on the Drawings or directed by engineer, contractor shall install grass sod or sprigs in lieu of seeding in order to establish ground cover. Normally this would be done in steep areas or areas otherwise subject to erosion.

Such sodding or sprigging when authorized by the engineer as a necessary part of the work and not elected to be used by the Contractor in lieu of seeding shall be a separate pay item if identified separately on the Bid Form.

Prior to sodding or sprigging, soil shall be properly prepared and fertilized. The top 3" of soil shall be pulverized to remove roots, sticks, etc. and smooth the surface. The area shall be fertilized at a minimum rate of 500 pounds per acre. Fertilizer shall be mixed into the top 3" of soil by raking, disking, or other acceptable method. Do not over fertilize areas in order to avoid damaging growth. Fertilizer shall be "Vertigreen", "Vigaro", or approved equal. It shall contain not less than 10% nitrogen, 10% phosphorus, and 10% potash. If the area soil requires adjustment of the pH for proper growth of ground cover, ground limestone shall be applied to bring the pH into the proper range.

Sod shall be at least 8" wide and 12" long with at least 3" of dirt on the roots. The variety of grass shall be suitable to the growing conditions of the area, and compatible with the adjacent grasses. It shall be placed on the prepared surfaces with edges in close contact and, as much as is practicable, in a position to break joints. Each section shall be pounded into place with wooden tamps or other approved implements. Sod shall be maintained moist from the time of its removal until reset and shall be reset as soon as practicable after removal. Immediately after placing, it shall be rolled or hand tamped to the satisfaction of the Engineer. On steep slopes pinning or pegging will be required to hold the sod in place.

Sprigs shall be placed in a random manner at spacing suitable for optimum growth and cover as recommended by the supplier.

Immediately prior to sodding or sprigging, the area shall be sprinkled until saturated to at least 1" depth and kept moist until sodding or sprigging is completed. Sprigs or sod shall be watered as required after setting (normally through a 14-day period). Contractor shall not allow any equipment or material on any planted area and shall erect barricades and guards if necessary to prevent his equipment, labor or the public from traveling on any planted area until satisfactory growth is established.

6.0 SPECIAL CONSTRUCTION ITEMS

6.1 Roadway Crossings

Roads, streets or highways will be crossed at locations and in the manner as designated by the Drawings. State Highway crossings will be subject to the requirements of the crossing permit obtained from the Kentucky Transportation Cabinet.

When working in or near lines of traffic, the Contractor shall provide warning signals or flag men as required by Kentucky Transportation cabinet and the Manual of Uniform Traffic Control Devices.

6.2 Sinkholes

When excavating within an area draining to a sinkhole, special precautions shall be required to avoid excessive silt runoff or debris entering the sinkhole. In such areas, the excavation shall be closed as quickly as possible and the surface restored and mulched to avoid erosion. In the immediate vicinity of sinkholes and when ordered by the Engineer, special erosion control measures as specified in Section 6.3 are to be used.

6.3 Slope Protection and Erosion Control

This section shall consist of temporary control measures as shown in the Drawings or directed by the Engineer or as required by the State of Kentucky - Water Pollution Control Division during the life of the contract to control erosion and water pollution through the use of silt fences, hay bales and other control devices.

- a. Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw containing five (5) cubic feet or more of natural material.
- b. Baled hay or straw erosion checks - hay or straw erosion checks shall be embedded in the ground 4 to 6 inches to prevent water flowing under them. These bales shall be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales may remain in place after construction, or be removed after they have served their purpose, as determined by the Engineer. The Contractor shall keep the checks in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris and sediment clear-out will be considered routine maintenance to be performed by the contractor as needed.
- c. Temporary silt fences - Silt fences utilizing posts, filter cloth (burlap or plastic filter fabric, etc.) or other approved materials are temporary measures to erosion control. These fences shall be installed to retain suspended silt particles in the run-off-water where directed by the Engineer.
- d. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the Contractor.
- e. Erosion control outside project area - Temporary pollution control measures shall include construction work outside the project area where such work is necessary as a result of

construction such as borrow pit operations, haul roads and equipment storage sited. Bid price in such cases shall include all necessary clearing and grubbing, construction incidentals, maintenance, and site restoration when no longer needed.

- f. No separate measurement and payment will be made for this work. It will be considered a subsidiary obligation of the Contractor under other bid items.

END OF SECTION 02-300

Section 02-400

WATER LINE TESTING AND ACCEPTANCE

1.0 GENERAL

Upon completion of the construction work the Contractor shall conduct pressure and leakage tests on the water lines and appurtenances. The Contractor shall furnish all labor, tools, equipment and materials for making the tests. In the event that the pressure or leakage test is unsatisfactory, the Contractor shall take corrective measures and shall repeat the tests until satisfactory results are obtained. Tests shall be made in the presence of an authorized representative of the Engineer.

1.2 Pressure and Leakage Tests

Each section of the completed water main extension shall be subjected to a pressure test. The section to be tested shall be valved off after having been filled with water, and a positive displacement test pump shall be used to pump clean water into the section to build up a test pressure as set by the Engineer at the highest point within the section of line being tested, but not exceeding the pipe class psi at the lowest point. The test pump shall then be valved off from the system and the pressure shall be observed over a period of four hours. A drop in pressure of 5 psi or more during the first hour of the four test shall be taken as a indication of leakage. In the event leaks are found and corrected, the Contractor shall repeat the pressure test using the same procedure described above. Should the Contractor be unable to obtain a satisfactory pressure test over a duration of four hours, he shall then be required to perform a leakage test using a water tap and standard water meter to measure the leakage in the test section at system pressure over a period of 24 hours. Leakage during the 24 hour period must not exceed the allowable leakage for mechanical or push-on joints as shown in Table 7 of ANSI/AWWA C600, latest revision. Should the system fail to pass the leakage test, the Contractor will be required to locate and correct the leaks and to retest the system until satisfactory results can be obtained.

The Engineer shall review and approve the Contractor's proposed testing plan, including the length of test sections, and designate hydrostatic test pressures for the section of line being tested. In general, a test section of line shall be subjected to the maximum hydrostatic pressure that does not exceed the working pressure rating of the pipe at any point in the section.

The Contractor shall provide suitable first quality pressure gauges with 0.5 psi or smaller graduations for the pressure and leakage test. Pressure gauge shall be equal to Ashcroft Model 601082AS02L200#. The Contractor shall provide materials for, and make any required temporary taps in the line for the introduction of test water, sampling, or installation of the test gauges, and plug or repair such taps when the testing is concluded.

1.3 Disinfection

All water mains and appurtenances shall be disinfected upon completion, and after the system has been flushed to remove dirt or foreign objects which may have been accidentally introduced into the line. Disinfection shall be accomplished by use of a main sterilizer for applying chlorine gas or a hypochlorinator for application of a hypochlorite solution.

The chlorine shall be introduced into the main as water is being added so that adequate mixing will occur. Chlorine shall be added until a concentration of not less than 50 parts per million of available chlorine is observed at check points throughout the section being disinfected. The chlorine solution shall be left in the mains for a period of 24 hours after which the mains shall be flushed until only the normal residual chlorine found in tap water is present. Samples of water shall then be taken by standard sampling methods approved by the Engineer and the Owner and shall be submitted to a certified bacteriological testing laboratory for analysis. In the event any of the bacteriological samples show the presence of coliform organisms, the disinfection procedure shall be repeated until samples of satisfactory bacteriological quality can be obtained.

The Contractor shall furnish the chlorine for main disinfection and shall furnish all labor, tools and equipment for the disinfection. The Owner will furnish water for one cycle of disinfection and flushing.

Water for subsequent testing of a line will be charged to the contractor. Disinfection procedures shall generally be in accordance with the AWWA Standard for Disinfecting Water Mains. AWWA C601, latest revision.

1.4 Detection Wire Continuity Test

Pipeline detection wire shall be No. 12 solid copper insulated wire. The detection wire shall be spliced to seal out moisture. The splicing kit shall be or equal to 3M direct Bury Slice Kit (DBY). Detection wire shall be accessible at all valves, air releases and other pipeline appurtenances for connection to detection equipment. Completed sections of detection wire shall be periodically checked for continuity by the Contractor. The Contractor is ultimately responsible for the continuity of the wire sections, and shall take measures during construction to insure a working final product. If, upon completion of the continuity test, a section of wire fails, the Contractor shall make corrective measures and the test will be repeated until satisfactory results are obtained.

1.5 Water for Testing

The pipeline shall be tested using potable water. The Contractor shall make arrangements with the Owner prior to testing for quantity and suitable testing times based upon demand conditions. The Contractor is responsible for making and removing any temporary connections between the water main and the existing potable water lines, and coordinating the work with the affected utility. Any temporary taps, blowoffs, or other modifications to the water main to facilitate flushing are also to be made and removed by the contractor.

The rate at which water may be drawn from the utility providing the test water shall be set by the utility, and the Contractor will be required to limit the draw of water as dictated by the utility. During certain times of the year or certain demand conditions, water for testing may not be available. If this occurs, testing may be delayed as necessary to accommodate the water shortage, and the Contractor shall be granted an extension of contract time commensurate with the delay.

END OF SECTION 02-400

Section 02-500

WATER MAIN MEASUREMENT AND PAYMENT

1.0 GENERAL

The Contractor shall furnish all labor, tools, equipment and materials to construct the proposed improvements complete as shown on the plans and described in these Specifications. The work shall be measured for payment in accordance with applicable provisions of these Specifications and payment shall be made on the basis of the unit prices or lump sum prices bid. The sum of the payments for eligible pay items contained in the proposal form shall be the compensation to be paid for the completed project; provided however, that changes in the work covered by written change orders, properly executed, may result in additions or deductions from the contract price.

The Contractor's attention is called to the fact that although the pay items shown shall be the basis for establishing the contract price, the description of the pay items does not necessarily reflect the full extent of work to be performed. The cost of the incidental work such as clearing and grubbing, trenching, backfilling, testing, etc., which is necessary but which is not specifically listed as one of the pay items, shall be included in the prices bid for the pay items to which the incidental work is most closely related.

2.0 WATER MAINS

- A. Measurement - Water mains shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot. Water main size shall be based on nominal pipe diameter as shown on the Plans.
- B. Payment - Water mains shall be paid for on the basis of the respective unit prices bid per linear foot for pipe of the various sizes. Partial payments for water line installations shall be based upon the following percentages:

| <u>Status</u> | <u>Maximum Percentage of Bid Price</u> |
|---|--|
| Line installed and backfilled only | 70% |
| Line installed, backfilled, debris/rock removed, & rough clean-up completed | 80% |
| Line installed, backfilled, debris removed, rough clean-up, & successfully tested | 90% |
| Line installed, backfilled, successfully tested & final surface restoration completed | 100% |

The foregoing partial payments will be subject to retainage.

Payment for furnishing and installing the water mains shall constitute compensation in full for furnishing all labor, tools, equipment and materials and installing the water mains complete, including incidental work such as location and protection of existing utilities, clearing, excavation (including rock), dewatering trenches, bedding with crushed stone in accordance with Specifications, fittings, thrust blocks, driveway and private road crossings and bores (including surface and pavement restoration), tracer wire (where required) backfilling, disposal of surplus excavated material, the removal of existing timber, structures and piping to be relocated or abandoned; also sheeting, diking, well pointing, bailing, dewatering; the furnishing, placing and removal of bulkheads, and restoration of any utilities, parkways, trees, turf, shrubbery, culverts, fences, and other surface features, and testing.

Backfill shall be in accordance with Section 02-300, and the cost thereof shall be included in the appropriate bid price. Where the water line is to be installed under roadways, railroads, creeks, or other special crossings for which a specific pay item is provided, payment based on the measured quantity and unit cost of the work shall be made in addition to the base unit cost for the designation of pipe provided as compensation for the additional work associated with the installation.

3.0 FINAL CLEANUP OF WATER MAINS (All sizes)

- A. Measurement – Final Cleanup of Water mains shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot actually installed in accordance with the contract drawings and specifications.
- B. Payment – Final Cleanup of Water mains shall be paid for on the basis of the respective unit price bid per linear foot, for all pipe size, in accordance with the contract drawings and specifications.

Payment for final cleanup of installed water mains shall constitute compensation in full for furnishing all labor, tools, equipment and materials for complete land restoration from the water main installation. Specific work items for the following areas shall be included for the payment:

- i. Residential Yards: The disturbed water main areas shall be free of all rocks, and the area shall be fine graded and thickly sown in accordance with Specification 02-300, Section 5.2. If warranted, new top soil shall be placed to cover poor, rocky soil and promote the healthy re-growth of grass in the affected portions of the yard. Additionally, if the Contractor hauls off and disposes a load of waste material (i.e. rock) from a particular yard, the Owner reserves the right to request the Contractor haul in and replace the area with an equal amount of suitable, topsoil material at no additional cost. Prior to final seeding, all areas shall be leveled and trench settlement shall be sufficiently backfilled to bring the areas back to their original grade. Final Seeding and Grading to affected areas shall only be completed between September 1 and April 30. Upon completion of the final cleanup, the Contractor shall obtain and supply the Owner with a handwritten acceptance notice from each affected landowner (Sample included in the Appendix). A landowner's acceptance does not supersede the Owner's acceptance, and the Owner reserves the right to request that leftover debris be thoroughly removed from the utility easement or hauled to the landowner's desired location on the respective parcel.
- ii. Row-Crop Fields: The disturbed water main areas shall be free of all rocks. All areas shall be leveled and trench settlement shall be sufficiently backfilled to bring the areas back to their original grade. Additionally, if the Contractor hauls off and disposes a load of waste material (i.e. rock) from a particular location, the Owner reserves the right to request the Contractor haul in and replace the area with an equal amount of suitable, topsoil material at no additional cost. Upon completion of the final cleanup, the Contractor shall provide evidence of crop damage restitution with each affected landowner, and the Contractor shall obtain and supply the Owner with a signed acceptance notice from each affected landowner (Sample included in the Appendix).
- iii. Pasture Fields: The disturbed water main areas shall be free of all rocks, and the area shall be graded and seeded sown in accordance with Specification 02-300, Section 5.2. Additionally, if the Contractor hauls off and disposes a load of waste material (i.e. rock) from a particular field, the Owner reserves the right to request the Contractor haul in and replace the area with an equal amount of suitable, topsoil material at no additional cost. Prior to final seeding, all areas shall be leveled and trench settlement shall be sufficiently backfilled to bring the areas back to their original grade. Final Seeding and Grading to affected areas shall only be completed between September 1 and April 30. Upon completion of the final cleanup, the Contractor shall obtain and supply the Owner with a handwritten acceptance notice from each affected landowner (Sample included in the Appendix). A landowner's acceptance does not supersede the Owner's acceptance, and the Owner reserves the right to request that leftover debris be thoroughly removed from the utility easement or hauled to the landowner's desired location on the respective parcel.

4.0 GATE VALVE AND BOX

- A. Measurement - Gate valves and boxes shall be measured by count of each size actually installed in accordance with the contract drawings and specifications in the completed system.

- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the valve, valve box, concrete ring, and valve marker along with all related supplies and materials required for a complete installation in accordance with the contract drawings and specifications.

5.0 STEEL CASED ROAD BORE

- A. Measurement - Steel cased road bore shall be measured to the nearest 1 linear foot of bore as shown on the Contact Drawings for each size of casing and carrier pipe installed in accordance with the contract drawings and specifications.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the steel casing pipe (excluding the PVC carrier pipe), excavation, installation and backfill of the pipes, all required materials, supplies and equipment for a complete installation as well as all associated pavement and/or surface repair required for a complete installation. Payment shall also include adhering to any special provisions, including bonding requirements, specifically instructed by Federal/State/County Highway Officials and the encroachment permit(s) obtained by the Owner.

6.0 OPEN CUT CASED ROAD CROSSING

- A. Measurement - Open cut cased road crossing shall be measured to the nearest 1 linear foot of crossing as shown on the Contact Drawings for each size casing and carrier pipe installed in accordance with the contract drawings and specifications.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the steel casing pipe (excluding the carrier pipe), excavation, installation and backfill of the casing and water main, all required materials, supplies and equipment for a complete installation as well as all associated pavement and/or surface repair required for a complete installation. Payment shall also include adhering to any special provisions, including bonding requirements, specifically instructed by County/State Highway Officials and the encroachment permit(s) obtained by the Owner.

7.0 UNCASED DRIVEWAY BORE (If applicable)

- A. Measurement – Uncased driveway bores shall be measured to the nearest 1 linear foot of bore as shown on the Contact Drawings for each size of carrier pipe installed in accordance with the contract drawings and specifications.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the installation of the carrier pipe, all required materials, supplies and equipment for a complete installation.

8.0 FLUSHING HYDRANT (All sizes)

- A. Measurement - Flushing hydrants shall be measured by count and size of hydrants actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the hydrant as sized, gate valve as sized, valve box, piping, and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

9.0 TAPPING SLEEVE AND VALVE

- A. Measurement - Tapping sleeves and valves shall be measured by count of each size actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the tapping sleeve, tapping valve, valve box, valve marker, concrete ring and all accessories

referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

10.0 NEW METER AND SERVICE (if applicable)

- A. Measurement – Meter sets and service shall be measured by count of each size of near side service or far side service actually installed in accordance with the contract drawings and specifications in the completed system. Near side service means that the meter is on the same side of the road as the water main. Far side service means that the meter is on the opposite side of the road as the water main, and that a service line road crossing, either open cut or bore, is required.
- B. Payment - Payment shall be at the unit bid prices for the measured quantity. Payment shall include tapping the main, new service tubing from the water main to the meter, new setter, radio read meter equal to the current product used by the Owner, new meter box and lid, and all materials, supplies and accessories required for a complete installation. Payment shall include all excavation and backfill to fill around the new sets or fill in the void from the old sets as required, for a complete and working installation. For far side meters, new service tubing shall be installed within a PVC casing pipe beneath the affected roadway as detailed in the contract drawings.

11.0 RECONNECTION OF EXISTING METER AND SERVICE (if applicable)

- A. Measurement – Reconnections of existing meter sets and service shall be measured by count of each size of near side service and of far side service actually installed in accordance with the contract drawings and specifications in the completed system. Near side service means that the meter is on the same side of the road as the water main. Far side service means that the meter is on opposite side of the road as the water main, and that a service line road crossing, either open cut or bore, is required along with PVC encasement.
- B. Payment - Payment shall be at the unit bid prices for the measured quantity. Payment shall include tapping the main, new service tubing from the tap to the existing meter setter, encasement for far side meter tubing, and all materials, supplies and accessories required for a complete installation and reconnection to the existing meter. For far side meters, new service tubing shall be installed within a PVC casing pipe beneath the affected roadway as detailed in the contract drawings.

12.0 RELOCATION & RECONNECITON OF EXISTING METER SETS & SERVICE (if applicable)

- A. Measurement – Relocation of existing meter sets & service shall be measured by count of each size of service actually relocated and reconnected in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and disconnecting the existing service line, shutting off the existing service line, if active, relocating the referenced water meter as illustrated, tapping the main, new service tubing from the tap to the new location, new individual PRV (if existing), new setter, new meter box with lid, all applicable fittings/piping for reconnection to the customer's existing service line, encasement for far side meter tubing (if applicable), and supplying all materials and accessories required for a complete installation and reconnection of the relocated meter and customer service line. For far side meters, new service tubing shall be installed within a PVC casing pipe with tracer wire, all beneath the affected roadway as detailed in the contract drawings.

13.0 CONNECTION TO EXISTING WATER MAINS

- A. Measurement – Connections to existing water mains shall be measured by count and by size of connections actually installed in accordance with the contract drawings and specifications in the completed system.

- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and excavating the existing line, shutting off the existing line, if active, removing any plugs, fittings, blowoffs, or other items as may be required to make the connection and delivering any removed items that are re-usable to the OWNER, if requested. Payment shall include providing fittings that may be required for the connection, backfilling, and other accessories and work necessary for a complete and working installation.

14.0 TERMINATE WATER LINE WITH A PLUG & CAP (All Line Sizes)

- A. Measurement – Plugging and Capping of water lines shall be measured by count and by size of connections actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and excavating the water line, shutting off the water line, if active, installing any necessary plugs, fittings, or other items as may be required to make the cap. Payment shall include providing fittings that may be required, backfilling, concrete thrust blocking, and other accessories and work necessary for a complete and working installation.

15.0 AIR VALVES (if applicable)

- A. Measurement - Air release valves or combination air valves shall be measured by count of valves actually installed (including valve marker) in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the air valve, valve vault or box and all accessories referenced by the plans and specifications, and excavation, installation and backfill as required for a complete and working installation.

16.0 WATER LINE MARKERS (Isolated Location Requests)

- A. Measurement – Isolated pipeline markers shall be measured as the actual number installed.
- B. Payment – Payment will be made at the unit bid price for the measured quantity.

17.0 UNDERCUT AND REFILL

- A. Measurement - Where directed by the Engineer to undercut an excavation to avoid unstable soils, the undercut shall be measured as the actual volume of material removed from the excavation in excess of that which would have been otherwise required. Refill shall be measured as the actual volume of crushed stone or concrete refill placed in accordance with the Engineer's directions. Undercut or refill made without the direction or concurrence of the Engineer will not be measured for payment. Unclassified aggregate refill is not applicable for gravel driveway backfilling. No differentiation will be made between rock and soil undercutting.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include removing and disposing of undercut materials, placing and compacting any refill materials, and all other work as required for a complete and working installation.

18.0 REPLACEMENT/ADDITION OF NEW GATE VALVE ON EXISTING WATERLINE (If applicable)

- A. Measurement – Replacement or Addition of new gate valves on existing waterlines shall be measured by count and size of valve actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the gate valve as sized, valve box, piping, valve marker, concrete ring and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation. Payment shall also include locating and

excavating the existing line, shutting off the existing line, if active, installing any temporary fittings or items as may be required to make the connection.

19.0 STREAM CROSSING BY DIRECTIONAL BORE

- A. Measurement – Directional bored stream crossings shall be measured to the nearest 1-foot of crossing actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include both the casing pipe and the carrier pipe and all work required to install the line, including excavation and refill of bore pits, surface restoration, accessories and related work referenced by the plans and specifications or otherwise required for a complete and working installation. Payment shall also include any erosion control measures justified by the construction as well as any measures needed to return sediment-free water back into the river.

20.0 REMOTE TEST METER VAULT

- A. Measurement – The Remote Test Meter vault shall be measured by percent complete of critical milestone items actually installed or delivered in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the lump sum basis for the items specified. Payment shall be total compensation for components, including but not limited to the meter, all piping (internal & external from vault), fittings (internal & external from vault), vault, hatch, pipe connections, and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

21.0 ASPHALT REPLACEMENT

- A. Measurement - The replacement of asphalt surface shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot (all depths).
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall be total compensation for saw cutting, granular backfill or flowable concrete fill (as specified), furnishing and placing all base and surfacing materials, including rolling and finishing, for disposal of all surplus material, and for all labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and specifications.

22.0 CREEK CROSSING (All line Sizes)

- A. Measurement - Creek crossing shall be measured to the nearest 1-foot of crossing actually installed in accordance with the contract drawings and specifications in the completed system.
- B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include casing pipe where required by rock depth, any temporary measures taken to control water flow in the creek, excavation, installation of the water main and/or casing (as required), backfilling, concrete encasement where required, rip rap channel and bank lining, removal of temporary water control measures, accessories and related work referenced by the plans and specifications or otherwise required for a complete and working installation. Payment shall also include any erosion control measures justified by the construction as well as any measures needed to return sediment-free water back into the river.

END OF SECTION 02-500

Standard Sanitary Sewer Bid Item Descriptions

S BYPASS PUMPING This item shall include all labor, equipment, and materials needed to complete a bypass pumping and/or hauling operation for diversion of sewage during sanitary sewer construction. Examples of such operations when bypass pumping and/or hauling may be necessary is during force main tie-ins, manhole invert reconstruction, insertion of new manholes into existing mains, or other similar construction. There may be more than one bypass pumping/hauling operation on a project. This item shall be paid for each separate bypass pumping/hauling operation occurrence as called out on the plans or directed by the engineer and actually performed. There will be no separate bid items defined for length, duration, or volume of sewage pumped or hauled in each occurrence. If a bypass pumping/hauling operation is called out on the plans; but, conditions are such that the bypass pumping/hauling operation is not needed or utilized, no payment will be made under this item. The contractor shall draw his own conclusions as to what labor, equipment, and materials may be needed for each bypass pumping/hauling occurrence. The contractor should be prepared to handle the maximum volume of the sewer being bypassed, even during a storm event. This item shall not be paid separately, but shall be considered incidental, when bypass pumping and/or hauling is needed during cast-in-place-pipe (CIPP) and/or point repair operations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S CIPP LATERAL SERVICE INVESTIGATION This item shall include all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements and perform the identification, assessment and pre-measurement of all existing and abandoned laterals for the placement of Cured-In-Place-Pipe lining. This item shall be in payment for all lateral service investigation for all sewer segments to be lined as a part of this contract. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be LUMP SUM (LS).

S CIPP LATERAL REINSTATEMENT This item is to pay for installing a Cured-In-Place-Pipe liner in service laterals and service/mainline connections to stabilize structural defects and construction inadequacies. This bid item shall include all labor, equipment, materials and incidentals necessary to perform the service lateral reinstatement in accordance with the plans and specifications. Work under this item shall include bypass pumping, sewer flow control, pre-installation cleaning, sealing connections to existing sewer main, pre- and post- construction CCTV inspection and final testing of the CIPP system. This item shall also include the "top hat" required by the specifications. All CIPP lateral reinstatements shall be paid under this item regardless of the size or length of reinstatement. No separate bid items of varying sizes or length of CIPP lateral reinstatement will be provided in the contract. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each CIPP lateral reinstatement complete and ready for use.

S CIPP LINER This bid Item is to pay for rehabilitation of existing sanitary sewers using the Cured-In-Place-Pipe method. This bid item description applies to all CIPP sizes included in the contract.

All CIPP Liner items of all varying sizes shall include all labor, materials, customer notification, testing, necessary permits, ingress and egress procedures, bypass pumping, pre-construction video, sediment and root removal, dewatering, traffic control, erosion and sediment control, excavation pits, removal and replacement of manhole frames and covers as necessary to facilitate the lining work, sealing at manholes and service connections, clearing and grubbing, pipeline cleaning, re-cleaning and video inspection as many times as necessary, debris collection and disposal, root removal, pre- and post-construction video inspection, all digital inspection footage, final report preparation and approval, the cost of potable water from the Owner, required compliance tests, site restoration, site cleanup, sealing of liner at manholes, acceptance testing and all other rehabilitation work and incidentals not included under other pay items necessary to complete the rehabilitation per the plans and specifications. There will be no separate payment for acceptance testing of the lined pipe; but shall be considered incidental to this item. Pay under this item shall be by each size bid in the contract. Pay measurement shall be from center of manhole to center of manhole. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S CIPP PROTRUDING LATERAL REMOVAL This item includes all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements, remove a sufficient amount of the protruding tap to insure a proper and safe Cured-In-Place-Pipe lining insertion and perform pre-installation CCTV. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each protruding lateral removed.

S CONCRETE PIPE ANCHOR This item shall be constructed on the sewer pipe at the locations shown on the plans in accordance with sanitary sewer specifications and standard drawings. Payment for concrete anchors will be made at the contract unit price each in place complete and ready for use. Each concrete anchor of sewer pipe or force main shall be paid under one bid item per contract regardless of the sizes of carrier pipe being anchored in the contract. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of force main or gravity sewer under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing

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

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

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

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

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

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

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

S FORCE MAIN This description shall apply to all PVC and ductile iron and polyethylene/plastic pipe bid items of every size and type, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. This item shall also include pipe anchors on polyethylene pipe runs as shown on the plans or required by the specifications to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN AIR RLS/VAC VLV This bid item description shall apply to all force main air release/vacuum valve installations of every size except those defined as "Special". This item shall include the air release/vacuum valve, main to valve connecting line or piping, manhole/vault/structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release/vacuum valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release/vacuum valve would a separate bid item be established. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of sewer or force main under streets, buildings, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the locations shown on the plans. This bid item is to be used to relocate an existing force main at point locations such as to clear a conflict at a

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

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

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

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

S FORCE MAIN TIE-IN This bid description shall be used for all force main tie-in bid items of every size except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, testing and backfill required to make the force main tie-in as shown on the plans and in accordance with the specifications complete and ready for use. This bid item shall include purge and sanitary disposal of any sewage from any abandoned segments of force main. Pipe for tie-ins shall be paid under separate bid items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

referenced. This item shall be paid EACH (EA) when complete.

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

S LATERAL CLEANOUT This item shall be for payment for installation of a cleanout in a service lateral line. This item shall include furnishing and installation of a tee, vertical pipe of whatever length required, and threaded cap. The cleanout shall extend from the lateral to final grade elevation. The size of the cleanout shall be equivalent to the size of the lateral. The cleanout materials shall meet the same specification as those for the lateral. The cleanout shall be installed at the locations shown on the plans or as directed by the engineer. Only one pay item shall be established for cleanout installation. No separate pay items shall be established for size or height variances. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL LOCATE This bid item is to pay for all labor, equipment, and materials needed in locating an existing sanitary sewer service lateral for tie-in of the lateral to new mainline sewers and/or for the relocation of a lateral. This bid item shall be inclusive of any and all methods and efforts required to locate the lateral for tie-in or relocation of the lateral. Locating methods to be included under this items shall include, but are not limited to, those efforts employing the use of video cameras from within an existing sanitary sewer main or lateral, electronic locating beacons and/or tracers inserted into the sanitary sewer main or lateral, careful excavation as a separate operation from mainline sewer or lateral excavation, the use of dyes to trace the flow of a lateral, or any combination of methods required to accurately locate the lateral. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S LATERAL LONG SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch internal diameter, except those lateral bid items defined as "Special". This item includes the specified piping material, main tap, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for service lateral installations where the ends of the lateral connection are on opposite sides of the public roadway. The new lateral must cross the centerline of the public roadway to qualify for payment as a long side lateral. The length of the service lateral is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service lateral across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL SHORT SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch, except those lateral bid items defined as “Special”. This item includes the specified piping material, main tap tee, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for lateral installations where both ends of the lateral connection are on the same side of the public roadway, or when an existing lateral crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service lateral is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the lateral crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

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

S MANHOLE Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup in accordance with the specifications and standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ABANDON/REMOVE Payment under this item is for the partial removal and/or filling of any sanitary sewer manhole regardless of size or depth that no longer serves any purpose. Payment shall be made regardless of whether the manhole is or is not in conflict with other work. Any manhole requiring partial removal, but not total removal, in order to clear a conflict with other work shall be paid under this item. All manholes partially removed shall be removed to a point at least one foot below final grade, one foot below roadway subgrade, or one foot clear of any other underground infrastructure, whichever is lowest. If partial removal of an abandoned manhole is elected by the contractor, the remaining manhole structure shall be refilled with flowable fill. Payment for disposal of a sanitary sewer manhole will be made under this item only. Please refer to the Utility Company’s

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

S MANHOLE ADJUST TO GRADE Payment under this item is for the adjustment of sanitary sewer casting elevation on all sizes of existing sanitary manholes. This work shall be performed in accordance with the sanitary sewer specifications. Payment shall be made under this bid item regardless of the amount of adjustment necessary to a sanitary sewer manhole casting or diameter of the manhole. Work under this pay item may be as simple as placing a bed of mortar under a casting; but, shall also be inclusive of installation of adjusting rings, and /or addition, removal, or replacement of barrel sections. The existing casting is to be reused unless a new casting is specified on the plans. New casting, when specified, shall be paid as a separate bid item. Anchoring of the casting shall be incidental to this item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE CASTING STANDARD Payment under this bid items is for furnishing of a new standard traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE CASTING WATERTIGHT Payment under this bid item is for furnishing of a new watertight traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE RECONSTRUCT INVERT This bid item is to pay for all labor, equipment, and material for rework of the manhole bench to redirect or eliminate flow, such as when the flow of a pipe or pipes are being removed or redirected. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in elimination or redirect of flow. This item shall also include providing and placement of a rubber seal or boot as required by utility specification, standard drawing or plan. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. No payment shall be made under this bid when MANHOLE TAP EXISTING, or MANHOLE TAP EXISTING ADD DROP are being paid at the same location, as this type of work is included in those items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each core opening added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the

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

S MANHOLE TAP EXISTING ADD DROP This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, addition of a vertical drop pipe to the outside of the manhole, placement of reinforcing steel and concrete to encase vertical pipe, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each drop added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH DROP Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with drop. Payment for drop manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Drop manholes shall include concrete base, barrel sections, drop materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH LINING Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with corrosion resistant lining. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, lining, excavation, backfilling, air testing, restoration, and cleanup in accordance with the standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH TRAP Payment under this item is for the installation of a new manhole with

trap. Payment for trap manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Trap manholes shall include concrete base, manhole structure and trap materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. All materials, except casting, shall be new and unused. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S PIPE This description shall apply to all PVC and ductile iron gravity sewer pipe bid items of every size and type 8 inches internal diameter and larger, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, tap tees and couplings for joining to existing similar or dissimilar pipes), polyethylene wrap (if required by specification), labor, equipment, excavation, bedding, restoration, pressure or vacuum testing, temporary testing materials, video inspection, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. This bid item shall include material and placement of flowable fill under existing and proposed pavement, and wherever specified on the plans or in the specifications. No additional payment will be made for rock excavation. Measurement of quantities under this item shall be through fittings and encasements to a point at the outside face of manhole barrels, or to the point of main termination at dead ends or lamp holes. Carrier pipe placed within an encasement shall be paid under this item and shall include casing spacers and end seals. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PIPE POINT REPAIR This item is to be used to pay for repair of short lengths of existing sanitary sewer pipe that, through prior video inspection or other means, are known to have pre-existing failure. Pipe Point Repair may be needed in preparation for installation of cured-in-place-pipe (CIPP) lining or other instances where failure is known and repair is prudent. The size of pipe shall not be defined in separate bid items. All diameter sizes of point repair shall be paid under this one item. The materials to be used to make the repair shall be as defined on the plans or in the specifications. This bid item shall include all excavation, pipe materials, joining materials to connect old and new pipe, bedding, and backfill to complete the repair at the locations shown on the plans or as directed by the engineer, complete and ready for use. This bid item shall include bypass pumping when required. Measurement shall be from contact point to contact point of old and new pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PUMP STATION This item is for payment for installation of sanitary pump stations including above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall

be referenced. This item shall be paid LUMP SUM (LS) for each when complete.

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

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

SECTION 01-100

SUMMARY OF WORK

1.0 GENERAL

1.01 WORK INCLUDED

- A. Relocation of sewer in Central City, Kentucky along Highway 62.
- B. The Contractor shall include all materials, labor and equipment necessary for completion of the Project. The Contract Documents are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the Project shall be included.

1.02 PERMITS

Contractor shall obtain all permits related to or required by the Work in this Contract.

1.03 CODES

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

1.04 EXISTING CONDITIONS AND DIMENSIONS

- A. The Work in this Contract will be performed along the right-of-way of Highway 62 in Central City, Kentucky.
- B. The Contractor is responsible for verifying all existing conditions, elevations, dimensions, etc., and providing his finished work to accommodate existing conditions.

2.0 CONTRACTOR'S DUTIES

2.1 Construction and Related Activities

The Contractor shall provide and pay for all labor, materials, equipment, machinery, tools, superintendence, insurance, shipping, utilities, and other costs required for a complete and functioning lift station installation.

2.2 Taxes

The Contractor shall pay all required sales taxes, payroll taxes, consumer and use taxes, and other taxes relating to the work of the project.

2.3 Permits

The contractor shall secure and pay for all legally required permits, licenses and fees associated with the construction.

2.4 Notices

The Contractor shall provide all required notices, including notices to utility owners of intent to excavate in the vicinity of their utilities, notices to property owners of intent to enter their property for construction purposes, notices regarding the interruption of any utility service, as well as other notices required by the plans and contract documents. The Contractor shall provide traffic control equipment and flagman, as may be required by the Kentucky Department of Highways or by working conditions.

2.5 Laws

Contractor shall fully comply with all applicable laws, ordinances, rules, regulations, orders and other legal requirements, and shall bear the cost of such compliance.

2.6 Character of Workmen

Contractor shall employ workman and foremen with sufficient knowledge of and experience in the type of work proposed to assure satisfactory performance. Workman shall maintain a professional demeanor and appearance at all times on the project. Any workman on the project who performs work in an incompetent manner, or acts in a disorderly or intemperate manner shall be removed from the project, and may not be employed on any portion of the project unless approved by the Owner.

2.7 Notice of Discrepancies

If discrepancies or ambiguities are found in the plans, specifications, contract documents or in any communication to the contractor, the contractor shall immediately notify the Engineer in writing. Do not proceed with the affected work until clarification is received.

2.8 Inspection

Provide at all times, access to the work for inspection by representatives of the Owner, the Engineer, and regulatory authorities having jurisdiction over the project.

2.09 Contractor's Use of Premises

Contractor shall confine his operations to public right-of-way, easements and property obtained by the Owner for construction of the project, or to areas secured by the Contractor for his use. Contractor shall take precautions to minimize disruption to existing properties.

Stored materials, regardless of their location shall be protected by the Contractor from damage, theft or degradation at all times.

2.10 Existing Facilities

The existing and adjacent roadways will be in continuous operation during the construction of the Project. Contractor shall avoid disturbing existing streets, and any other utilities or structures encountered in the work, except as necessary for construction operations. Contractor shall give at least 48 hours prior notice to the Owner, or to any utility or other entity, of any necessary disruptions to service, or work affecting active lines.

2.11 Partial Owner Occupancy

The Owner may, at his discretion, place into service any or all portions of the completed work prior to final completion of all work on the project. Placing a portion of the work in service before final completion does not relieve the contractor of his obligation to complete all work associated with that portion of the work (i.e. clean-up, surface restoration, etc.), to perform maintenance for the required period, or to provide warranty for that portion of the work

3.0 MEASUREMENT & PAYMENT

3.1 General

The Contractor shall furnish all labor, tools, equipment and materials to construct the proposed improvements complete as shown on the plans and described in these Specifications. The work shall be measured for payment in accordance with applicable provisions of these Specifications and payment shall be made on the basis of the unit prices or lump sum prices bid. The sum of the payments for eligible pay items contained in the proposal form shall be the compensation to be paid for the completed

project; provided however, that changes in the work covered by written change orders, properly executed, may result in additions or deductions from the contract price.

The Contractor's attention is called to the fact that although the pay items shown shall be the basis for establishing the contract price, the description of the pay items does not necessarily reflect the full extent of work to be performed. The cost of the incidental work which is necessary but which is not specifically listed as one of the pay items, shall be included in the prices bid for the pay items to which the incidental work is most closely related.

END OF SECTION 01-100

SECTION 01-300

SUBMITTALS

1.0 GENERAL

1.01 WORK INCLUDED

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

1.02 DEFINITIONS

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

1.03 GENERAL CONDITIONS

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

1.04 GENERAL REQUIREMENTS FOR SUBMITTALS

- A. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Documents. Where applicable, show fabrication, layout, setting and erection details. Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop drawings illustrate some portion of the work and show fabrication, layout, setting or erection details of equipment, materials and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for his distribution plus three (3) which will be retained by the Engineer and Owner. Shop drawings shall be folded to an approximate size of 8-1/2 inch x 11 inch and in such manner that the title block will be located in the lower right-hand corner of the exposed surface.
- B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the Project, and shall be supplemented to provide additional information applicable to the Project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the Project.
- C. Where samples are required, they shall be adequate to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.

- D. All submittals shall be referenced to the applicable item, section and division of the Specifications, and to the applicable Drawing(s) or Drawing schedule(s) and shall be with transmittal forms and format provided by the Engineer.
- E. The Contractor shall review and check submittals, and indicate his review by initials and date.
- F. If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer, in letter of transmittal of the deviation and the reasons therefore. All changes shall be clearly marked on the submittal with a bold mark other than red. Any additional costs for modifications shall be borne by the Contractor.
- G. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, make any changes to structures, piping, controls, electrical work, mechanical work, etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineer, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted item.
- H. Additional information on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.
- I. Submittals for all electrically operated items (including instrumentation and controls) shall include complete wiring diagrams showing lead, runs, number of wires, wire size, color coding, all terminations and connections, and coordination with related equipment.
- J. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers and fabricators; the Contractor shall be responsible for insuring the compatibility of such coatings with the field-applied paint products and systems.
- K. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.
- L. Where manufacturer's brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.
- M. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.
- N. All bulletins, brochures, instructions, parts lists, and warranties packaged with and accompanying materials and products delivered to and installed in the Project shall be saved and transmitted to the Owner through the Engineer.
- O. All submittals shall be made by the use of a multi-copy transmittal form supplied by the Engineer. All applicable blanks on the form shall be filled in with the appropriate data.

1.05 CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, field construction criteria, catalog numbers and similar data.
- B. Coordinate each submittal with requirements of Work and Contract Documents.
- C. Notify Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.

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

END OF SECTION 01-300

SECTION 01565

EROSION AND SEDIMENT CONTROL

1.0 GENERAL

1.01 WORK INCLUDED

- A. The Contractor shall do all Work and take all measures necessary to control soil erosion resulting from construction operations, shall prevent the flow of sediment from the construction site, and shall contain construction materials (including excavation and backfill) within his protected working area so as to prevent damage to the adjacent wetlands and water courses.
- B. The Contractor shall not employ any construction method that violates a rule, regulation, guideline or procedure established by Federal, State or local agencies having jurisdiction over the environmental effects of construction.
- C. Pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste shall not be discharged into or alongside of any body of water or into natural or man-made channels leading thereto.
- D. If required by regulatory authorities, Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for the project, obtain all necessary approvals and comply with the plan for the duration of construction.

2.0 PRODUCTS

2.01 MATERIALS

Bales may be hay or straw, and shall be reasonably clean and free of noxious weeds and deleterious materials. Filter fabric for sediment traps shall be of suitable materials acceptable to the Engineer.

3.0 EXECUTION

3.01 METHODS OF CONSTRUCTION

- A. The Contractor shall use any of the acceptable methods necessary to control soil erosion and prevent the flow of sediment to the maximum extent possible. These methods shall include, but not be limited to, the use of water diversion structures, diversion ditches and settling basins.
- B. Construction operations shall be restricted to the areas of work indicated on the Drawings and to the area which must be entered for the construction of temporary or permanent facilities. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of the wetlands and adjacent watercourses. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.
- C. Excavated soil material shall not be placed adjacent to the wetlands or watercourses in a manner that will cause it to be washed away by high water or runoff. Earth berms or diversions shall be constructed to intercept and divert runoff water away from critical areas. Diversion outlets shall be stable or shall be stabilized by means acceptable to the Engineer. If for any reason construction materials are washed away during the course of construction, the Contractor shall remove those materials from the fouled areas as directed by the Engineer.

- D. For Work within easements or rights-of-way, all materials used in construction such as excavation, backfill, roadway, and pipe bedding and equipment shall be kept within the limits of these easements or rights-of-way.
- E. The Contractor shall not pump silt-laden water from trenches or other excavation into the wetlands, or adjacent watercourses. Instead, silt-laden water from his excavations shall be discharged within areas surrounded by baled hay or into sediment traps or ensure that only sediment-free water is returned to the watercourses. Damage to vegetation by excessive watering or silt accumulation in the discharge area shall be avoided.
- F. Prohibited construction procedures include, but are not limited to the following:
 - 1. Dumping of spoil material into any streams, wetlands, surface waters, or unspecified locations.
 - 2. Indiscriminate, arbitrary, or capricious operation of equipment in wetlands or surface waters.
 - 3. Pumping of silt-laden water from trenches or excavations into surface waters, or wetlands.
 - 4. Damaging vegetation adjacent to or outside of the construction area limits.
 - 5. Disposal of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash water from concrete trucks or hydro seeders, or any other pollutant in wetlands, surface waters, or unspecified locations.
 - 6. Permanent or unauthorized alteration of the flow line of any stream.
 - 7. Open burning of debris from the construction work.
- G. Any temporary working roadways required shall be clean fill approved by the Engineer. In the event fill is used, the Contractor shall take every precaution to prevent the fill from mixing with native materials of the site. All such foreign fill materials shall be removed from the site following construction.

3.02 EROSION CHECKS

The Contractor shall furnish and install baled hay or straw erosion checks surrounding the base of all deposits of stored excavated material outside of the disturbed area, and where indicated by the Engineer. Checks located surrounding stored material shall be located approximately 6 feet from that material. Bales shall be held in place with two 2 inch by 2 inch by 3 feet wooden stakes. Each bale shall be butted tightly against the adjoining bale to preclude short-circuiting of the erosion check.

END OF SECTION 01-565

SECTION 02-050

DEMOLITION

1.0 GENERAL

1.01 GENERAL PROVISIONS

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

1.02 SCHEDULE

- A. Perform demolition and removal work at such a time and in such a manner, so as not to interfere with the Owner's operations, the work of other trades and other Contracts. Follow the Progress Schedule as agreed to and worked out with the Owner.
- B. Coordinate demolition and removal work with the work of other Contractors, so that the new construction work installed before, during and after the work of this Section may commence without undue delay.

1.03 PROTECTION

- A. Do not close or obstruct streets, walks, and other facilities occupied and used by the Owner and the public, without prior written permission from the Owner and local authorities having jurisdiction.
- B. The structural stability of structures adjacent to, or affected by the work of this Contract will be the responsibility of the Contractor. Provide temporary shoring, and bracing where required.
- C. Provide all necessary shielding of existing materials and equipment, which are to remain within or adjacent to work areas.
- D. Maintain in service and protect from damage the existing utilities that are indicated to remain.

1.04 UTILITIES

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

1.05 PIPE SEALING

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

1.06 SALVAGEABLE MATERIALS

- A. The Owner shall have first right to salvaged material. If the Owner declines the salvaged material, it shall become the property of the Contractor to be disposed of at no cost to the Owner.
- B. Salvage material and equipment to be retained by the Owner shall be located as directed by the Engineer.

1.07 DEMOLITION OPERATIONS

- A. Existing structures shall be removed to a minimum of 12 inches below the finished grade or 36 inches below the location of a new structure or as shown on the Contract Drawings.
- B. Remove existing concrete using an abrasive saw to make initial cuts not less than 2 inches deep, between areas to be removed and areas to remain, providing a smooth, straight joint or cut line. Make cut lines in floor slabs parallel with walls.
- C. If existing abandoned utility lines extend into the area of construction being removed, remove abandoned lines to elevations shown on the drawings, or as directed by the Engineer outside of demolition area and plug permanently with steel cap or concrete.
- D. Adequate drainage of all structures demolished shall be provided by providing openings in the floors and walls of the portion of the structures remaining in place. The Contractor shall notify the Engineer, prior to backfilling the structures remaining in place, in order for him to inspect the drainage provision provided.
- E. Provide all temporary shoring and bracing as required to transfer loads of existing construction to remain from construction being removed. Remove and dispose of temporary support measures when new construction has been installed by other contractors.

END OF SECTION 02-050

SECTION 02-222

EXCAVATION

1.0 GENERAL

1.01 WORK INCLUDED

- A. Structure excavation.
- B. Utility excavation.

1.02 RELATED REQUIREMENTS

- A. Section 02-225: Excavating, Backfilling and Compacting for Utilities.

1.03 PROTECTION

- A. Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent cave-in or loose soil from falling into excavation.
- B. Underpin adjacent structures that may be damaged by excavation work, including service utilities and pipe chases.
- C. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- D. Protect bottom of excavations and soil adjacent to and beneath foundations from frost.
- E. Grade excavation top perimeter to prevent surface water run-off into excavation.
- F. Contractor shall provide ample means and devices with which to intercept any water entering the excavation area.

1.04 ROCK EXCAVATION

Any rock encountered within foundation excavations for recommended soil bearing elements should be removed to a depth sufficient to provide a minimum 24-inch soil cushion between the bottom of the footing and the top of rock. The soil cushion should be constructed of properly compacted on-site soils free of organics and deleterious materials. All excavation is unclassified; no additional payment will be made based on the type of material to be excavated.

1.05 PAYMENT

- A. General excavation shall include all excavation specified, undercutting, fill, backfill, grading, and rock excavation except unsuitable foundation material, as hereinafter described.
- B. All general excavation shall be included in the Lump Sum Bid. Changes that require additions to or deductions from the excavation will be adjusted on the basis of the unit price for changes contained in the Contract.

2.0 PRODUCTS

2.01 MATERIALS

- A. Excavated material: Soil or rock free of lumps larger than 6 inches, rocks larger than 6 inches, and debris.

- B. Stone or Aggregate: Mineral aggregate graded to meet the requirements set forth on the plans, and meeting Kentucky Department of Highways specifications.

3.0 EXECUTION

3.01 PREPARATION

Identify required lines, levels, contours, and datum.

3.02 EXCAVATION

- A. Excavate subsoil required for structure foundations, construction operations, and other work.
- B. Contractor is responsible to adequately brace open cuts and protect workmen and equipment from cave-in.
- C. Remove lumped subsoil, boulders, and rock up to 1/3 Cu. yd., measured by volume.
- D. Correct unauthorized excavation at no Cost to Owner.
- E. Fill over-excavated areas under structure bearing surfaces in accordance with direction by Engineer.
- F. Stockpile excavated material in area designated on site.

3.03 EXCAVATION FOR STRUCTURES

- A. For structures, excavate to elevations and dimensions indicated, plus ample space for construction operations and inspection of foundations.
 - 1. Excavate to the depth and grade required for subgrade preparation and bridge course construction as indicated on the Drawings. Structure foundations shall bear entirely on prepared subgrade.
 - 2. Structure foundations shall be installed immediately after subgrade preparation is completed. In no case should foundations be installed in excavations which contain water. Any soft, saturated areas in the bottom of excavations shall be removed or stabilized using granular material.
 - 3. Make no excavation to the full depth indicated when freezing temperatures may be expected unless foundations can be installed after the excavation has been completed. Protect the bottom so excavated from frost if foundation installation is delayed.

3.04 REMOVAL OF WATER

- A. The Contractor, at his own expense, shall provide adequate facilities for promptly and continuously removing water from all excavation.
- B. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to remove promptly and dispose properly of all water entering trenches and other excavations. Such excavation shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
- C. All water pumped or drained from the Work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of the Work.

- D. If necessary, the Contractor shall dewater the excavations by means of an efficient drainage wellpoint system that will drain the soil and prevent saturated soil from flowing into the excavation. The wellpoints shall be designed especially for this type of service. The pumping unit shall be designed for use with the wellpoints, and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.
- E. The installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work, which is necessary for the wellpoint system to operate for the successful dewatering of the excavation.

3.05 UNAUTHORIZED EXCAVATION

If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at the Contractor's expense with thoroughly compacted aggregate material.

3.06 ELIMINATION OF UNSUITABLE MATERIAL

- A. If material unsuitable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted, screened gravel, select bank-run gravel, fine aggregate or concrete as directed.
- B. No excavated materials shall be removed from the site of the work or disposed of by the Contractor except as directed or permitted.
- C. Surplus excavated materials suitable for backfill shall be used to backfill normal excavations in rock or to replace other materials unacceptable for use as backfill; shall be neatly deposited and graded so as to make or widen fills, flatten side slopes, or fill depressions. All work shall be as directed or permitted and without additional compensation.

3.07 EXCESS MATERIAL

Excess material may be disposed of on City property in areas as designated by the Owner. Contractor shall be responsible for transporting material to the disposal site, placing material in a manner that facilitates drainage and maintenance of the site, and seeding the area to establish erosion control.

3.08 EXISTING UTILITIES AND OTHER OBSTRUCTIONS

Prior to the commencement of construction on the project, the Contractor shall contact the utility companies whose lines, above and below ground, may be affected during construction and verify the locations of the utilities as shown on the Contract Drawings. The Contractor shall ascertain from said companies if he will be allowed to displace or alter, by necessity, those lines encountered or replace those lines disturbed by accident during construction, or if the companies themselves are only permitted by policy to perform such work. If the Contractor is permitted to perform such work, he shall leave the lines in as good condition as were originally encountered and complete the Work as quickly as possible. All such lines or underground structures damaged or molested in the construction shall be replaced at the Contractor's expense, unless in the opinion of the Engineer, such damage was caused through no fault of the Contractor.

3.09 FIELD QUALITY CONTROL

Allow time for inspection of excavated areas by the Engineer prior to placement of any backfill.

END OF SECTION 02-222

SECTION 02-223

BACKFILL AND EMBANKMENTS

1.0 GENERAL

1.01 WORK INCLUDED

- A. Structure perimeter backfilling to subgrade elevations.
- B. Site backfilling.
- C. Compaction requirements.
- D. Access road subgrade preparation.

1.02 RELATED WORK

- A. Section 02-222: Excavation.
- B. Section 02-225: Excavation, Backfilling and Compacting for Utilities.

1.03 REFERENCES

- A. Commonwealth of Kentucky, Standard Specifications for Road and Bridge Construction.
- B. ANSI/ASTM D698 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 5.5 lb Rammer and 12 inch Drop.
- C. ANSI/ASTM D1556 - Density of Soil in Place by the Sand-Cone Method.
- D. ASTM 2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods.
- E. ASTM 3017 - Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.04 TESTS

- A. Tests and analysis of fill materials will be performed in accordance with ANSI/ASTM D698. Tests shall include but not be limited to gradation analysis and moisture/density relationships.
- B. Test will be performed by an approved independent testing laboratory and shall be the responsibility of the Contractor at no additional cost to the Owner.
- C. Density test shall be performed in sufficient number to insure the specified densities are being obtained.
- D. When ASTM D2922 is used, the calibration curves shall be checked and adjusted if necessary by the procedure described in ASTM D2922, paragraph ADJUSTING CALIBRATION CURVE. ASTM D2922 results in a wet unit weight of soil; and when using this method, ASTM D3017 shall be used to determine content of the soil. The calibration checks of both the density and moisture gages shall be made at the beginning of a job on each different type of material encountered and at intervals as directed by the testing laboratory.

1.05 SUBMITTALS

Results of soil moisture and density tests by an approved testing laboratory shall be submitted to the Engineer for review.

2.0 PRODUCTS

2.01 SELECT FILL MATERIALS

- A. The on-site residual soils are considered suitable for use as compacted fill. Fill that will support foundation elements should be placed in 6- to 8-inch loose lifts and compacted to a minimum of 100 percent of its maximum dry density and within plus or minus 2 percent of optimum moisture content as determined by standard Proctor moisture density test. A minimum of 95 percent of the maximum dry density and plus or minus 2 percent of optimum moisture content should be obtained for fill soils supporting floor slabs, sidewalks or pavements. Field density tests should be performed on each lift placed to determine if proper compaction is being achieved. If sufficient suitable material is not available from the excavations, the backfill material shall be screened gravel, crushed stone or selected borrow as directed.
- B. Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material. Previously frozen material shall be removed or shall be otherwise treated as required before new backfill is placed.
- C. All material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, suitable fill. It shall not contain vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2-inch in diameter, stones over 6 inches in diameter, or porous matter.

2.02 COMPACTED FILL

- A. Soil used for compacted fill should be inorganic clayey soils free of deleterious debris or rocks whose largest dimension is no larger than 3-inches. The soil should have a liquid limit (LL) of less than 50, a plasticity index (PI) of less than 30, and a maximum dry density according to the standard Proctor compaction test of at least 100 pcf. The fill should be compacted to at least 95 percent of the SPMDD. The top foot of structural fill shall be compacted to 100 percent of the SPMDD.
- B. The moisture content of the compacted fill material shall be within 2% of the optimum moisture content as determined by ASTM D-698.

2.03 STRUCTURAL BACKFILL

- A. All structures shall be supported on a bearing pad consisting of at least 6-inches of crushed stone aggregate placed over sound subgrade.
- C. Crushed stone used as a bearing medium should be placed in uniform, loose lifts not exceeding 8 inches in thickness. It is recommended that each lift be compacted by a minimum of five (5) passes of a smooth drum vibratory roller having a total static weight of not less than 20,000 pounds. The diameter of the drum should be between 5.0 and 5.5 feet and 6.0 and 6.5 feet wide.
- D. Walls below final grade should be backfilled with a minimum 12-inch thick layer of free draining material up to two feet below final grade. The two feet above this free draining material should be backfilled with an impervious material that would retard surface water infiltration. The free draining material should extend down to a rock blanket beneath the bottom slab.

3.0 EXECUTION

3.01 INSPECTION

- A. Verify that subgrade has been inspected by the Geotechnical Engineer.
- B. Verify areas to be backfilled are free of debris, snow, ice, or water, and ground surfaces are not frozen.

3.02 PREPARATION

- A. When necessary, compact subgrade surfaces to density requirements for the backfill material and prepare subgrade or previous layer of compacted fill prior to placement of additional fill by scarifying or disking.
- B. Cut out soft areas of subgrade not readily capable of in situ compaction. Backfill with subsoil and compact to density equal to requirements for subsequent backfill material.

3.03 BACKFILLING - GENERAL

- A. Backfill areas to contours and elevations. Use unfrozen materials. The Contractor shall keep the foundation and subgrade free from water or unacceptable materials after the fill operations have started.
- B. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, or spongy subgrade surfaces.
- C. Place and compact fill materials in continuous layers not exceeding 8 inches loose depth. Field density tests shall be performed on each lift.
- D. Employ a placement method so not to disturb or damage foundation drainage.
- E. Maintain optimum moisture content of backfill material to attain required compaction density as specified. Material deposited on the fill that is too wet shall be removed or spread and permitted to dry, assisted by disking or blading, if necessary, until the moisture content is reduced to the specified limits.
- F. All crushed stone fill and crushed stone backfill under structures and pavements adjacent to structures shall be DGA per crushed stone per Kentucky Highway Department Standard Specifications for Road and Bridge Construction, unless indicated otherwise. Fill and backfill materials shall be placed in layers not exceeding six (6) inches in thickness and compacted to 95 percent of maximum dry density.
- G. Backfill shall not be placed against or on structures until they have attained sufficient strength to support all loads to which subjected without distortion, cracking, or damage. Deposit soil evenly around the structure.
- H. Slope grade away from structures minimum 2 inches in 10 feet, unless noted otherwise.
- I. Make changes in grade gradual. Blend slopes into level areas.
- J. Remove surplus excavation materials to designated areas.

3.04 TOLERANCES

Top Surface of Backfilling: Plus or minus 1 inch.

3.05 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with ASTM D1556 or ASTM D2922 and under provisions of Sections 01-400.
- B. Tests shall be performed on each 100 square feet of surface area and on each lift of the surface area, where more than one lift is required to achieve the required bearing or backfill surface.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION 02-223

SECTION 02-225

EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

1.0 GENERAL

1.01 WORK INCLUDED

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

1.02 RELATED WORK

A. Section 02-732: Force Mains.

1.04 PAYMENT

A. General excavation, backfilling and compacting for utilities shall include all excavation specified, undercutting, fill, backfill, grading, and rock excavation except unsuitable foundation material, as hereinafter described.

B. All general excavation shall be included in the Lump Sum Bid. Changes that require additions to or deductions from the excavation will be adjusted on the basis of the unit price for changes contained in the Contract.

2.0 PRODUCTS

2.01 MATERIALS

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

B. Two classes of crushed stone material are used in this Section. The type of material in each class is as follows:

1. Class I - No. 9 Aggregate.
2. Class II - Dense Graded Aggregate (DGA).

3.0 EXECUTION

3.01 EXCAVATION OF TRENCHES

A. Unless otherwise directed by the Engineer, trenches are to be excavated in open cuts.

1. Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to, or just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.
2. Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery. However, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

B. Trenches shall be sufficient width to provide working space on each side of the pipe and to permit

proper backfilling around the pipe.

- C. All excavated materials shall be placed a safe distance back from the edge of the trench.
- D. Unless specifically directed otherwise by the Engineer, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew, and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew. Watchmen or barricades, lanterns and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the Contractor.
- E. Trench excavation shall include the removal of earth, rock, or other materials encountered in the excavating to the depth and extent shown or indicated on the Drawings. All excavation is unclassified.

3.02 GRAVITY AND PRESSURE SEWER BEDDING

- A. Piping for gravity sewers and force mains shall be supported as follows:
 - 1. All gravity sewer piping shall be laid on a bed of granular material except when a concrete encasement situation occurs. All pipe bedding material shall be Class I (No. 9 crushed stone aggregate) and shall be placed to a depth of 4 inches in an earth trench and 6 inches in a rock trench. Aggregate bedding shall be graded to provide for a uniform and continuous support beneath the pipe at all points.
 - 2. The trench bottom for force main piping shall be stable, continuous, relatively smooth and free of frozen material, clodded dirt, foreign material and rock or granular material larger than 1/2 inch in diameter. The foundation for force main piping shall be prepared so that the entire load of the backfill on top of the pipe will be carried uniformly on the barrel of the pipe. Any uneven areas in the trench bottom shall be shaved-off or filled-in with Class I granular bedding. When the trench is made through rock, the bottom shall be lowered to provide 6 inches of clearance around the pipe. Class I granular bedding shall be used to bring the trench bottom to grade.
- B. After each pipe has been brought to grade, aligned, and placed in final position, Class I material for gravity sewer piping and earth material for force main piping shall be deposited and densified under the pipe haunches and on each side of the pipe up to the spring line of the pipe to prevent lateral displacement and hold the pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations.
- C. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.
- D. Where an unstable (i.e., water, mud, etc.) trench bottom is encountered, stabilization of the trench bottom is required. This is to be accomplished by undercutting the trench depth and replacing to grade with a foundation of crushed stone aggregate.
- E. The depth of the foundation is dependent upon the severity of the trench bottom. The size of stone aggregate used in the foundation will be determined by the condition of the unstable material. Once the trench bottom has been stabilized, the required Class I bedding material can be placed.
- F. It should be noted that no pipe shall be laid on solid or blasted rock.

3.03 GRAVITY AND PRESSURE SEWER BACKFILL

A. Initial Backfill:

1. This backfill is defined as that material which is placed over the pipe from the spring line to a point 6 inches above the top of the pipe. For gravity sewer piping the material shall be Class I (No. 9 crushed stone aggregate) and may be machine placed without compaction. Uneven places in the backfill shall be leveled by hand. For force main piping, initial backfill material shall be earth material free of rocks, acceptable to the Engineer or with Class I material

B. Final Backfill:

1. There are two cases where the method of final backfilling varies. The various cases and their trench situations are as follows:
 - a. Case I - Areas not subject to vehicular traffic.
 - b. Case II - Paved areas including streets, drives, parking areas, and walks.
2. In all cases, walking or working on the completed pipelines, except as may be necessary in backfilling, will not be permitted until the trench has been backfilled to a point 6 inches above the top of the pipe. The method of final backfilling for each of the above cases is as follows:
 - a. Case I - The trench shall be backfilled from a point 6 inches above the top of the pipe to a point 8 inches below the surface of the ground with earth material free from large rock (over one-half cubic foot in volume), acceptable to the Engineer. The remainder of the trench shall be backfilled with earth material reasonably free of any rocks.
 - b. Case II - The trench shall be backfilled from a point 6 inches above the top of the pipe to a point 12 inches below the existing pavement surface with Class I (No. 9 crushed stone aggregate) material. The backfill shall be mechanically tamped in approximately 6-inch layers to obtain a compaction of 95 percent density as measured by the modified Procter Test. The remaining backfill shall be Class II (dense graded aggregate) material mechanically tamped to the compaction as required above for Class I material. The trench may be left with a slight mound if permitted by the Engineer. Where required by state or local regulations, a bituminous binder course detailed on the Drawings.

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

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

END OF SECTION 02-225

SECTION 02-732

SEWAGE FORCE MAINS

1.0 GENERAL

1.01 WORK INCLUDED

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

1.02 RELATED WORK

- A. Section 02-222: Excavation.
- B. Section 02-225: Excavating, Backfilling, and Compacting for Utilities.

2.0 PRODUCTS

2.01 DUCTILE IRON PIPE (DIP) AND FITTINGS

- A. Ductile iron pipe (DIP) shall conform to ANSI/AWWA C150/A21.50, ANSI/AWWA C151/A21.51 Standard (latest). The pipe shall conform to pressure class 350 unless noted otherwise. All pipe, fittings and joints should be capable of accommodating a working pressure up to 150 psi. The ductile iron pipe shall be as manufactured by Clow Corporation, U.S. Pipe & Foundry Company, American Cast Iron Pipe Company, or approved equal.
- B. Fittings shall be ductile iron in accordance with AWWA C153 and have a body thickness and radii of curvature conforming to ANSI A21.10 or ANSI A21.53 for compact fittings and shall conform to the details and dimensions shown therein. Fittings shall have rubber gasket joints meeting the requirements of AWWA C111. Fittings shall be cement-mortar lined and bituminous coated to conform to the latest revision of ANSI/AWWA standards.
- C. Ductile iron flanged joint pipe shall conform to ANSI/AWWA C115/A 21.15 Standard and have a thickness Class of 53. The pipe shall have a rated working pressure of 250 psi with Class 125 flanges. Gaskets shall be ring gaskets with a thickness of 1/8 inch. Flange bolts shall conform to ANSI B 16.1.
- D. Flanged fittings shall meet all requirements of ANSI/AWWA C110/A21.10 and have Class 125 flanges. Fittings shall accommodate a working pressure up to 250 psi and be supplied with all accessories.
- E. All pipe and fittings shall be tar coated outside and shall receive standard cement lining with bituminous seal coat on the inside in accordance with ASA Specification A21.40 (AWWA-C104).
- F. Cement mortar lining and seal coating for pipe and fittings, where applicable shall be in accordance with ANSI/AWWA C104/A21.4. Bituminous outside coating shall be in accordance with ANSI/AWWA C151/A21.51 for pipe and ANSI/AWWA C110/A21.10 for fittings.
- G. All ductile fittings shall be rated at 250 psi water working pressure plus water hammer. Ductile iron fittings shall be ductile cast-iron grade 80-60-03 per ASTM Specification A339-55.
- H. Restrained joint pipe and fittings shall be a boltless system equal to "Field Lok" restraining gaskets or "TRFLEX Joint" as manufactured by U.S. Pipe & Foundry Company.
- I. No separate pay item has been established for fittings and no determination of the number of fittings required on the job has been made. The Contractor, during the bidding phase, shall

determine the number of fittings required on the job and include the cost of the fittings and installation in the Contract unit price.

2.02 POLYVINYL CHLORIDE (PVC) FORCE MAIN PIPE

- A. Polyvinyl chloride (PVC) pipe for force mains shall be Class 200 (SDR 21) PVC pressure rated pipe with integral bell joints with rubber O-ring seals.
- B. All PVC pipe shall conform to the latest revisions of ASTM D-1784 (PVC Compounds), ASTM D-2241 (PVC Plastic Pipe, SDR) and ASTM D-2672 (Bell -End PVC Pipe). PVC pipe shall have a minimum cell classification of 12454B or 12454C as defined in ASTM D-1784. Rubber gasketed joints shall conform to ASTM D-3139. The gaskets for the PVC pipe joint shall conform to ASTM F-477 and D-1869.
- C. Fittings shall be ductile iron and in accordance with Article 2.01 B of this section.
- D. All pipe and couplings shall bear identification markings that will remain legible during normal handling, storage and installation, which have been applied in a manner that will not reduce the strength of the pipe or coupling or otherwise damage them. Pipe and coupling markings shall include the nominal size and OD base, material code designation, dimension ratio number, ASTM Pressure Class, ASTM designation number for this standard, manufacturer's name or trademark, seal (mark) of the testing agency that verified the suitability of the pipe material for sanitary sewer service. Each marking shall be applied at intervals of not more than 5 feet for the pipe and shall be marked on each coupling.

3.0 EXECUTION

3.01 LAYING DEPTHS

In general, force mains shall be laid with a minimum cover of 30 inches, except as otherwise indicated on the Drawings.

3.02 RELATIONSHIP TO WATER LINE

Where a force main and water line cross one another, the force main shall be laid under the water line and encased with concrete. The crossing shall be installed such that one full joint of the force main is centered on the water line, and there is at least 12" clearance between the two pipes. Concrete shall be used to encase the sewage line such that at least 6" of coverage is maintained over the pipe, and the encasement extends to include the entire section of pipe and the joint at each end.

3.03 PIPE LAYING

- A. All pipe shall be laid with ends abutting and true to the lines and grades indicated on the Drawings. Pipe shall be fitted and matched so that when laid in the Work, it will provide a smooth and uniform invert. Supporting of pipe shall be as set out in Section 02-225 and in no case shall the supporting of pipe on blocks be permitted.
- B. Before each piece of pipe is lowered into the trench, it shall be thoroughly swabbed out to insure it being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. If any defective pipe or fittings shall be discovered after the pipe is laid, it shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe. Bevel can be made with hand or power tools.
- C. The interior of the pipe, as the Work progresses, shall be cleaned of dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted so as to exclude earth or other material and precautions taken to prevent floatation of pipe by runoff into trench.

D. Anchorage of Bends:

1. At all tees, plugs, caps and bends of 11-1/4 degrees and over, and at reducers or in fittings where changes in pipe diameter occur, movement shall be prevented by using a mechanical restraining gland equal to Megalug by Ebba Iron, Inc.
2. No extra pay shall be allowed for work on proper anchorage of pipe, fittings or other appurtenances. Such items shall be included in the price bid for the supported item.

3.04 JOINTING

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

3.05 TESTING OF FORCE MAINS

- A. The completed work shall comply with the provisions listed herein, or similar requirements which will insure equal or better results. Suitable test plugs, water pump or other equipment and apparatus, and all labor required to properly conduct the tests shall be furnished by the Contractor at no expense to the Owner.
- B. Force main piping shall be pressure tested to 250 percent of the normal system operating pressure or to 150 percent of the rated working pressure of the pipe, whichever is less. At no time shall the test pressure exceed 150 percent of the pipe's rated working pressure. A pipe section shall be accepted if the test pressure does not fall more than 5 percent during the 4-hour period.
- C. All piping shall be tested for leakage at a pressure no less than that specified for the pressure test. The leakage shall be less than an allowable amount determined by the following equation:

$$L = \frac{ND (P)^{1/2}}{7400}$$

Where

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

Notwithstanding the allowable leakage, any visible or detectable leakage shall be repaired

- D. Should the sections under test fail to meet the requirements, the Contractor shall do all work locating and repairing the leaks and retesting as the Engineer may require without additional compensation.
- E. If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

END OF SECTION 02-732

SECTION 02-930

SURFACE RESTORATION AND SEEDING

1.0 WORK INCLUDED

1.01 CLEAN-UP

Upon completion of the Project, the Contractor shall remove all debris and surplus construction materials resulting from his work. The Contractor shall grade the ground along each side of the pipe trenches and/or structures in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line, or as shown on the Drawings.

2.0 PRODUCTS

2.01 SEED

Grass seed shall be mixed and guaranteed by the supplier to consist of the following:

| | |
|--------------------|------------|
| Annual Ryegrass | 40 percent |
| Kentucky 31 Fescue | 60 percent |

2.02 TOPSOIL

Topsoil shall be material stripped and stored for reuse in the finished work. It shall not contain subsoil material and shall be clean and free of clay lumps, roots, stones or similar substances more than 2 inches in any dimension, debris, discarded fragments of building materials or weeds and weed seeds.

2.03 SOIL IMPROVEMENTS

- A. Commercial fertilizers shall have a guaranteed analysis of 10-10-10. Fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer that becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.
- B. Lime shall be ground limestone (Dolomite) containing not less than 85 percent of total carbonates, and shall be ground to such fineness that 50 percent will pass through a 100-mesh sieve, and 90 percent will pass through a 20-mesh sieve. Coarser material shall be acceptable provided that required rates of application are increased proportionally on the basis of quantities passing the 100-mesh sieve.

3.0 EXECUTION

3.01 SEEDING AND SODDING

- A. After installation of the Project, topsoil shall be spread evenly to a minimum 4-inch depth and lightly compacted. No topsoil shall be spread in a frozen or muddy condition. The Contractor as directed by the Engineer shall dispose of any stored topsoil remaining after work is in place.
- B. Soil improvement shall be made prior to seeding.
 - 1. Ground limestone shall be applied at the rate of 20 pounds per thousand square feet and shall be thoroughly mixed into the topsoil.
 - 2. Fertilizer shall be applied at a rate of 10 pounds per thousand square feet.
- C. Immediately before any seed is to be sown, the ground shall be scarified as necessary and shall be raked until the surface is smooth, friable and of a uniformly fine texture. Areas shall be seeded evenly with a mechanical spreader at a rate of 5 pounds per 1,000 square feet, lightly raked to incorporate seed into the soil, and watered with a fine spray.

- D. After seed has been distributed, the Contractor shall cover all seeded areas with wheat straw to a depth of 2-3 inches.
- E. Seeded areas shall be protected and maintained by watering, regular mowing and reseeding as may be necessary to produce a uniform stand of grass. Maintenance shall continue throughout the guarantee period until a dense, uniform turf is established.
- F. All paved streets, roads, sidewalks, curbs, fences, stonewalls, lawns, etc., disturbed during construction shall be restored, repaired, or replaced to as good a condition as existed prior to construction. All materials and workmanship shall conform to standard practices and specifications of the Owner and/or the Kentucky Department of Highways, whichever applies.
- G. The Contractor shall remove from the site all equipment, unused materials and other items at his expense. The construction site shall be left in a neat, orderly condition, clear of all unsightly items, before the Work is finally accepted.

END OF SECTION 02-930

SECTION 03-320

PRECAST STRUCTURAL CONCRETE

1.0 GENERAL

1.01 WORK INCLUDED

The work in this section shall include all formwork, shoring, bracing, anchorage, concrete reinforcement and accessories for precast concrete.

1.02 GENERAL REQUIREMENT

All concrete construction shall conform to all applicable requirements of ACI 301, ACI 318 and ACI 350 R, except as modified by the supplemental requirements specified herein.

2.0 PRODUCTS

2.01 Contractor shall supply precast concrete from Ross Construction, Utility Precast Products, Oldcastle Precast or approved equal..

2.02 CONCRETE MIX

Structural concrete shall be proportioned by Section 3.9 of ACI 301 to produce the following 28-day compressive strengths:

- A. Selection of Proportions for all precast concrete:
 - 1. 4,000 psi compressive for strength at 28 days.
 - 2. Maximum water/cement plus water reducing dispersing agent ratio = 0.50.
 - 4. Minimum cement content = 564 pounds (6.0 bags)/cubic yards concrete.
 - 5. Nominal maximum size coarse aggregate = No. 57 (1-inch maximum).
 - 6. Air content = 6 percent plus or minus 2 percent by volume.
 - 7. Slump = 2 inches to 3 inches in accordance with ASTM C-143.

2.03 REINFORCING STEEL

- A. All reinforcing steel shall conform to ASTM A-615, grade 60.

3.0 EXECUTION

3.01 FORMING

- A. All forming shall be with suitable wooden or metal forms to provide the specified shape and finished thickness.
- B. Precast concrete shall remain in the forms until it develops sufficient strength to safely withstand handling stresses.

3.02 PLACEMENT AND FINISHING

- A. Concrete shall be placed and compacted in the forms with vibrators to remove air pockets. Reinforcing steel and embedments shall be placed in the location shown on the drawings and secured in a way to avoid displacement during concrete placement.
- B. Precast concrete shall receive a float finish. Surfaces shall be smooth and uniform.

END OF SECTION 03-320

SECTION 11-100 GRINDER PUMP STATIONS

1.0 General

1.01 GENERAL DESCRIPTION: The **MANUFACTURER** shall furnish complete factory-built and tested grinder pump unit(s), each consisting of a grinder pump core suitably mounted on an integral stand of stainless steel, tank, electrical quick disconnect (NEMA 6P), pump removal harness, discharge assembly/shut-off valve, anti-siphon valve/check valve assembly, electrical alarm assembly and all necessary internal wiring and controls. For ease of serviceability, all pump motor/grinder units shall be of like type and horsepower throughout the system.

1.02 SUBMITTALS: After receipt of notice to proceed, the **MANUFACTURER** shall furnish a minimum of six sets of shop drawings detailing the equipment to be furnished including dimensional data and materials of construction. The **ENGINEER** shall promptly review this data, and return two copies as accepted, or with requested modifications. Upon receipt of accepted shop drawings, the **MANUFACTURER** shall proceed immediately with fabrication of the equipment.

1.03 MANUFACTURER: Grinder pump stations, complete with all appurtenances, form an integral system, and as such, shall be supplied by one grinder pump station manufacturer. The **CONTRACTOR** shall be responsible for the satisfactory operation of the entire system. The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps for specific use in low pressure sewage systems. The company shall submit detailed installation and user instructions for its product, submit evidence of an established service program including complete parts and service manuals, and be responsible for maintaining a continuing inventory of grinder pump replacement parts. The **MANUFACTURER** shall provide, upon request, a reference and contact list from ten of its largest contiguous grinder pump installations of the type of grinder pumps described within this specification.

The **MANUFACTURER** of the grinder pump station shall be Environment One Corporation (or Proposed Alternate).

Attention is directed to the fact that the drawings and overall system design are based on a particular piece of equipment from a particular manufacturer. These specifications are intended to provide guidelines for standard equipment of a recognized manufacturer who already meets all the requirements of this specification.

1.04 EXPERIENCE CLAUSE: The equipment furnished hereunder shall be the product of a company experienced in the design and manufacture of grinder pumps specifically designed for use in low pressure systems. All manufacturers proposing equipment for this project shall have at least 10 years of experience in the design and manufacture of units of identical size(s) and performance to the specified units. All manufacturers proposing equipment for this project must also have not less than 500 successful installations of low pressure sewer systems utilizing grinder pumps of like type to the grinder pumps specified herein. An installation is defined as a minimum of 25 pumps discharging into a common force main which forms a low pressure sewer system. The **CONTRACTOR** (supplier) proposing alternate equipment shall also submit, as part of the bid schedule, an installation list with contact person(s), phone number(s) and date(s) of at least 10 installations of the type of pump specified herein that have been in operation for at least 10 years.

In lieu of this experience clause, the **CONTRACTOR** (supplier) of alternate equipment will be required to submit a 5-year performance bond for 100 percent of the stipulated cost of the equipment as bid and as shown in the Bid Schedule. This performance bond will be used to guarantee the replacement of the equipment in the event that it fails within the bond period.

1.05 OPERATING CONDITIONS: The pumps shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG). The pump(s) must also be capable

of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

1.06 WARRANTY: The grinder pump **MANUFACTURER** shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 24 months after notice of **OWNER'S** acceptance, but no greater than 27 months after receipt of shipment. Any manufacturing defects found during the warranty period will be reported to the **MANUFACTURER** by the **OWNER** and will be corrected by the **MANUFACTURER** at no cost to the **OWNER**.

1.07 WARRANTY PERFORMANCE CERTIFICATION: As a bid certification requirement, each bidder shall provide with their bid schedule a Warranty Performance Certification statement executed by the most senior executive officer of the grinder pump **MANUFACTURER**, which certifies a minimum of a 24-month warranty. They must further detail any exclusions from the warranty or additional cost items required to maintain the equipment in warrantable condition, including all associated labor and shipping fees, and certify that the **MANUFACTURER** will bear **all** costs to correct any original equipment deficiency for the effective period of the warranty. All preventive maintenance type requirements shall be included in this form as exclusions. These requirements include, but are not limited to, unjamming of grinder mechanism, periodic motor maintenance, and periodic cleaning of liquid level controls. Should the **CONTRACTOR** (supplier) elect to submit a performance bond in lieu of the experience clause outlined above, this Warranty Performance Certification shall also be used as a criterion to evaluate the **CONTRACTOR'S** (supplier's) performance over the warranty period. A Warranty Performance Certification form is included with the bid schedule and must be completed and submitted as part of the bid package. Bids with incomplete forms or missing forms will be considered nonresponsive.

2.0 PRODUCT

2.01 PUMP: The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the **progressing cavity type** with a single mechanical seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier. All pump castings shall be cast iron, fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, excellent aging properties, and outstanding wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

2.02 GRINDER: The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.

This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:

1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.

2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.

The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of "foreign objects," such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

2.03 ELECTRIC MOTOR: As a maximum, the motor shall be a 1 HP, 1725 RPM, 240 Volt 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F installation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. This motor protector combination shall have been specifically investigated and listed by Underwriters Laboratories, Inc., for the application. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted.

2.04 MECHANICAL SEAL: The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

2.05 TANK: High Density Polyethylene Construction (HDPE). The tank shall be a wetwell design made of high density polyethylene of a grade selected for environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. Corrugations of the outside wall are to be of a minimum amplitude of 1-1/2" to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be a minimum .250 inch thick. All seams created during tank construction are to be thermally welded and factory tested for leak tightness. Tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to maximum external soil and hydrostatic pressure.

The tank shall be furnished with a factory installed PVC inlet flange to accept a 4.50" OD (4" DWV or SCH 40) inlet pipe.

The tank shall include a lockable cover assembly providing low profile mounting and watertight capability. The cover shall be high density polyethylene, green in color, with a load rating of 150 lbs per square foot. The cover assembly shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank. The accessway design and construction shall facilitate field adjustment of station height in increments of 3" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.

The power and control cable shall connect to the pump by means of the provided NEMA 6P Electrical Quick Disconnect (EQD) and shall enter the tank through a factory installed watertight strain relief connector. An electrical junction box shall not be permitted in the tank.

Tank heights shall be as shown on the contract drawings.

The station shall have all necessary penetrations factory sealed and tested. No field penetrations shall be acceptable.

Fiberglass Construction. The tank shall be a wetwell design consisting of a single wall, laminated fiberglass construction. The resin used shall be of a commercial grade suitable for the environment. The reinforcing material shall be a commercial grade of glass fiber capable of bonding with the selected resin. The inner surface shall have a smooth finish and be free of cracks and crazing. The exterior tank surface shall be relatively smooth with no exposed fiber or sharp projections present.

The tank wall and bottom shall be of sufficient thickness and construction to withstand the imposed loading due to saturated soil at the specified burial depth for each available tank height. All station components must function normally when exposed to the external soil and hydrostatic pressures developed at the specified burial depth. The tank bottom shall be reinforced with a fiberglass plate extending beyond the tank walls to support concrete anchoring, as required, to prevent flotation.

The Fiberglass tank shall have a stainless steel discharge bulkhead which terminates outside the tank wall with a 1-1/4" female pipe thread. The discharge bulkhead shall be factory installed and warranted by the manufacturer to be watertight. The tank shall be furnished with a field installed EPDM grommet to accept a 4.50" OD (4" DWV or SCH 40) inlet pipe.

The power and control cable shall connect to the pump by means of the provided NEMA 6P Electrical Quick Disconnect (EQD) and shall enter the tank through a field installed watertight strain relief connector supplied by the manufacturer. An electrical junction box shall not be permitted in the tank. Installation of the inlet grommet and cable strain relief shall require field penetration of the tank wall by the installing party. The tank shall also be vented to prevent sewage gases from accumulating inside the tank by means of a factory-provided, field-installed mushroom vent. The station cover shall be factory drilled to accept the mushroom vent. The tank and stainless steel discharge bulkhead shall be factory-tested to be watertight.

Consult the contract drawings for station tank sizes (diameter and height).

- 2.06 DISCHARGE HOSE AND DISCONNECT/VALVE:** All discharge fittings and piping shall be constructed of polypropylene, EPDM or PVC. The discharge hose assembly shall include a shut-off valve rated for 200 psi WOG and a quick disconnect feature to simplify installation and pump removal. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.
- 2.07 ELECTRICAL QUICK DISCONNECT:** The grinder pump core shall include a factory-installed NEMA 6P electrical quick disconnect (EQD) for all power and control functions. The EQD will be supplied with 32', 25' of useable, electrical supply cable (ESC) to connect to the alarm panel. The EQD shall require no tools for assembly, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. Junction boxes are not acceptable due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required.
- 2.08 CHECK VALVE:** The pump discharge shall be equipped with a factory installed, gravity operated, flapper-type integral check valve built into the discharge piping. The check valve will provide a full-ported passageway when open, and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly providing a maximum degree of freedom to assure seating even at a very low back-pressure. The valve body shall be an injection molded part made of an engineered thermoplastic resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves are unacceptable due to their limited sealing capacity in slurry applications.

- 2.09 ANTI-SIPHON VALVE:** The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.
- 2.10 CORE UNIT:** The grinder pump station shall have an easily removable core assembly containing pump, motor, grinder, all motor controls, check valve, anti-siphon valve, electrical quick disconnect and wiring. The watertight integrity of the core unit shall be established by a 100% factory test at a minimum of 5 PSIG.
- 2.11 CONTROLS:** All necessary motor starting controls shall be located in the cast iron enclosure of the core unit secured by stainless steel fasteners. Locating motor starting controls in a plastic enclosure is not acceptable. Wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. Level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. Level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. Level sensing housing must be a high-impact thermoplastic copolymer over-molded with a thermo plastic elastomer. The use of PVC for the level sensing housing is not acceptable.

Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and the pressure switch. Any connections are to be radial sealed with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.

All fasteners throughout the assembly shall be 300 Series stainless steel. High-level sensing will be accomplished in the manner detailed above by a separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump-on circuit. For increased reliability, pump ON/OFF and high-level alarm functions shall not be controlled by the same switch. Float switches of any kind, including float trees, will not be accepted due to the periodic need to maintain (rinsing, cleaning) such devices and their tendency to malfunction because of incorrect wiring, tangling, grease buildup, and mechanical cord fatigue. To assure reliable operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank or into tank-mounted junction boxes providing pressure switch equalization will not be permitted due to their susceptibility to condensation, kinking, pinching, and insect infestation. The grinder pump will be furnished with a 6 conductor 14 gauge, type SJOW cable, pre-wired and watertight to meet UL requirements with a **FACTORY INSTALLED** NEMA 6P EQD half attached to it.

- 2.12 STAINLESS STEEL CURB STOP/CHECK VALVE ASSEMBLY (UNI-LATERAL):** The curb stop shall be pressure-tight in both directions. The ball valve actuator shall include position stop features at the fully opened and closed positions. The curb stop/check valve assembly shall be designed to withstand a working pressure of 235 psi.

The stainless steel check valve shall be integral with the curb stop valve. The check valve will provide a full-ported 1-1/4" passageway and shall introduce minimal friction loss at maximum rated flow. The flapper hinge design shall provide a maximum degree of freedom and ensure seating at low back pressure.

Engineered Thermoplastic Fittings – All plastic fitting components are to be in compliance with applicable ASTM standards.

All pipe connections shall be made using compression fitting connections including a Buna-N O-ring for sealing to the outside diameter of the pipe. A split-collet locking device shall be integrated into all pipe connection fittings to securely restrain the pipe from hydraulic pressure and external loading caused by shifting and settling.

Curb Boxes – Curb boxes shall be constructed of ABS, conforming to ASTM-D 1788. Lid top casting shall be cast iron, conforming to ASTM A-48 Class 25, providing magnetic detectability, and be painted black. All components shall be inherently corrosion-resistant to ensure durability in the ground. Curb boxes shall provide height adjustment downward (shorter) from their nominal height.

High Density Polyethylene Pipe (Supplied by others) – Pipe shall be have a working pressure of 160 psi minimum and shall be classified SDR per ASTM D 3035.

Pipe Dimensions – The SDR (Standard Dimension Ratio) of the pipe supplied shall be as specified by the **SPECIFYING ENGINEER**. SDR 7, 9 and 11 fittings are available from the **MANUFACTURER**.

Factory Test – The stainless steel, combination curb stop/check valve component shall be 100 percent hydrostatically tested to 150 psi in the factory.

Construction Practices – Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking should be in accordance with the pipe manufacturer's recommendations. The pipe should be handled in such a manner that it is not damaged by being dragged over sharp objects or cut by chokers or lifting equipment.

Segments of pipe having cuts or gouges in excess of 10 percent of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using the butt fusion joining method. Sections of polyethylene pipe should be joined into continuous lengths on the job site above ground. The joining method shall be the butt-fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt-fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure.

Fused segments of pipe shall be handled so as to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable-type chokers should be avoided. Nylon slings are preferred. Spreader bars should be used when lifting long, fused sections. Care should be exercised to avoid cutting or gouging the pipe.

Installation – Assemble the compression fittings according to the fitting manufacturer's recommendations.

The trench and trench bottom should be constructed in accordance with ASTM D 2321. Embedment materials should be Class I, Class II or Class III materials as defined in ASTM D 2321. The use of Class IV and/or Class V materials for embedment is not recommended and should be allowed only with the approval of the **SPECIFYING ENGINEER**. Bedding of the pipe should be performed in accordance with ASTM D 2321. Compaction should be as specified in ASTM D 2321. Deviations from the specified compaction shall be approved by the **SPECIFYING ENGINEER**.

Haunching and initial backfill should be as specified in ASTM D 2321 using Class I, Class II or Class III materials. Materials used and compaction shall be as specified by the **SPECIFYING ENGINEER**. In

cases where a compaction of 85 percent Standard Proctor Density is not attainable, the **SPECIFYING ENGINEER** may wish to increase the SDR of the pipe to provide adequate stiffness. ASTM D 2321 sections titled "Minimum Cover for Load Application," "Use of Compaction Equipment" and "Removal of Trench Protection" should apply unless directed otherwise by the **SPECIFYING ENGINEER**.

- 2.13 ALARM PANEL:** Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 10.5" W x 14" H x 7" D, or 12.5" W x 16" H x 7.5" D if certain options are included.

The alarm panel shall contain one 15-amp, double-pole circuit breaker for the pump core's power circuit and one 15-amp single-pole circuit breaker for the alarm circuit. The panel shall contain a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.

The alarm panel shall include the following features: external audible and visual alarm; push-to-run switch; push-to-silence switch; redundant pump start; and high level alarm capability. The alarm sequence is to be as follows when the pump and alarm breakers are on:

1. When liquid level in the sewage wet-well rises above the alarm level, the contacts on the alarm pressure switch activate, audible and visual alarms are activated, and the redundant pump starting system is energized.
2. The audible alarm may be silenced by means of the externally mounted, push-to-silence button.
3. Visual alarm remains illuminated until the sewage level in the wet-well drops below the "off" setting of the alarm pressure switch.

The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).

The entire alarm panel, as manufactured and including any of the following options shall be listed by Underwriters Laboratories, Inc.

- 2.14 SERVICEABILITY:** The grinder pump core, including level sensor assembly, shall have two lifting hooks complete with lift-out harness connected to its top housing to facilitate easy core removal when necessary. The level sensor assembly must be easily removed from the pump assembly for service or replacement. All mechanical and electrical connections must provide easy disconnect capability for core unit removal and installation. Each EQD half must include a water-tight cover to protect the internal electrical pins while the EQD is unplugged. A pump push-to-run feature will be provided for field trouble shooting. The push-to-run feature must operate the pump even if the level sensor assembly has been removed from the pump assembly. All motor control components shall be mounted on a readily replaceable bracket for ease of field service.

- 2.15 OSHA CONFINED SPACE:** All maintenance tasks for the grinder pump station must be possible without entry into the grinder pump station (as per OSHA 1910.146 Permit-required confined spaces). *"Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."*

2.16 SAFETY: The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc., to be safe and appropriate for the intended use. UL listing of components of the station, or third-party testing to UL standard are not acceptable.

The grinder pump shall meet accepted standards for plumbing equipment for use in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications. As evidence of compliance with this requirement, the grinder pump shall bear the seal of NSF International. Third-party testing to NSF standard is not acceptable.

3.0 EXECUTION

3.01 FACTORY TEST: Each grinder pump shall be submerged and operated for 1.5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge assembly and each unit's dedicated level controls and motor controls. All factory tests shall incorporate each of the above listed items. Actual appurtenances and controls which will be installed in the field shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps is not acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two different points on its curve. Additional validation tests include: integral level control performance, continuity to ground and acoustic tests of the rotating components.

The **ENGINEER** reserves the right to inspect such testing procedures with representatives of the **OWNER**, at the **GRINDER PUMP MANUFACTURER'S** facility.

All HDPE basins shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means (grommets, gaskets etc.).

3.02 CERTIFIED SERVICE PROGRAM: The grinder pump **MANUFACTURER** shall provide a program implemented by the **MANUFACTURER'S** personnel as described in this specification to certify the service company as an authorized serviced center. As evidence of this, the **MANUFACTURER** shall provide, when requested, sufficient evidence that they have maintained their own service department for a minimum of 30 years and currently employ a minimum of five employees specifically in the service department.

As part of this program, the **MANUFACTURER** shall evaluate the service technicians as well as the service organization annually. The service company will be authorized by the **MANUFACTURER** to make independent warranty judgments. The areas covered by the program shall include, as a minimum:

1. Pump Population Information — The service company will maintain a detailed database for the grinder pumps in the territory that tracks serial numbers by address.
2. Inventory Management — The service company must maintain an appropriate level of inventory (pumps, tanks, panels, service parts, etc.) including regular inventory review and proper inventory labeling. Service technicians will also maintain appropriate parts inventory and spare core(s) on service vehicles.
3. Service Personnel Certification — Service technicians will maintain their level-specific certification annually. The certifications are given in field troubleshooting, repair, and training.

4. Service Documentation and Records — Start up sheets, service call records, and customer feedback will be recorded by the service company.
5. Shop Organization — The service company will keep its service shop organized and pumps will be tagged with site information at all times. The shop will have all required equipment, a test tank, and cleaning tools necessary to service pumps properly.

3.03 DELIVERY: All grinder pump core units, including level controls, will be delivered to the job site 100 percent completely assembled, including testing, ready for installation. Grinder pump cores will be shipped separately from the tanks. Installing the cores and discharge piping/hose into the tanks is the only assembly step required and allowed due to the workmanship issues associated with other on-site assembly. Grinder pump cores must be boxed for ease of handling.

3.04 INSTALLATION: Earth excavation and backfill are specified under **SITE WORK**, but are also to be done as a part of the work under this section, including any necessary sheeting and bracing.

The **CONTRACTOR** shall be responsible for handling ground water to provide a firm, dry subgrade for the structure, and shall guard against flotation or other damage resulting from general water or flooding.

The grinder pump stations shall not be set into the excavation until the installation procedures and excavation have been approved by the **ENGINEER**.

Remove packing material. User instructions **MUST** be given to the **OWNER**. Hardware supplied with the unit, if required, will be used at installation. The basin will be supplied with a standard 4" inlet grommet (4.50" OD) for connecting the incoming sewer line. Appropriate inlet piping must be used. The basin may not be dropped, rolled or laid on its side for any reason.

Installation shall be accomplished so that 1 inch to 4 inches of accessway, below the bottom of the lid, extends above the finished grade line. The finished grade shall slope away from the unit. The diameter of the excavated hole must be large enough to allow for the concrete anchor.

A 6" inch (minimum) layer of naturally rounded aggregate, clean and free flowing, with particle size of not less than 1/8" or more than 3/4" shall be used as bedding material under each unit.

A concrete anti-flotation collar, as detailed on the drawings, and sized according to the manufacturer's instructions, shall be required and shall be pre-cast to the grinder pump or poured in place. Each grinder pump station with its pre-cast anti-flotation collar shall have a minimum of three lifting eyes for loading and unloading purposes.

If the concrete is poured in place, the unit shall be leveled, and filled with water, to the bottom of the inlet, to help prevent the unit from shifting while the concrete is being poured. The concrete must be manually vibrated to ensure there are no voids. If it is necessary to pour the concrete to a level higher than the inlet piping, an 8" sleeve is required over the inlet prior to the concrete being poured.

The **CONTRACTOR** will provide and install a 4-foot piece of 4-inch SCH 40 PVC pipe with water tight cap, to stub-out the inlet for the property owners' installation contractor, as depicted on the contract drawings.

E/One requires that an E/One Uni-Lateral assembly (E/One part number NB0184PXX or NC0193GXX) or E/One Redundant Check Valve (E/One part number PC0051GXX) be installed in the pipe lateral outside the home between the pump discharge and the street main on all installations.

The electrical enclosure shall be furnished, installed and wired to the grinder pump station by the **CONTRACTOR**. An alarm device is required on every installation, there shall be **NO EXCEPTIONS**. It will be the responsibility of the **CONTRACTOR** and the **ENGINEER** to coordinate with the individual property owner(s) to determine the optimum location for the alarm panel.

The **CONTRACTOR** shall mount the alarm device in a conspicuous location, as per national and local codes. The alarm panel will be connected to the grinder pump station by a length of 6-conductor type TC cable as shown on the contract drawings. The power and alarm circuits must be on separate power circuits. The grinder pump stations will be provided with 32 feet, 25 feet of useable, electrical supply cable to connect the station to the alarm panel. This cable shall be supplied with a **FACTORY INSTALLED** EQD half to connect to the mating EQD half on the core.

3.05 BACKFILL REQUIREMENTS: Proper backfill is essential to the long-term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil conditions. The most highly recommended method of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321. Class 1A and Class 1B are recommended where frost heave is a concern; Class 1B is a better choice when the native soil is sand or if a high, fluctuating water table is expected. Class 1, angular crushed stone, offers an added benefit in that it doesn't need to be compacted.

Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density. If the native soil condition consists of clean compactible soil, with less than 12% fines, free of ice, rocks, roots and organic material, it may be an acceptable backfill. Soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density of between 85% and 90%. Heavy, non-compactible clays and silts are not suitable backfill for this or any underground structure such as inlet or discharge lines.

If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material is obtained before specifying backfill.

Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped more than four feet from the discharge to the bottom of the hole to avoid separation of the constituent materials.

Backfill of clean, native earth, free of rocks, roots, and foreign objects, shall be thoroughly compacted in lifts not exceeding 12" to a final Proctor Density of not less than 85%. Improper backfilling may result in damaged accessways. The grinder pump station shall be installed at a minimum depth from grade to the top of the 1 1/4" discharge line, to assure maximum frost protection. The finish grade line shall be 1" to 4" below the bottom of the lid, and final grade shall slope away from the grinder pump station.

All restoration will be the responsibility of the **CONTRACTOR**. Per unit costs for this item shall be included in the **CONTRACTOR'S** bid price for the individual grinder pump station. The properties shall be restored to their original condition in all respects, including, but not limited to, curb and sidewalk replacement, landscaping, loaming and seeding, and restoration of the traveled ways, as directed by the **ENGINEER**.

3.06 START-UP AND FIELD TESTING: The **MANUFACTURER** shall provide the services of qualified factory trained technician(s) who shall inspect the placement and wiring of each station, perform field tests as specified herein, and instruct the **OWNER'S** personnel in the operation and maintenance of the equipment before the stations are accepted by the **OWNER**.

All equipment and materials necessary to perform testing shall be the responsibility of the **INSTALLING CONTRACTOR**. This includes, as a minimum, a portable generator and power cable (if temporary power is required), water in each basin (filled to a depth sufficient to verify the high level alarm is operating), and opening of all valves in the system. These steps shall be completed prior to the qualified factory trained technician(s) arrival on site.

The services of a trained, factory-authorized technician shall be provided at a rate of 40 hours for every 100 grinder pump stations supplied.

Upon completion of the installation, the authorized factory technician(s) will perform the following test on each station:

1. Make certain the discharge shut-off valve in the station is fully open.
2. Turn ON the alarm power circuit and verify the alarm is functioning properly.
3. Turn ON the pump power circuit. Initiate the pump operation to verify automatic "on/off" controls are operative. The pump should immediately turn ON.
4. Consult the Manufacturer's Service Manual for detailed start-up procedures.

Upon completion of the start-up and testing, the **MANUFACTURER** shall submit to the **ENGINEER** the start-up authorization form describing the results of the tests performed for each grinder pump station. Final acceptance of the system will not occur until authorization forms have been received for each pump station installed and any installation deficiencies corrected.

4.0 OPERATION AND MAINTENANCE

4.01 SPARE CORE: The **MANUFACTURER** will supply one spare grinder pump core for every 50 grinder pump stations installed or portion thereof, complete with all operational controls, level sensors, check valve, anti-siphon valve, pump/motor unit, and grinder.

4.02 MANUALS: The **MANUFACTURER** shall supply four copies of Operation and Maintenance Manuals to the **OWNER**, and one copy of the same to the **ENGINEER**.

END OF SECTION

KYTC #:02-8506.00

Muhlenberg County, KY

N O T I C E

United States Army Corps of Engineers (Nationwide Permit)
&
Kentucky Division of Water (General Water Quality Certification)

Project Description

Widen US-62 from KY-277 intersection to
KY-1031 intersection
Muhlenberg County, KY
KYTC Item #: 02-8506.00

The Section 404 & 401 activities for this project have been permitted under the authority of the United States Army Nationwide Permit No. 14 “Linear Transportation Projects” & KY Division of Water General Water Quality Certification. In order for these authorizations to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Permit & General WQC in a conspicuous location at the project site for the duration of construction and comply with the general conditions as required.

To more readily expedite construction, the contractor may elect to alter the design or perform the work in a manner different from what was originally proposed and specified. Prior to commencing such alternative work, the contractor shall obtain **written** permission from the Division of Construction and the Corps of Engineers. A copy of any request to the Corps of Engineers to alter this proposal and subsequent responses shall be forwarded to the Division of Environmental Analysis, DA Permit Coordinator, for office records and for informational purposes.

KYTC #:02-8506.00

Muhlenburg County, KY

Summary of Impacts

- 1) **Station 1027 + 90** – Existing channel will be reconstructed for enhanced drainage. Total impact length is 275 linear feet and 0.02 acres. The watershed is approximately 0.1 acres.
- 2) **Station 1060 + 50** – Existing channel will be reconstructed for enhanced drainage. Total impact length is 250 linear feet and 0.02 acres. The watershed is approximately 24 acres.

Note 1: All impacts are below notification requirements for regulatory agencies, but all work is subject to the Nationwide 14 permit conditions, Nationwide General Conditions and the Kentucky Division of Water Quality Certification General Conditions.

Note 2: Some of the proposed work may involve maintenance (armoring, lining, piping, etc.) in areas that were previously armored, lined, or piped. Except where “Waters of the U.S.” flows through these existing structures or ditches, these activities are exempt per RGL 07-02.

2017 Nationwide Permit

14. Linear Transportation Projects. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to

ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas: Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas: Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds: No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP's 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material: No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes: No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments: If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows: To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains: The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWP's, or who is currently relying on an existing or prior permit authorization under one or more NWP's, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements: No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody,

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. **Migratory Birds and Bald and Golden Eagles.** The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. **Historic Properties.** (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot

begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NHPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NHPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those

waters. The district engineer may authorize activities under these NHPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(c)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on

what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a

State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer.

The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

- (a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
- (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(f)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
- (c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

- (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWP's 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee is right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed activity;
- (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
- (4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other

waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans):

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction

notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

**2017 Nationwide Permits Regional and Permit-Specific Conditions
 COMMONWEALTH OF KENTUCKY**

These regional conditions are in addition to, but do not supersede, the requirements in the Federal Register (Volume 82, No. 4 of January 6, 2017, pp 1860).

Notifications for all Nationwide Permits (NWP) shall be in accordance with General Condition No. 32.

1. For activities that would impact Outstanding State or National Resource Waters (OSNRWs), Exceptional Waters (EWs), Coldwater Aquatic Habitat Waters (CAHs) under the Endangered Species Act for the NWP listed below, a Pre-Construction Notification (PCN) will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWP (Section 404 activities), for impacts to these waters.

- NWP 3 (Maintenance)
- NWP 4 (Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities)
- NWP 5 (Scientific Measurement Devices)
- NWP 6 (Survey Activities)
- NWP 7 (Outfall Structures and Associated Intake Structures)
- NWP 12 (Utility Line Activities)
- NWP 13 (Bank Stabilization)
- NWP 14 (Linear Transportation Projects)
- NWP 15 (U.S. Coast Guard Approved Bridges)
- NWP 16 (Return Water from Upland Contained Disposal Areas)
- NWP 17 (Hydropower Projects)
- NWP 18 (Minor Discharges)
- NWP 19 (Minor Dredging)
- NWP 20 (Response Operations for Oil or Hazardous Substances)
- NWP 21 (Surface Coal Mining Activities)
- NWP 22 (Removal of Vessels)
- NWP 23 (Approved Categorical Exclusions)
- NWP 25 (Structural Discharges)
- NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)
- NWP 29 (Residential Developments)
- NWP 30 (Moist Soil Management for Wildlife)
- NWP 31 (Maintenance of Existing Flood Control Facilities)
- NWP 32 (Completed Enforcement Actions)
- NWP 33 (Temporary Construction, Access, and Dewatering)
- NWP 34 (Cranberry Production Activities)
- NWP 36 (Boat Ramps)
- NWP 37 (Emergency Watershed Protection and Rehabilitation)
- NWP 38 (Cleanup of Hazardous and Toxic Waste)
- NWP 39 (Commercial and Institutional Developments)
- NWP 40 (Agricultural Activities)

- NWP 41 (Reshaping Existing Drainage Ditches)
- NWP 42 (Recreational Facilities)
- NWP 43 (Stormwater Management Facilities)
- NWP 44 (Mining Activities)
- NWP 45 (Repair of Uplands Damaged by Discrete Events)
- NWP 46 (Discharges in Ditches)
- NWP 48 (Commercial Shellfish Aquaculture Activities)
- NWP 49 (Coal Remining Activities)
- NWP 50 (Underground Coal Mining Activities)
- NWP 51 (Land-Based Renewable Energy Generation Facilities)
- NWP 52 (Water-Based Renewable Energy Generation Pilot Projects)
- NWP 53 (Removal of Low-Head Dams)
- NWP 54 (Living Shorelines)

2. In addition to the notification and agency coordination requirements in the NWP, for impacts greater than 0.25 acres in all "waters of the U.S." for the NWP listed below, a PCN will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWP:
 - NWP 3 (Maintenance)
 - NWP 7 (Outfall Structures and Associated Intake Structures)
 - NWP 12 (Utility Line Activities)
 - NWP 14 (Linear Transportation Projects)
 - NWP 29 (Residential Developments)
 - NWP 39 (Commercial and Institutional Developments)
 - NWP 40 (Agricultural Activities)
 - NWP 41 (Reshaping Existing Drainage Ditches)
 - NWP 42 (Recreational Facilities)
 - NWP 43 (Stormwater Management Facilities)
 - NWP 44 (Mining Activities)
 - NWP 51 (Land-Based Renewable Energy Generation Facilities)
 - NWP 52 (Water-Based Renewable Energy Generation Pilot Projects)
 - NWP 53 (Removal of Low-Head Dams)

3. For activities in all "waters of the U.S." for the NWP listed below, a PCN will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWP:
 - NWP 21 (Surface Coal Mining Activities)
 - NWP 27 (Aquatic Habitat Restoration, Establishment & Enhancement Activities)
 - NWP 49 (Coal Remining Activities)
 - NWP 50 (Underground Coal Mining Activities)

4. Nationwide Permit No. 14 – Linear Transportation Projects.
 - (a) New road alignments or realignments are limited to a permanent loss of 500 linear feet of intermittent or perennial stream length at each crossing. Road crossings with permanent losses greater than 500 linear feet of intermittent or perennial stream associated with new

alignments or realignments will be evaluated as an individual permit (i.e., a Letter of Permission or as a Standard Individual Permit).

(b) In addition to the notification requirements contained in NWP 14, the permittee must submit a PCN to the district engineer prior to commencing the activity for the permanent loss of greater than 300 feet of ephemeral, intermittent and perennial stream of all "waters of the U.S." (See General Condition 32 and the definition of "loss of waters of the United States" in the Nationwide Permits for further information.)

5. Notification in accordance with General Condition 32 is required to the Corps for all activities which are subject to jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
6. All applications are required as both a paper copy and in an electronic media format, including electronic mail or compact disc.
7. For all activities, the applicant shall review the U.S. Fish and Wildlife Service's IPaC website: <http://ecos.fws.gov/ipac> to determine if the activity might affect threatened and/or endangered species or designated critical habitat. If federally-listed species or designated critical habitat are identified, a PCN in accordance with General Condition 18 and 32 would be triggered and the official species list generated from the IPaC website must be submitted with the PCN.

Further information:

Outstanding State or National Resource Water (OSNRWs), Exceptional Waters (EWS), and Coldwater Aquatic Habitat Waters (CAHs) are waters designated by the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet. The list can be found at the following link: <http://epcapp.ky.gov/spwaters/>

Information on Pre-Construction Notification (PCN) can be found at NWP General Condition No. 32 in the Federal Register (Volume 81, No. 105 of June 1, 2017, pp 35211).



MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

**ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

R. BRUCE SCOTT
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

**General Certification--Nationwide Permit # 14
Linear Transportation Projects**

This General Certification is issued March 19, 2017, in conformity with the requirements of Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C. §1341), as well as Kentucky Statute KRS 224.16-050.

For this and all nationwide permits, the definition of surface water is as per 401 KAR 10:001 Chapter 10, Section 1(80): Surface Waters means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the commonwealth.

Agricultural operations, as defined by KRS 224.71-100(1) conducting activities pursuant to KRS 224.71-100 (3), (4), (5), (6), or 10 are deemed to have certification if they are implementing an Agriculture Water Quality Plan pursuant to KRS 224.71-145.

For all other operations, the Commonwealth of Kentucky hereby certifies under Section 401 of the Clean Water Act (CWA) that it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 304, 306 and 307 of the CWA, will not be violated for the activity covered under NATIONWIDE PERMIT 14, namely Linear Transportation Projects, provided that the following conditions are met:

1. The activity will not occur within surface waters of the Commonwealth identified by the Kentucky Division of Water as Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters.
2. The activity will not occur within surface waters of the Commonwealth identified as perpetually-protected (e.g. deed restriction, conservation easement) mitigation sites.
3. The activity will impact less than 1/2 acre of wetland/marsh.

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 2

4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth. Stream realignment greater than 100 feet and in-stream stormwater detention/retention basins are not covered under this general water quality certification.
5. For complete linear transportation projects, all impacts shall not exceed a cumulative length of 500 linear feet within each Hydrologic Unit Code (HUC) 14.
6. Any crossings must be constructed in a manner that does not impede natural water flow.
7. Stream impacts covered under this General Water Quality Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KWQP).
8. The Kentucky Division of Water may require submission of a formal application for an individual certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
9. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
10. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:
 - Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
 - Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur (401 KAR 10:031 Section 2 and KRS 224.70-100).
 - Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to,

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 3

upstream, or downstream of the structures. All sediment and erosion control devices shall be removed and the natural grade restored within the completion timeline of the activities.

- Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
- Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access.
- To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
- Heavy equipment, e.g. bulldozers, backhoes, draglines, etc., if required for this project, should not be used or operated within the stream channel. In those instances in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation.
- Any fill shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement.
- If there are water supply intakes located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when such work will be done.
- Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the KDOW shall be notified immediately by calling (800) 928-2380.

Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

GENERAL CONDITIONS FOR WATER QUALITY CERTIFICATION

1. The Kentucky Division of Water may require submission of a formal application for an Individual Certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
2. Nationwide permits issued by the U.S. Army Corps of Engineers for projects in Outstanding State Resource Waters, Cold Water Aquatic Habitats, and Exceptional Waters as defined by 401 KAR 10:026 shall require individual water quality certifications.
3. Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
4. Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur.
5. Sediment and erosion control measures (e.g., check-dams, silt fencing, or hay bales) shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, placement shall not be conducted in such a manner that may cause instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control measures shall be removed and the natural grade restored prior to withdrawal from the site.
6. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
7. To the maximum extent practicable, all in-stream work under this certification shall be performed during low flow.
8. Heavy equipment (e.g. bulldozers, backhoes, draglines, etc.), if required for this project, should not be used or operated within the stream channel. In those instances where such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize re-suspension of sediments and disturbance to the channel, banks, or riparian vegetation.
9. If there are water supply intakes located downstream that may be affected by increased turbidity, the permittee shall notify the operator when work will be performed.
10. Removal of existing riparian vegetation should be restricted to the minimum necessary for project construction.

11. Should stream pollution, wetland impairment, and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling 800/564-2380.

SPECIAL NOTE

Filing of eNOI for KPDES Construction Stormwater Permit

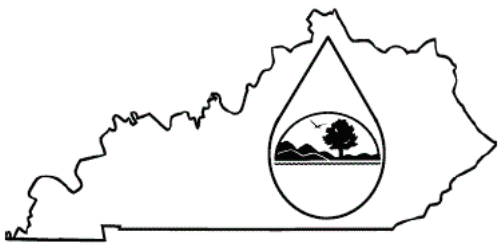
County: Muhlenberg
Item No.: 2-8506.00

Route: US 62
KDOW Submittal ID:
13ac5076-68bd-4d2d-87b6-
a3c858688467

Project Description: Widen US 62 – from Wal-mart (MP 16.471) to US 431 (MP 17.930) in Muhlenberg County

A Notice of Intent for obtaining coverage under the Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Stormwater Discharges Associated with Construction Activities (KYR10) has been drafted, copy of which is attached. Upon award, the Contractor will be identified in Section III of the form as the “Building Contractor” and it will be submitted for approval to the Kentucky Division of Water. The Contractor shall be responsible for advancing the work in a manner that is compliant with all applicable and appropriate KYTC specifications for sediment and erosion control as well as meeting the requirements of the KYR10 permit and the KDOW.

If there are any questions regarding this note, please contact Danny Peake, Director, Division of Environmental Analysis, TCOB, 200 Mero Street, Frankfort, KY 40622, Phone: (502) 564-7250.

| | |
|---|---|
|  | <h2 style="margin: 0;">KENTUCKY POLLUTION DISCHARGE</h2> <h3 style="margin: 0;">ELIMINATION SYSTEM (KPDES)</h3> <p style="margin: 0;">Notice of Intent (NOI) for coverage of Storm Water Discharge Associated with Construction Activities Under the KPDES Storm Water General Permit KYR100000</p> <p style="margin: 0;">Click here for Instructions (Controls/KPDES_FormKYR10_Instructions.htm)</p> <p style="margin: 0;">Click here to obtain information and a copy of the KPDES General Permit. (http://dep.ky.gov/formslibrary/Documents/KYR10PermitPage.pdf)</p> <p style="margin: 0;">(*) indicates a required field; (✓) indicates a field may be required based on user input or is an optionally required field</p> |
|---|---|

| | | |
|--|--|---|
| Reason for Submittal:(*) <input type="text" value="Application for New Permit Coverage"/> | Agency Interest ID: <input type="text" value="Agency Interest ID"/> | Permit Number:(✓) <input type="text" value="KPDES Permit Number"/> |
|--|--|---|

If change to existing permit coverage is requested, describe the changes for which modification of coverage is being sought:(✓)

ELIGIBILITY:
 Stormwater discharges associated with construction activities disturbing individually one (1) acre or more, including, in the case of a common plan of development, contiguous construction activities that cumulatively equal one (1) acre or more of disturbance.

EXCLUSIONS:
 The following are excluded from coverage under this general permit:
 1) Are conducted at or on properties that have obtained an individual KPDES permit for the discharge of other wastewaters which requires the development and implementation of a Best Management Practices (BMP) plan;
 2) Any operation that the DOW determines an individual permit would better address the discharges from that operation;
 3) Any project that discharges to an Impaired Water listed in the most recent Integrated Report, §305(b) as impaired for sediment and for which an approved TMDL has been developed.

SECTION I -- FACILITY OPERATOR INFORMATION (PERMITTEE)

| | | | |
|---|---|---|---|
| Company Name:(✓) <input type="text" value="Kentucky Transportation Cabinet - District 2"/> | First Name:(✓) <input type="text" value="Deneatra"/> | M.I.: <input type="text" value="MI"/> | Last Name:(✓) <input type="text" value="Henderson"/> |
| Mailing Address:(*) <input type="text" value="1840 N. Main St."/> | City:(*) <input type="text" value="Madisonville"/> | State:(*) <input type="text" value="Kentucky"/> | Zip:(*) <input type="text" value="42431"/> |
| eMail Address:(*) <input type="text" value="Deneatra.Henderson@ky.gov"/> | Business Phone:(*) <input type="text" value="270 824 7080"/> | Alternate Phone: <input type="text" value="270 791 4396"/> | |

SECTION II -- GENERAL SITE LOCATION INFORMATION

| | | | |
|---|---|---|--|
| Project Name:(*) <input type="text" value="Widen US 62 from Walmart to US 431 - MP 16.471 to MP 17.93"/> | Status of Owner/Operator(*) <input type="text" value="State Government"/> | SIC Code(*) <input type="text" value="1611 Highway and Street Const"/> | |
| Company Name:(✓) <input type="text" value="Kentucky Transportation Cabinet - District 2"/> | First Name:(✓) <input type="text" value="Deneatra"/> | M.I.: <input type="text" value="MI"/> | Last Name:(✓) <input type="text" value="Madisonville"/> |
| Site Physical Address:(*) <input type="text" value="US 62 - Central City, KY MP 16.471 to MP 17.93"/> | | | |
| City:(*) <input type="text" value="Central City"/> | State:(*) <input type="text" value="Kentucky"/> | Zip:(*) <input type="text" value="42330"/> | |
| County:(*) <input type="text" value="Muhlenberg"/> | Latitude(decimal degrees)(*)DMS to DD Converter <small>(https://www.fcc.gov/media/radio/dms-decimal)</small> <input type="text" value="37.288889"/> | Longitude(decimal degrees)(*) <input type="text" value="-87.119444"/> | |

SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION

Project Description:(*)

a. For single projects provide the following information

| | |
|--|--|
| Total Number of Acres in Project:(✓) <input type="text" value="32.64"/> | Total Number of Acres Disturbed:(✓) <input type="text" value="28.9"/> |
| Anticipated Start Date:(✓) <input type="text"/> | Anticipated Completion Date:(✓) <input type="text" value="10/01/2021"/> |

b. For common plans of development provide the following information

| | |
|--|--|
| Total Number of Acres in Project:(✓) <input type="text" value="# Acre(s)"/> | Total Number of Acres Disturbed:(✓) <input type="text" value="# Acre(s)"/> |
| Number of individual lots in development, if applicable:(✓) <input type="text" value="# lot(s)"/> | Number of lots in development:(✓) <input type="text" value="# lot(s)"/> |
| Total acreage of lots intended to be developed:(✓) <input type="text" value="Project Acres"/> | Number of acres intended to be disturbed at any one time:(✓) <input type="text" value="Disturbed Acres"/> |
| Anticipated Start Date:(✓) <input type="text"/> | Anticipated Completion Date:(✓) <input type="text"/> |

List Building Contractor(s) at the time of Application:(*)

| Company Name |
|------------------------|
| + <input type="text"/> |

SECTION IV -- IF THE PERMITTED SITE DISCHARGES TO A WATER BODY THE FOLLOWING INFORMATION IS REQUIRED ?

Discharge Point(s):

| | Unnamed Tributary? | Latitude | Longitude | Receiving Water Name | |
|----|--------------------|-----------|------------|----------------------|--------|
| 1 | Yes | 37.276669 | -87.139835 | Little Cypress Creek | Delete |
| 2 | Yes | 37.276950 | -87.140294 | Little Cypress Creek | Delete |
| 3 | Yes | 37.277277 | -87.139242 | Little Cypress Creek | Delete |
| 4 | Yes | 37.277492 | -87.139572 | Little Cypress Creek | Delete |
| 5 | Yes | 37.277501 | -87.139004 | Little Cypress Creek | Delete |
| 6 | Yes | 37.278316 | -87.138818 | Little Cypress Creek | Delete |
| 7 | Yes | 37.278453 | -87.138031 | Little Cypress Creek | Delete |
| 8 | Yes | 37.279218 | -87.137000 | Little Cypress Creek | Delete |
| 9 | Yes | 37.279400 | -87.137200 | Little Cypress Creek | Delete |
| 10 | Yes | 37.279532 | -87.136817 | Little Cypress Creek | Delete |

SECTION V -- IF THE PERMITTED SITE DISCHARGES TO A MS4 THE FOLLOWING INFORMATION IS REQUIRED ?

| Name of MS4: <input type="text"/> | | | | | |
|---|--|----------|-----------|------------------------|----------------------|
| Date of application/notification to the MS4 for construction site permit coverage: <input type="text" value="Date"/> | Discharge Point(s):(*) <table border="1"> <thead> <tr> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>+ <input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table> | Latitude | Longitude | + <input type="text"/> | <input type="text"/> |
| Latitude | Longitude | | | | |
| + <input type="text"/> | <input type="text"/> | | | | |

SECTION VI -- WILL THE PROJECT REQUIRE CONSTRUCTION ACTIVITIES IN A WATER BODY OR THE RIPARIAN ZONE?

| | |
|---|---|
| Will the project require construction activities in a water body or the riparian zone?: (*) | <input type="text" value="Yes"/> |
| If Yes, describe scope of activity: (✓) | <input type="text" value="Pier Construction in the floodplain for widening of the bridge"/> |
| Is a Clean Water Act 404 permit required?:(*) | <input type="text" value="Yes"/> |

| | |
|--|-----|
| Is a Clean Water Act 401 Water Quality Certification required?:(*) | Yes |
|--|-----|

| | | | |
|---|----------------------------------|---------------------------|-------------------------------|
| SECTION VII -- NOI PREPARER INFORMATION | | | |
| First Name:(*) Jean | M.I.: MI | Last Name:(*) Jones | Company Name:(*) KYTC D-02 |
| Mailing Address:(*) 1840 N. Main St. | City:(*) Madisonville | State:(*) Kentucky | Zip:(*) 42431 |
| eMail Address:(*) jeanr.jones@ky.gov | Business Phone:(*) 2708247080 | Alternate Phone: Phone | |

| | |
|-----------------------------|--|
| SECTION VIII -- ATTACHMENTS | |
| Facility Location Map:(*) | <input type="button" value="Upload file"/> |
| Supplemental Information: | <input type="button" value="Upload file"/> |

| | | | |
|--|----------------------------------|--------------------------------------|----------------------------|
| SECTION IX -- CERTIFICATION | | | |
| I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. | | | |
| Signature:(*) Jean Jones | | Title:(*) Chief District Engineer | |
| First Name:(*) Jean | M.I.: MI | Last Name:(*) Jones | |
| eMail Address:(*) Deneatra.Henderson@ky.gov | Business Phone:(*) 2708247080 | Alternate Phone: 2707914396 | Signature Date:(*) Date |

| | |
|--|---|
| <input type="button" value="Click to Save Values for Future Retrieval"/> | <input type="button" value="Click to Submit to EEC"/> |
|--|---|

KyTC BMP Plan for Project CID ## - #####



Kentucky Transportation Cabinet

Highway District 2 (1)

And

_____ **(2), Construction**

**Kentucky Pollutant Discharge Elimination System
Permit KYR10**

Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

**Widen US 62 (Everly Brothers Blvd.) from Wal-
Mart (MP 16.471 to US 431 (MP 17.930) in
Muhlenberg County(1)**

Project: CID ## - #####

KyTC BMP Plan for Project CID ## -

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 2 (1)
2. Resident Engineer: (2)
3. Contractor name: (2)
Address: (2)

Phone number: (2)
Contact: (2)
Contractors agent responsible for compliance with the KPDES permit requirements (3):
4. Project Control Number (2)
5. Route (Address) US 62 (1)
6. Latitude/Longitude (project mid-point) 37/17/20, 87/07/10 (1)
7. County (project mid-point) Muhlenberg (1)
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

KyTC BMP Plan for Project CID ## -

A. Site description:

1. Nature of Construction Activity (from letting project description) Widen US 62 in Muhlenberg County from Wal-mart (MP 16.471) to US 431 (MP 17.930) (1)
2. Order of major soil disturbing activities (2) and (3)
3. Projected volume of material to be moved 54,340 CY (1)
4. Estimate of total project area (acres) 32.64 (1)
5. Estimate of area to be disturbed (acres) 28 (1)
6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information.(1)
7. Data describing existing soil condition (1) & (2) See Geotech report if available. See Roadway Plans
8. Data describing existing discharge water quality (if any) No existing water quality information available (1) & (2)
9. Receiving water name Little Cypress Creek (1)
10. TMDLs and Pollutants of Concern in Receiving Waters: (1 DEA)
11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.
12. Potential sources of pollutants:

KyTC BMP Plan for Project CID ## -

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

B. Sediment and Erosion Control Measures:

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

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

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as "Do Not Disturb" until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP's shall be for the first phase (generally Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA's as the work progresses. All DDA's will have adequate BMP's in place before being disturbed.
3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:
 - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.
 - At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants.

KyTC BMP Plan for Project CID ## -

Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.

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

KyTC BMP Plan for Project CID ## -

- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
 - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.
 - Permanent Seeding and Protection
 - Placing Sod
 - Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are : Seeding and Protection, Erosion Control Blanket. (1)

C. Other Control Measures

1. No solid materials, including building materials, shall be discharged to waters of the commonwealth, except as authorized by a Section 404 permit.
2. Waste Materials

All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in appropriate covered waste containers. Waste containers shall be removed from the project site on a sufficiently frequent basis as to not allow wastes to become a source of pollution. All personnel will be instructed regarding the correct procedure for waste disposal. Wastes will be disposed in accordance with appropriate regulations. Notices stating these practices will be posted in the office.

3. Hazardous Waste

All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the Section Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

KyTC BMP Plan for Project CID ## -

4. Spill Prevention

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

➤ **Good Housekeeping:**

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

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

➤ **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

➤ **Petroleum Products:**

KyTC BMP Plan for Project CID ## -

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

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

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

➤ **Fertilizers:**

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

➤ **Paints:**

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

➤ **Concrete Truck Washout:**

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

➤ **Spill Control Practices**

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

KyTC BMP Plan for Project CID ## -

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations.

D. Other State and Local Plans

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. No other local requirements are being added to this project. (1)

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.
- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.
 - Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for

KyTC BMP Plan for Project CID ## -

the purpose of post construction storm water management with specific guidance for any non-routine maintenance. No features of this project will require post construction maintenance over and above normal maintenance procedures. (1)

F. Inspections

Inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by individuals that have successfully completed the KEPSC-RI course as required by Section 213.02.02 of the Standard Specifications for Road and Bridge Construction, current edition.
- Inspection reports will be written, signed, dated, and kept on file.
- Areas at final grade will be seeded and mulched within 14 days.
- Areas that are not at final grade where construction has ceased for a period of 21 days or longer and soil stock piles shall receive temporary mulch no later than 14 days from the last construction activity in that area.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Sediment basins will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

KyTC BMP Plan for Project CID ## -

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;

KyTC BMP Plan for Project CID ## -

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

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

_____ 2. (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

_____ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

The contractor is responsible for the preparation of a plan that addresses the

401 KAR 5:037 Section 3. (3) Elements of site specific groundwater protection plan:

- (a) General information about this project is covered in the Project information;
- (b) Activities that require a groundwater protection plan have been identified above;
- (c) Practices that will protect groundwater from pollution are addressed in section C. Other control measures.
- (d) Implementation schedule – all practices required to prevent pollution of groundwater are to be in place prior to conducting the activity;
- (e) Training is required as a part of the ground water protection plan. All employees of the contractor, sub-contractor and resident engineer personnel will be trained to understand the nature and requirements of this plan as they pertain to their job function(s). Training will be accomplished within one week of employment and annually thereafter. A record of training will be maintained by the contractor with a copy provide to the resident engineer.
- (f) Areas of the project and groundwater plan activities will be inspected as part of the weekly sediment and erosion control inspections
- (g) Certification (see signature page.)

KyTC BMP Plan for Project CID ## - #####

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:

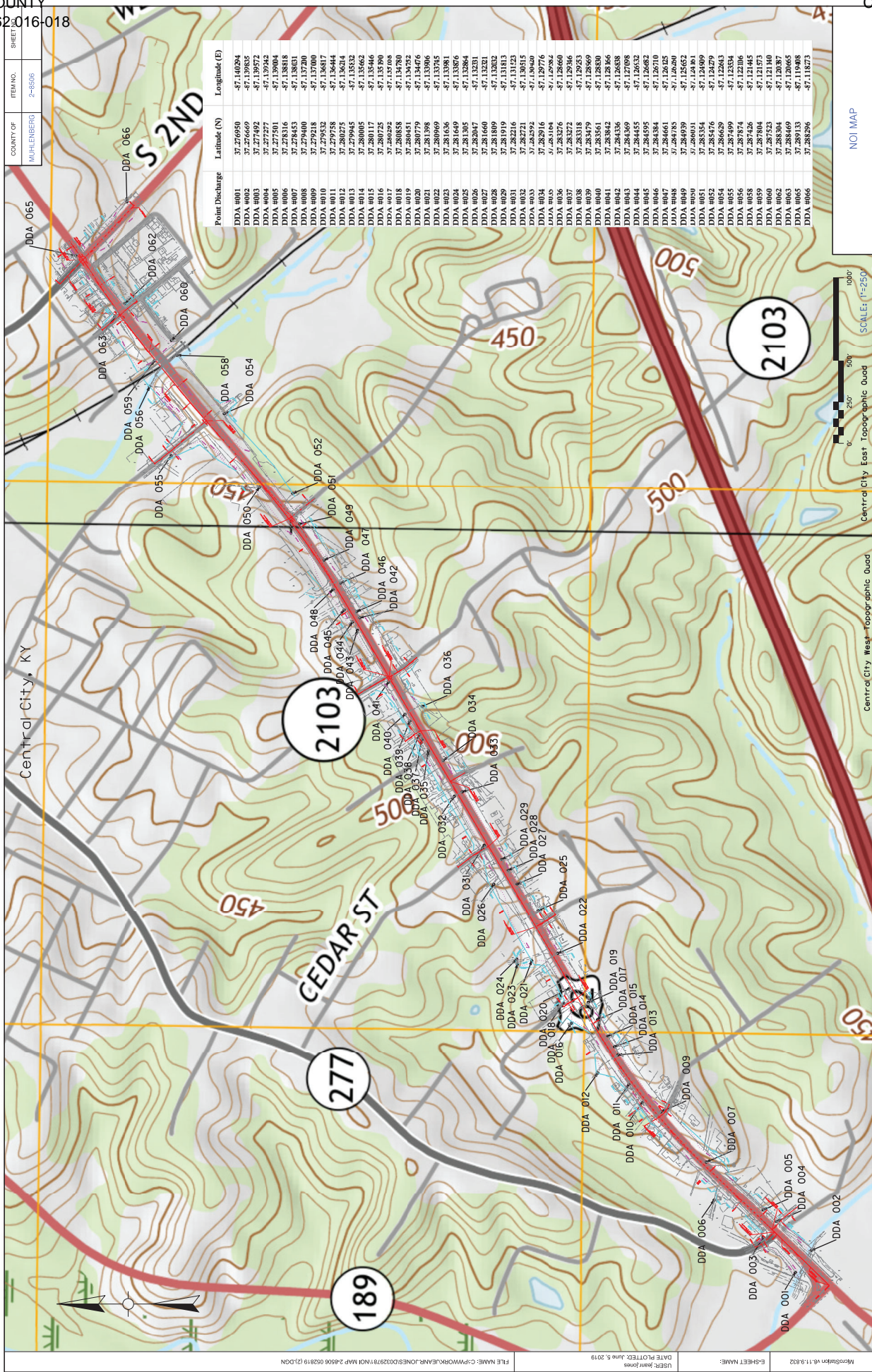
Phone:

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 name¹ 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.



COUNTY OF
 MUHLENBERG
 SHEET NO.
 2-0006

| Point Discharge | Latitude (N) | Longitude (E) |
|-----------------|--------------|---------------|
| DDA_001 | 37.27690 | -87.14084 |
| DDA_002 | 37.27690 | -87.14084 |
| DDA_003 | 37.27742 | -87.13972 |
| DDA_004 | 37.27742 | -87.13972 |
| DDA_005 | 37.27701 | -87.13904 |
| DDA_006 | 37.27836 | -87.13808 |
| DDA_007 | 37.27833 | -87.13801 |
| DDA_008 | 37.27918 | -87.13700 |
| DDA_009 | 37.27918 | -87.13697 |
| DDA_010 | 37.27952 | -87.13644 |
| DDA_011 | 37.27952 | -87.13644 |
| DDA_012 | 37.28025 | -87.13624 |
| DDA_013 | 37.27945 | -87.13532 |
| DDA_014 | 37.28005 | -87.13562 |
| DDA_015 | 37.28005 | -87.13562 |
| DDA_016 | 37.28025 | -87.13500 |
| DDA_017 | 37.28025 | -87.13500 |
| DDA_018 | 37.28058 | -87.13470 |
| DDA_019 | 37.28045 | -87.13492 |
| DDA_020 | 37.28158 | -87.13386 |
| DDA_021 | 37.28158 | -87.13386 |
| DDA_022 | 37.28069 | -87.13345 |
| DDA_023 | 37.28156 | -87.13381 |
| DDA_024 | 37.28169 | -87.13366 |
| DDA_025 | 37.28130 | -87.13284 |
| DDA_026 | 37.28247 | -87.13201 |
| DDA_027 | 37.28247 | -87.13201 |
| DDA_028 | 37.28169 | -87.13202 |
| DDA_029 | 37.28191 | -87.13113 |
| DDA_030 | 37.28221 | -87.13123 |
| DDA_031 | 37.28221 | -87.13123 |
| DDA_032 | 37.28271 | -87.13015 |
| DDA_033 | 37.28292 | -87.13040 |
| DDA_034 | 37.28292 | -87.13040 |
| DDA_035 | 37.28148 | -87.12942 |
| DDA_036 | 37.28376 | -87.12860 |
| DDA_037 | 37.28372 | -87.12836 |
| DDA_038 | 37.28318 | -87.12923 |
| DDA_039 | 37.28379 | -87.12869 |
| DDA_040 | 37.28379 | -87.12869 |
| DDA_041 | 37.28342 | -87.12846 |
| DDA_042 | 37.28436 | -87.12658 |
| DDA_043 | 37.28469 | -87.12708 |
| DDA_044 | 37.28455 | -87.12652 |
| DDA_045 | 37.28495 | -87.12682 |
| DDA_046 | 37.28484 | -87.12670 |
| DDA_047 | 37.28484 | -87.12670 |
| DDA_048 | 37.28478 | -87.12620 |
| DDA_049 | 37.28499 | -87.12562 |
| DDA_050 | 37.28603 | -87.12481 |
| DDA_051 | 37.28354 | -87.12489 |
| DDA_052 | 37.28354 | -87.12489 |
| DDA_053 | 37.28354 | -87.12489 |
| DDA_054 | 37.28354 | -87.12489 |
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| DDA_061 | 37.28354 | -87.12489 |
| DDA_062 | 37.28354 | -87.12489 |
| DDA_063 | 37.28354 | -87.12489 |
| DDA_064 | 37.28354 | -87.12489 |
| DDA_065 | 37.28354 | -87.12489 |
| DDA_066 | 37.28354 | -87.12489 |

Scale: 1"=250'
 0 250 500 1000
 Central City East Topographic Quad

Central City West Topographic Quad

NOI MAP

**KENTUCKY TRANSPORTATION CABINET
COMMUNICATING ALL PROMISES (CAP)**

21 JUN 2019

| | | | | | |
|--|------------------------|-------------------------|----------------------------|---------------------|--------------------|
| Item No. | 2 - 8506 | | | Project Mgr. | kytc\john.rudd |
| | | | County | MUHLENBERG | Route US-62 |
| CAP # | Date of Promise | Promise made to: | Location of Promise | | |
| 1 | 21-JUN-19 | John Rudd | Parcel 3 | | |
| CAP Description | | | | | |
| UPON COMPLETION OF THE EXCAVATION AND SITE GRADING, THE CONTRACTOR OR SUB-CONTRACTOR SHALL RE-SEED AND FERTILIZE THE TEMPORARY EASEMENT AREA SO THAT THE TEMPORARY EASEMENT AREA IS RESTORED TO AT LEAST AS GOOD OF A MOWABLE CONDITION THAT EXISTED BEFORE THIS TEMPORARY EASEMENT. | | | | | |
| 2 | 21-JUN-19 | John Rudd | Parcel 7 | | |
| CAP Description | | | | | |
| THE NEW SANITARY SEWER SERVICE THAT WILL BE INSTALLED DUE TO THIS PROJECT WILL BE INSTALLED AND OPERATIONAL PRIOR TO THE REMOVAL OF THE SEPTIC SYSTEM/LATERAL LINES ON THE PROPERTY. | | | | | |
| 3 | 21-JUN-19 | John Rudd | Parcel 11 | | |
| CAP Description | | | | | |
| THE NEW SANITARY SEWER SERVICE THAT WILL BE INSTALLED DUE TO THIS PROJECT WILL BE INSTALLED AND OPERATIONAL PRIOR TO THE REMOVAL OF THE SEPTIC SYSTEM/LATERAL LINES ON THE PROPERTY. | | | | | |

PART II
SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2016*.

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting.
The Supplemental Specifications can be found at the following link:

<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS

This Special Note will apply when indicated on the plans or in the proposal.

1.0 DESCRIPTION. Furnish, install, operate, and maintain variable message signs at the locations shown on the plans or designated by the Engineer. Remove and retain possession of variable message signs when they are no longer needed on the project.

2.0 MATERIALS.

2.1 General. Use LED Variable Message Signs Class I, II, or III, as appropriate, from the Department's List of Approved Materials.

Unclassified signs may be submitted for approval by the Engineer. The Engineer may require a daytime and nighttime demonstration. The Engineer will make a final decision within 30 days after all required information is received.

2.2 Sign and Controls. All signs must:

- 1) Provide 3-line messages with each line being 8 characters long and at least 18 inches tall. Each character comprises 35 pixels.
- 2) Provide at least 40 preprogrammed messages available for use at any time. Provide for quick and easy change of the displayed message; editing of the message; and additions of new messages.
- 3) Provide a controller consisting of:
 - a) Keyboard or keypad.
 - b) Readout that mimics the actual sign display. (When LCD or LCD type readout is used, include backlighting and heating or otherwise arrange for viewing in cold temperatures.)
 - c) Non-volatile memory or suitable memory with battery backup for storing pre-programmed messages.
 - d) Logic circuitry to control the sequence of messages and flash rate.
- 4) Provide a serial interface that is capable of supporting complete remote control ability through land line and cellular telephone operation. Include communication software capable of immediately updating the message, providing complete sign status, and allowing message library queries and updates.
- 5) Allow a single person easily to raise the sign to a satisfactory height above the pavement during use, and lower the sign during travel.
- 6) Be Highway Orange on all exterior surfaces of the trailer, supports, and controller cabinet.
- 7) Provide operation in ambient temperatures from -30 to + 120 degrees Fahrenheit during snow, rain and other inclement weather.
- 8) Provide the driver board as part of a module. All modules are interchangeable, and have plug and socket arrangements for disconnection and reconnection. Printed circuit boards associated with driver boards have a conformable coating to protect against moisture.
- 9) Provide a sign case sealed against rain, snow, dust, insects, etc. The lens is UV stabilized clear plastic (polycarbonate, acrylic, or other approved material) angled to prevent glare.
- 10) Provide a flat black UV protected coating on the sign hardware, character PCB, and appropriate lens areas.
- 11) Provide a photocell control to provide automatic dimming.

- 12) Allow an on-off flashing sequence at an adjustable rate.
- 13) Provide a sight to aim the message.
- 14) Provide a LED display color of approximately 590 nm amber.
- 15) Provide a controller that is password protected.
- 16) Provide a security device that prevents unauthorized individuals from accessing the controller.
- 17) Provide the following 3-line messages preprogrammed and available for use when the sign unit begins operation:

| | |
|-------------------------|-------------------------|
| /KEEP/RIGHT/=>=>=>/ | /MIN/SPEED/**MPH/ |
| /KEEP/LEFT/<=<=<=</ | /ICY/BRIDGE/AHEAD/ /ONE |
| /LOOSE/GRAVEL/AHEAD/ | LANE/BRIDGE/AHEAD/ |
| /RD WORK/NEXT/**MILES/ | /ROUGH/ROAD/AHEAD/ |
| /TWO WAY/TRAFFIC/AHEAD/ | /MERGING/TRAFFIC/AHEAD/ |
| /PAINT/CREW/AHEAD/ | /NEXT/***/MILES/ |
| /REDUCE/SPEED/**MPH/ | /HEAVY/TRAFFIC/AHEAD/ |
| /BRIDGE/WORK/***0 FT/ | /SPEED/LIMIT/**MPH/ |
| /MAX/SPEED/**MPH/ | /BUMP/AHEAD/ |
| /SURVEY/PARTY/AHEAD/ | /TWO/WAY/TRAFFIC/ |

*Insert numerals as directed by the Engineer.
Add other messages during the project when required by the Engineer.

2.3 Power.

- 1) Design solar panels to yield 10 percent or greater additional charge than sign consumption. Provide direct wiring for operation of the sign or arrow board from an external power source to provide energy backup for 21 days without sunlight and an on-board system charger with the ability to recharge completely discharged batteries in 24 hours.

3.0 CONSTRUCTION. Furnish and operate the variable message signs as designated on the plans or by the Engineer. Ensure the bottom of the message panel is a minimum of 7 feet above the roadway in urban areas and 5 feet above in rural areas when operating. Use Class I, II, or III signs on roads with a speed limit less than 55 mph. Use Class I or II signs on roads with speed limits 55 mph or greater.

Maintain the sign in proper working order, including repair of any damage done by others, until completion of the project. When the sign becomes inoperative, immediately repair or replace the sign. Repetitive problems with the same unit will be cause for rejection and replacement.

Use only project related messages and messages directed by the Engineer, unnecessary messages lessen the impact of the sign. Ensure the message is displayed in either one or 2 phases with each phase having no more than 3 lines of text. When no message is needed, but it is necessary to know if the sign is operable, flash only a pixel.

When the sign is not needed, move it outside the clear zone or where the Engineer directs. Variable Message Signs are the property of the Contractor and shall be removed from the project when no longer needed. The Department will not assume ownership of these signs.

4.0 MEASUREMENT. The final quantity of Variable Message Sign will be

11

the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

5.0 PAYMENT. The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

| <u>Code</u> | <u>Pay Item</u> | <u>Pay Unit</u> |
|-------------|----------------------------------|-----------------|
| 02671 | Portable Changeable Message Sign | Each |

Effective June 15, 2012

SPECIAL NOTE FOR ROCK BLASTING

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. This work consists of fracturing rock and constructing stable final rock cut faces using presplit blasting and production blasting techniques.

2.0 MATERIALS. Deliver, store, and use explosives according to the manufacturer's recommendations and applicable laws. Do not use explosives outside their recommended use date. Verify date of manufacture and provide copies of the technical data sheets (TDS) and material safety data sheets (MSDS) to the Engineer. Explosives and initiating devices include, but are not necessarily limited to, dynamite and other high explosives, slurries, water gels, emulsions, blasting agents, initiating explosives, detonators, blasting caps, and detonating cord.

3.0 CONSTRUCTION. Furnish copies or other proof of all-applicable permits and licenses. Comply with Federal, State, and local regulations on the purchase, transportation, storage, and use of explosive material. Regulations include but are not limited to the following:

- 1) KRS 351.310 through 351.9901.
- 2) 805 KAR 4:005 through 4:165
- 3) Applicable rules and regulations issued by the Office of Mine Safety and Licensing.
- 4) Safety and health. OSHA, 29 CFR Part 1926, Subpart U.
- 5) Storage, security, and accountability. Bureau of Alcohol, Tobacco, and Firearms (BATF), 27 CFR Part 181.
- 6) Shipment. DOT, 49 CFR Parts 171-179, 390-397.

3.1 Blaster-in-Charge. Designate in writing a blaster-in-charge and any proposed alternates for the position. Submit documentation showing the blaster-in-charge, and alternates, have a valid Kentucky blaster's license. Ensure the blaster-in-charge or approved alternate is present at all times during blasting operations.

3.2 Blasting Plans. Blasting plans and reports are for quality control and record keeping purposes. Blasting reports are to be signed by the blaster-in-charge or the alternate blaster-in-charge. The general review and acceptance of blasting plans does not relieve the Contractor of the responsibility whatsoever for conformance to regulations or for obtaining the required results. All blasting plans shall be submitted to the Engineer. The Engineer will be responsible for submitting the plan to the Central Office Division of Construction and the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at the following address: 2 Hudson Hollow, Frankfort, Kentucky, 40601.

A) General Blasting Plan. Submit a general blasting plan for acceptance at least 15 working days before drilling operations begin. Include, as a minimum, the following safety and procedural details:

- 1) Working procedures and safety precautions for storing, transporting, handling, detonating explosives. Include direction on pre and post blast audible procedures, methods of addressing misfires, and methods of addressing inclement weather, including lightning.
- 2) Proposed product selection for both dry and wet holes. Furnish Manufacturer's TDS and MSDS for all explosives, primers, initiators, and other blasting devices.
- 3) Proposed initiation and delay methods.
- 4) Proposed format for providing all the required information for the site specific blasting shot reports.

B) Preblast Meeting. Prior to drilling operations, conduct a preblast meeting to discuss safety and traffic control issues and any site specific conditions that will need to be addressed. Ensure, at a minimum, that the Engineer or lead inspector, Superintendent, blaster-in-charge, and all personnel involved in the blasting operation are present. Site specific conditions include blast techniques; communication procedures; contingency plans and equipment for dealing with errant blast material. The conditions of the General Blasting plan will be discussed at this meeting. Record all revisions and additions made to the blasting plan and obtain written concurrence by the blaster-in-charge. Provide a copy of the signed blast plan to the Engineer along with the sign in sheet from the preblast meeting.

3.3 Preblast Condition Survey and Vibration Monitoring and Control. Before blasting, arrange for a preblast condition survey of nearby buildings, structures, or utilities, within 500 feet of the blast or that could be at risk from blasting damage. Provide the Engineer a listing of all properties surveyed and any owners denying entry or failing to respond. Notify the Engineer and occupants of buildings at risk at least 24 hours before blasting.

Limit ground vibrations and airblast to levels that will not exceed limits of 805 KAR 4:005 through 4:165. More restrictive levels may be specified in the Contract.

Size all blast designs based on vibration, distance to nearest building or utility, blast site geometry, atmospheric conditions and other factors. Ground vibrations are to be controlled according to the blasting standards and scaled distance formulas in 805 KAR 4:020 or by the use of seismographs as allowed in 805 KAR 4:030. The Department will require seismographs at the nearest allowable location to the protected site when blasting occurs within 500 feet of buildings, structures, or utilities.

3.4 Blasting. Drill and blast at the designated slope lines according to the blasting plan. Perform presplitting to obtain smooth faces in the rock and shale formations. Perform the presplitting before blasting and excavating the interior portion of the specified cross section at any location. The Department may allow blasting for fall benches and haul roads prior to presplitting when blasting is a sufficient distance from the final slope and results are satisfactory to the Engineer. Use the types of explosives and blasting accessories necessary to obtain the required results.

Free blast holes of obstructions for their entire depth. Place charges without caving the blast hole walls. Stem the upper portion of all blast holes with dry sand or other granular material passing the 3/8-inch sieve. Dry drill cuttings are acceptable for stemming when blasts are more than 800 feet from the nearest dwelling.

11D

Stop traffic during blasting operations when blasting near any road and ensure traffic does not pass through the Danger Zone. The blaster-in-charge will define the Danger Zone prior to each blast. Ensure traffic is stopped outside the Danger Zone, and in no case within 800 feet of the blast location.

Following a blast, stop work in the entire blast area, and check for misfires before allowing worker to return to excavate the rock.

Remove or stabilize all cut face rock that is loose, hanging, or potentially dangerous. Leave minor irregularities or surface variations in place if they do not create a hazard. Drill the next lift only after the cleanup work and stabilization work is complete.

When blasting operations cause fracturing of the final rock face, repair or stabilize it in an approved manner at no cost to the Department.

Halt blasting operations in areas where any of the following occur:

- 1) Slopes are unstable;
- 2) Slopes exceed tolerances or overhangs are created;
- 3) Backslope damage occurs;
- 4) Safety of the public is jeopardized;
- 5) Property or natural features are endangered;
- 6) Fly rock is generated; or
- 7) Excessive ground or airblast vibrations occur in an area where damage to buildings, structures, or utilities is possible.
- 8) The Engineer determines that materials have become unsuitable for blasting

Blasting operations may continue at a reasonable distance from the problem area or in areas where the problems do not exist. Make the necessary modifications to the blasting operations and perform a test blast to demonstrate resolution of the problem.

A) Drill Logs. Maintain a layout drawing designating hole numbers with corresponding drill logs and provide a copy of this information to the blaster prior to loading the hole. Ensure the individual hole logs completed by the driller(s) show their name; date drilled; total depth drilled; and depths and descriptions of significant conditions encountered during drilling that may affect loading such as water, voids, changes in rock type.

B) Presplitting. Conduct presplitting operations in conformance with Subsection 204.03.04 of the Standard Specifications for Road and Bridge Construction.

3.5 Shot Report. Maintain all shot reports on site for review by the Department. Within one day after a blast, complete a shot report according to the record keeping requirements of 805 KAR 4:050. Include all results from airblast and seismograph monitoring.

3.6 Unacceptable Blasting. When unacceptable blasting occurs, the Department will halt all blasting operations. Blasting will not resume until the Department completes its investigation and all concerns are addressed. A blast is unacceptable when it results in fragmentation beyond the final rock face, fly rock, excessive vibration or airblast, overbreak, damage to the final rock face or overhang. Assume the cost for all resulting damages to private and public property and hold the Department harmless.

11D

When an errant blast or fly rock causes damage to or blocks a road or conveyance adjacent to the roadway, remove all debris from the roadway as quickly as practicable and perform any necessary repairs. Additionally, when specified in the Contract, the Department will apply a penalty.

Report all blasting accidents to the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at 502-564-2340.

4.0 MEASUREMENT AND PAYMENT. The Department will not measure this work for payment and will consider all items contained in this note to be incidental to either Roadway Excavation or Embankment-in-Place, as applicable. However, if the Engineer directs in writing slope changes, then the Department will pay for the second presplitting operation as Extra Work.

The Department will measure for payment material lying outside the typical section due to seams, broken formations, or earth pockets, including any earth overburden removed with this material, only when the work is performed under authorized adjustments.

The Department will not measure for payment any extra material excavated because of the drill holes being offset outside the designated slope lines.

The Department will not measure for payment any material necessary to be removed due to the inefficient or faulty blasting practices.

June 15, 2012

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs. Section references herein are to the Department's 2012 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

structures, utility cuts, areas where vehicles may be expected to traverse the mat, channels with large heavy drift, and where higher factors of safety, very steep slopes and/or durability concerns are needed as determined by project team and designer and will be specified in the plans by designer.

| Turf Reinforcement Matting | | | | | |
|--|---------------------|-----------------------|---------------------|-----------------------|---|
| Properties ¹ | Type 1 | Type 2 | Type 3 | Type 4 | Test Method |
| Minimum tensile Strength lbs/ft | 125 | 150 | 175 | 3000 by 1500 | ASTM D6818 ² |
| UV stability (minimum % tensile retention) | 80 | 80 | 80 | 90 | ASTM D4355 ³ (1000-hr exposure) |
| Minimum thickness (inches) | 0.25 | 0.25 | 0.25 | 0.40 | ASTM D6525 |
| Slopes applications | 2H:1V or flatter | 1.5H:1V or flatter | 1H:1V or flatter | 1 H: 1V or greater | |
| Shear stress lbs/ft ² Channel applications | 6.0 ⁴ | 8.0 ⁴ | 10.0 ⁴ | 12.0 ⁴ | ASTM D6459 ASTM D6460-07 |

¹ For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting alone.

²Minimum Average Roll Values for tensile strength of sample material machine direction.

³Tensile Strength percentage retained after stated 1000 hr duration of exposure under ASTM D4355 testing. Based on nondegradable components exclusively.

⁴Maximum permissible shear design values based on short-term (0.5 hr) vegetated data obtained by full scale flume testing ASTM D6459, D6460-07. Based on nondegradable components exclusively. Testing will be done at Independent Hydraulics Facility such as Colorado State University hydraulics laboratory, Utah State University hydraulics laboratory, Texas Transportation Institute (TTI) hydraulics and erosion control laboratory.

2.3 Quality Assurance Sampling, Testing, and Acceptance

- A) Provide TRM listed on the Department’s List of Approved Materials. Prior to inclusion on the LAM, the manufacturer of TRM must meet the physical and performance criteria as outlined in the specification and submit a Letter Certifying compliance of the product under the above ASTM testing procedures and including a copy of report from Full Scale Independent Hydraulics Facility that Fully Vegetated Shear Stress meets shear stress requirements tested under D6459 and D6460-07.
- B) Contractors will provide a Letter of Certification from Manufacturer stating the product name, manufacturer, and that the product MARV product unit testing results meets Department criteria. Provide Letters once per project and for each product.
- C) Acceptance shall be in accordance with ASTM D-4759 based on testing performed by a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory using Procedure A of ASTM D-4354.

Current mats meeting the above criteria are shown on the Department's List of Approved Materials.

2.4 Fasteners. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils as directed by Engineer or Manufacturer's Representative. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. When requested by the Engineer, provide a Manufacturer's Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from the Manufacturer approving the installation. When there is a conflict between the Department's criteria and the Manufacturer's criteria, construct using the more restrictive. The Engineer and Manufacturer's Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer's recommendations and the following as minimum installation technique:

3.1 Site Preparation. Grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, roots, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil.

3.2 Installation. Install mats according to Standard Drawing Sepias "Turf Mat Channel Installation" and "Turf Mat Slope Installation." Install mats at the specified elevation and alignment. Anchor the mats with staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils as directed by the Engineer or Manufacturer's Representative. The mat should be in direct contact with the soil surface.

4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed, providing a Manufacturer's Representative, topsoil, or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat. Seeding and protection will be an incidental item.

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

| <u>Code</u> | <u>Pay Item</u> | <u>Pay Unit</u> |
|-------------|--------------------------|-----------------|
| 23274EN11F | Turf Reinforcement Mat 1 | Square Yard |
| 23275EN11F | Turf Reinforcement Mat 2 | Square Yard |
| 23276EN11F | Turf Reinforcement Mat 3 | Square Yard |
| 23277EN11F | Turf Reinforcement Mat 4 | Square Yard |

June 15, 2012

SPECIAL NOTE FOR LONGITUDINAL PAVEMENT JOINT ADHESIVE

1. DESCRIPTION. This specification covers the requirements and practices for applying an asphalt adhesive material to the longitudinal joint of the surface course of an asphalt pavement. Apply the adhesive to the face of longitudinal joint between driving lanes for the first lane paved. Then, place and compact the adjacent lane against the treated face to produce a strong, durable, waterproof longitudinal joint.

2. MATERIALS, EQUIPMENT, AND PERSONNEL.

2.1 Joint Adhesive. Provide material conforming to Subsection 2.1.1.

2.1.1 Provide an adhesive conforming to the following requirements:

| Property | Specification | Test Procedure |
|------------------------------|---------------|----------------------|
| Viscosity, 400 ° F (Pa·s) | 4.0 – 10.0 | ASTM D 4402 |
| Cone Penetration, 77 ° F | 60 – 100 | ASTM D 5329 |
| Flow, 140 ° F (mm) | 5.0 max. | ASTM D 5329 |
| Resilience, 77 ° F (%) | 30 min. | ASTM D 5329 |
| Ductility, 77 ° F (cm) | 30.0 min. | ASTM D 113 |
| Ductility, 39 ° F (cm) | 30.0 min. | ASTM D 113 |
| Tensile Adhesion, 77 ° F (%) | 500 min. | ASTM D 5329, Type II |
| Softening Point, ° F | 171 min. | AASHTO T 53 |
| Asphalt Compatibility | Pass | ASTM D 5329 |

Ensure the temperature of the pavement joint adhesive is between 380 and 410 °F when the material is extruded in a 0.125-inch-thick band over the entire face of the longitudinal joint.

2.2. Equipment.

2.2.1 Melter Kettle. Provide an oil-jacketed, double-boiler, melter kettle equipped with any needed agitation and recirculating systems.

2.2.2 Applicator System. Provide a pressure-feed-wand applicator system with an applicator shoe attached.

2.3 Personnel. Ensure a technical representative from the manufacturer of the pavement joint adhesive is present during the initial construction activities and available upon the request of the Engineer.

3. CONSTRUCTION.

3.1 Surface Preparation. Prior to the application of the pavement joint adhesive, ensure the face of the longitudinal joint is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the joint face by the use of compressed air.

Ensure this preparation process occurs shortly before application to prevent the return of debris on the joint face.

3.2 Pavement Joint Adhesive Application. Ensure the ambient temperature is a minimum of 40 ° F during the application of the pavement joint adhesive. Prior to applying the adhesive, demonstrate competence in applying the adhesive according to this note to the satisfaction of the Engineer. Heat the adhesive in the melter kettle to the specified temperature range. Pump the adhesive from the melter kettle through the wand onto the vertical face of the cold joint. Apply the adhesive in a continuous band over the entire face of the longitudinal joint. Do not use excessive material in either thickness or location. Ensure the edge of the extruded adhesive material is flush with the surface of the pavement. Then, place and compact the adjacent lane against the joint face. Remove any excessive material extruded from the joint after compaction (a small line of material may remain).

3.3 Pavement Joint Adhesive Certification. Furnish the joint adhesive's certification to the Engineer stating the material conforms to all requirements herein prior to use.

3.4 Sampling and Testing. The Department will require a random sample of pavement joint adhesive from each manufacturer's lot of material. Extrude two 5 lb. samples of the heated material and forward the sample to the Division of Materials for testing. Reynolds oven bags, turkey size, placed inside small cardboard boxes or cement cylinder molds have been found suitable. Ensure the product temperature is 400°F or below at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of Pavement Joint Adhesive in linear feet. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of Pavement Joint Adhesive, the cleaning of the joint face, or furnishing and placing the adhesive. The Department will consider all such items incidental to the Pavement Joint Adhesive.
5. PAYMENT. The Department will pay for the Pavement Joint Adhesive at the Contract unit bid price and apply an adjustment for each manufacturer's lot of material based on the degree of compliance as defined in the following schedule. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

| Pavement Joint Adhesive Price Adjustment Schedule | | | | | | |
|---|---------------|----------|----------------------|----------------------|----------------------|----------------|
| Test | Specification | 100% Pay | 90% Pay | 80% Pay | 50% Pay | 0% Pay |
| Joint Adhesive Referenced in Subsection 2.1.1 | | | | | | |
| Viscosity, 400 ° F (Pa•s) ASTM D 3236 | 4.0-10.0 | 3.5-10.5 | 3.0-3.4 10.6-11.0 | 2.5-2.9 11.1-11.5 | 2.0-2.4 11.6-12.0 | ≤1.9 ≥ 12.1 |
| Cone Penetration, 77 ° F ASTM D 5329 | 60-100 | 57-103 | 54-56 104-106 | 51-53 107-109 | 48-50 110-112 | ≤ 47 ≥ 113 |
| Flow, 140 ° F (mm) ASTM D 5329 | ≤ 5.0 | ≤ 5.5 | 5.6-6.0 | 6.1-6.5 | 6.6-7.0 | ≥ 7.1 |
| Resilience, 77 ° F (%) ASTM D 5329 | ≥ 30 | ≥ 28 | 26-27 | 24-25 | 22-23 | ≤ 21 |
| Tensile Adhesion, 77 ° F (%) ASTM D 5329 | ≥ 500 | ≥ 490 | 480-489 | 470-479 | 460-469 | ≤ 459 |
| Softening Point, ° F AASHTO T 53 | ≥ 171 | ≥ 169 | 166-168 | 163-165 | 160-162 | ≤ 159 |
| Ductility, 77 ° F (cm) ASTM D 113 | ≥ 30.0 | ≥ 29.0 | 28.0-28.9 | 27.0-27.9 | 26.0-26.9 | ≤ 25.9 |
| Ductility, 39 ° F (cm) ASTM D 113 | ≥ 30.0 | ≥ 29.0 | 28.0-28.9 | 27.0-27.9 | 26.0-26.9 | ≤ 25.9 |

Code
20071EC

Pay Item
Joint Adhesive

Pay Unit
Linear Foot

May 7, 2014

SPECIAL PROVISION FOR EMBANKMENT AT BRIDGE END BENT STRUCTURES

This Special Provision will apply when indicated on the plans or in the proposal. Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, Current Edition.

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with soil, granular or cohesive pile core and place structure granular backfill, as the Plans require. Construct the embankment according to the requirements of this Special Provision, the Plans, Standard Drawing RGX 100 and 105, and the Standard Specifications, Current Edition.

2.0 MATERIALS.

2.1 Granular Embankment. Conform to Subsection 805.10. When Granular Embankment materials are erodible or unstable according to Subsection 805.03.04, use the Special Construction Methods found in 3.2 of the Special Provision.

2.2 Rock Embankment. Provide durable rock from roadway excavation that consists principally of Unweathered Limestone, Durable Shale (SDI equal to or greater than 95 according to KM 64-513), or Durable Sandstone.

2.3 Pile Core. Provide a pile core in the area of the embankments where deep foundations are to be installed unless otherwise specified. The Pile Core is the zone indicated on Standard Drawings RGX 100 and 105 designated as Pile Core. Material control of the pile core area during embankment construction is always required. Proper Pile Core construction is required for installation of foundation elements such as drilled or driven piles or drilled shafts. The type of material used to construct the pile core is as directed in the plans or below. Typically, the pile core area will be constructed from the same material used to construct the surrounding embankment. Pile Core can be classified as one of three types:

A) Pile Core - Conform to Section 206 of the Standard Specifications. Provide pile core material consisting of the same material as the adjacent embankment except the material in the pile core area shall be free of boulders or particle sizes larger than 4 inches in any dimension or any other obstructions that may hinder pile driving operations. If the pile core material hinders pile driving operations, take the appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

B) Granular Pile Core. Granular pile core is required only when specified in the plans. Select a gradation of durable rock to facilitate pile driving that conforms to Subsection 805.11. If granular pile core material hinders pile driving operations, take appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

C) Cohesive Pile Core. Cohesive Pile Core is required only when specified in the plans. Conform to Section 206 of the Standard Specifications and use soil with at least 50 percent passing a No. 4 sieve having a minimum Plasticity Index (PI) of 10. In addition, keep the cohesive pile core free of boulders, larger than 4 inches in any dimension, or any other obstructions, which would interfere with drilling operations. If cohesive pile core material interferes with drilling operations, take appropriate means necessary to maintain

excavation stability, at no expense to the Department.

2.4 Structure Granular Backfill. Conform to Subsection 805.11

2.5 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843.

3.0 CONSTRUCTION.

3.1 General. Construct roadway embankments at end bents according to Section 206 and in accordance with the Special Provision, the Plans, and Standard Drawings for the full embankment section. In some instances, granular or rock embankment will be required for embankment construction for stability purposes, but this special provision does not prevent the use of soil when appropriate. Refer to the plans for specific details regarding material requirements for embankment construction.

Place and compact the pile core and structure granular backfill according to the applicable density requirements for the project. If the embankment and pile core are dissimilar materials (i.e., a granular pile core is used with a soil embankment or a cohesive pile core is used with a granular embankment), a Geotextile Fabric, Type IV, will be required between the pile core and embankment in accordance with Sections 214 and 843 of the Standard Specifications.

When granular or rock embankment is required for embankment construction, conform to the general requirements of Subsection 206.03.02 B. In addition, place the material in no greater than 2-foot loose lifts and compact with a vibrating smooth wheel roller capable of producing a minimum centrifugal force of 15 tons. Apply these requirements to the full width of the embankment for a distance of half the embankment height or 50 feet, whichever is greater, as shown on Standard Drawing RGX-105.

When using granular pile core, install 8-inch perforated underdrain pipe at or near the elevation of the original ground in the approximate locations depicted on the standard drawing, and as the Engineer directs, to ensure positive drainage of the embankment. Wrap the perforated pipe with a fabric of a type recommended by the pipe manufacturer.

After constructing the embankment, excavate for the end bent cap, drive piling, install shafts or other foundation elements, place the mortar bed, construct the end bent, and complete the embankment to finish grade according to the construction sequence shown on the Plans or Standard Drawings and as specified hereinafter.

Certain projects may require widening of existing embankments and the removal of substructures. Construct embankment according to the plans. Substructure removal shall be completed according to the plans and Section 203. Excavation may be required at the existing embankment in order to place the structure granular backfill as shown in the Standard Drawings.

After piles are driven or shafts installed (see design drawings), slope the bottom of the excavation towards the ends of the trench as noted on the plans for drainage. Using a separate pour, place concrete mortar, or any class concrete, to provide a base for forming and placing the cap. Place side forms for the end bent after the mortar has set sufficiently to support workmen and forms without being disturbed.

Install 4-inch perforated pipe in accordance with the plans and Standard Drawings. In the event slope protection extends above the elevation of the perforated pipe, extend the pipe through the slope protection.

After placing the end bent cap and achieving required concrete cylinder strengths, remove adjacent forms and fill the excavation with compacted structure granular backfill material (maximum 1' loose lifts) to the level of the berm prior to placing beams for the bridge. Place Type IV geotextile fabric between embankment material and structure granular backfill. After completing the end bent backwall, or after completing the span end

wall, place the compacted structure granular backfill (maximum 1' loose lifts) to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill (maximum 1' loose lifts) at no expense to the Department. Do not place backfill before removing adjacent form work. Place structure granular backfill material in trench ditches at the ends of the excavation. Place Geotextile Fabric, Type IV over the surface of the compacted structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means approved by the Engineer. Thoroughly compact the backfill under the overhanging portions of the structure to ensure that the backfill is in intimate contact with the sides of the structure.

Do not apply seeding, sodding, or other vegetation to the exposed granular embankment.

3.2 Special Construction Methods. Erodible or unstable materials may erode even when protected by riprap or channel lining; use the special construction method described below when using these materials.

Use fine aggregates or friable sandstone granular embankment at "dry land" structures only. Do not use them at stream crossings or locations subject to flood waters.

For erodible or unstable materials having 50 percent or more passing the No. 4 sieve, protect with geotextile fabric. Extend the fabric from the original ground to the top of slope over the entire area of the embankment slopes on each side of, and in front of, the end bent. Cover the fabric with at least 12 inches of non-erodible material.

For erodible or unstable materials having less than 50 percent passing a No. 4 sieve, cover with at least 12 inches of non-erodible material.

Where erodible or unstable granular embankment will be protected by riprap or channel lining, place Type IV geotextile fabric between the embankment and the specified slope protection.

4.0 MEASUREMENT.

4.1 Granular Embankment. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment any Granular Embankment that is not called for in the plans.

The Department will not measure for payment any special construction caused by using erodible or unstable materials and will consider it incidental to the Granular Embankment regardless of whether the erodible or unstable material was specified or permitted.

4.2 Rock Embankment. The Department will not measure for payment any rock embankment and will consider it incidental to roadway excavation or embankment in place, as applicable. Rock embankments will be constructed using granular embankment on projects where there is no available rock present within the excavation limits of the project.

4.3 Pile Core. Pile core will be measured and paid under roadway excavation or embankment in place, as applicable. The Department will not measure the pile core for separate payment. The Department will not measure for payment the 8-inch perforated underdrain pipe and will consider it incidental to the Pile Core.

4.4 Structure Granular Backfill. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure any additional material required for backfill outside the limits shown on the Plans and Standard Drawings for payment and will

consider it incidental to the work.

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

4.5 Geotextile Fabric. The Department will not measure the quantity of fabric used for separating dissimilar materials when constructing the embankment and pile core and will consider it incidental to embankment construction.

The Department will not measure for payment the Geotextile Fabric used to separate the Structure Granular Backfill from the embankment and aggregate base course and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the Geotextile Fabric required for construction with erodible or unstable materials and will consider it incidental to embankment construction.

4.6 End Bent. The Department will measure the quantities according to the Contract. The Department will not measure furnishing and placing the 2-inch mortar or concrete bed for payment and will consider it incidental to the end bent construction.

4.7 Structure Excavation. The Department will not measure structure excavation on new embankments for payment and will consider it incidental to the Structure Granular Backfill or Concrete as applicable.

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

| <u>Code</u> | <u>Pay Item</u> | <u>Pay Unit</u> |
|-------------|-----------------------------|-----------------|
| 02223 | Granular Embankment | Cubic Yards |
| 02231 | Structure Granular Backfill | Cubic Yards |

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

September 16, 2016

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

**TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS**

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

- I. Application
- II. Nondiscrimination of Employees (KRS 344)

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.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

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

Revised: January 25, 2017

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 (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

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.

EMPLOYEE RIGHTS UNDER THE FAIR LABOR STANDARDS ACT

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

FEDERAL MINIMUM WAGE

\$7.25 PER HOUR

BEGINNING JULY 24, 2009

OVERTIME PAY At least 1½ times your regular rate of pay for all hours worked over 40 in a workweek.

CHILD LABOR An employee must be at least **16** years old to work in most non-farm jobs and at least **18** to work in non-farm jobs declared hazardous by the Secretary of Labor.

Youths **14** and **15** years old may work outside school hours in various non-manufacturing, non-mining, non-hazardous jobs under the following conditions:

No more than

- **3** hours on a school day or **18** hours in a school week;
- **8** hours on a non-school day or **40** hours in a non-school week.

Also, work may not begin before **7 a.m.** or end after **7 p.m.**, except from June 1 through Labor Day, when evening hours are extended to **9 p.m.** Different rules apply in agricultural employment.

TIP CREDIT Employers of “tipped employees” must pay a cash wage of at least \$2.13 per hour if they claim a tip credit against their minimum wage obligation. If an employee’s tips combined with the employer’s cash wage of at least \$2.13 per hour do not equal the minimum hourly wage, the employer must make up the difference. Certain other conditions must also be met.

ENFORCEMENT The Department of Labor may recover back wages either administratively or through court action, for the employees that have been underpaid in violation of the law. Violations may result in civil or criminal action.

Employers may be assessed civil money penalties of up to \$1,100 for each willful or repeated violation of the minimum wage or overtime pay provisions of the law and up to \$11,000 for each employee who is the subject of a violation of the Act’s child labor provisions. In addition, a civil money penalty of up to \$50,000 may be assessed for each child labor violation that causes the death or serious injury of any minor employee, and such assessments may be doubled, up to \$100,000, when the violations are determined to be willful or repeated. The law also prohibits discriminating against or discharging workers who file a complaint or participate in any proceeding under the Act.

ADDITIONAL INFORMATION

- Certain occupations and establishments are exempt from the minimum wage and/or overtime pay provisions.
- Special provisions apply to workers in American Samoa and the Commonwealth of the Northern Mariana Islands.
- Some state laws provide greater employee protections; employers must comply with both.
- The law requires employers to display this poster where employees can readily see it.
- Employees under 20 years of age may be paid \$4.25 per hour during their first 90 consecutive calendar days of employment with an employer.
- Certain full-time students, student learners, apprentices, and workers with disabilities may be paid less than the minimum wage under special certificates issued by the Department of Labor.

For additional information:



1-866-4-USWAGE

(1-866-487-9243) TTY: 1-877-889-5627



WWW.WAGEHOUR.DOL.GOV

PART IV
INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V
BID ITEMS

PROPOSAL BID ITEMS

Report Date 8/22/19

Section: 0001 - PAVING

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|--------------------------------------|-----------|------|-----------|----|--------|
| 0010 | 00003 | | CRUSHED STONE BASE | 8,006.00 | TON | | \$ | |
| 0020 | 00020 | | TRAFFIC BOUND BASE | 500.00 | TON | | \$ | |
| 0030 | 00078 | | CRUSHED AGGREGATE SIZE NO 2 | 21,489.00 | TON | | \$ | |
| 0040 | 00100 | | ASPHALT SEAL AGGREGATE | 9.60 | TON | | \$ | |
| 0050 | 00103 | | ASPHALT SEAL COAT | 1.20 | TON | | \$ | |
| 0060 | 00190 | | LEVELING & WEDGING PG64-22 | 2,781.00 | TON | | \$ | |
| 0070 | 00214 | | CL3 ASPH BASE 1.00D PG64-22 | 14,363.00 | TON | | \$ | |
| 0080 | 00324 | | CL3 ASPH SURF 0.50B PG64-22 | 3,241.00 | TON | | \$ | |
| 0090 | 00356 | | ASPHALT MATERIAL FOR TACK | 209.80 | TON | | \$ | |
| 0100 | 02101 | | CEM CONC ENT PAVEMENT-8 IN | 3,529.00 | SQYD | | \$ | |
| 0110 | 02599 | | FABRIC-GEOTEXTILE TYPE IV | 27,719.00 | SQYD | | \$ | |
| 0120 | 02676 | | MOBILIZATION FOR MILL & TEXT | 1.00 | LS | | \$ | |
| 0130 | 02677 | | ASPHALT PAVE MILLING & TEXTURING | 281.00 | TON | | \$ | |
| 0140 | 20071EC | | JOINT ADHESIVE | 42,908.00 | LF | | \$ | |
| 0150 | 22861EN | | HIGH STRENGTH GEOTEXTILE FABRIC TY V | 23,270.00 | SQYD | | \$ | |
| 0160 | 23314EC | | CONCRETE TRENCH | 1,329.00 | LF | | \$ | |

Section: 0002 - ROADWAY

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|---|-----------|------|-----------|----|--------|
| 0170 | 01310 | | REMOVE PIPE | 52.00 | LF | | \$ | |
| 0180 | 01314 | | PLUG PIPE | 2.00 | EACH | | \$ | |
| 0190 | 01585 | | REMOVE DROP BOX INLET | 6.00 | EACH | | \$ | |
| 0200 | 01791 | | ADJUST MANHOLE FRAME TO GRADE | 1.00 | EACH | | \$ | |
| 0210 | 01810 | | STANDARD CURB AND GUTTER | 10,349.10 | LF | | \$ | |
| 0220 | 01875 | | STANDARD HEADER CURB | 245.60 | LF | | \$ | |
| 0230 | 01982 | | DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE | 32.00 | EACH | | \$ | |
| 0240 | 02001 | | CURB TO BARRIER WALL TRANS | 4.00 | EACH | | \$ | |
| 0250 | 02014 | | BARRICADE-TYPE III | 36.00 | EACH | | \$ | |
| 0260 | 02091 | | REMOVE PAVEMENT | 40.00 | SQYD | | \$ | |
| 0270 | 02159 | | TEMP DITCH | 4,507.00 | LF | | \$ | |
| 0280 | 02160 | | CLEAN TEMP DITCH | 2,253.00 | LF | | \$ | |
| 0290 | 02230 | | EMBANKMENT IN PLACE | 65,541.00 | CUYD | | \$ | |
| 0300 | 02242 | | WATER (FOR DUST CONTROL) | 700.00 | MGAL | | \$ | |
| 0310 | 02351 | | GUARDRAIL-STEEL W BEAM-S FACE | 2,368.75 | LF | | \$ | |
| 0320 | 02360 | | GUARDRAIL TERMINAL SECTION NO 1 | 5.00 | EACH | | \$ | |
| 0330 | 02363 | | GUARDRAIL CONNECTOR TO BRIDGE END TY A | 4.00 | EACH | | \$ | |
| 0340 | 02367 | | GUARDRAIL END TREATMENT TYPE 1 | 6.00 | EACH | | \$ | |
| 0350 | 02381 | | REMOVE GUARDRAIL | 633.00 | LF | | \$ | |
| 0360 | 02391 | | GUARDRAIL END TREATMENT TYPE 4A | 5.00 | EACH | | \$ | |
| 0370 | 02397 | | TEMP GUARDRAIL | 2,237.50 | LF | | \$ | |
| 0380 | 02429 | | RIGHT-OF-WAY MONUMENT TYPE 1 | 67.00 | EACH | | \$ | |
| 0390 | 02430 | | RIGHT-OF-WAY MONUMENT TYPE 1A | 16.00 | EACH | | \$ | |
| 0400 | 02432 | | WITNESS POST | 3.00 | EACH | | \$ | |

PROPOSAL BID ITEMS

Report Date 8/22/19

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|---|-----------|------|-----------|----|-------------|
| 0410 | 02483 | | CHANNEL LINING CLASS II | 217.00 | TON | | \$ | |
| 0420 | 02484 | | CHANNEL LINING CLASS III | 18.00 | TON | | \$ | |
| 0430 | 02545 | | CLEARING AND GRUBBING (APPROXIMATELY 28.894 ACRES) | 1.00 | LS | | \$ | |
| 0440 | 02555 | | CONCRETE-CLASS B | 61.37 | CUYD | | \$ | |
| 0450 | 02562 | | TEMPORARY SIGNS | 445.50 | SQFT | | \$ | |
| 0460 | 02585 | | EDGE KEY | 471.00 | LF | | \$ | |
| 0470 | 02600 | | FABRIC GEOTEXTILE TY IV FOR PIPE | 23,835.00 | SQYD | \$2.00 | \$ | \$47,670.00 |
| 0480 | 02625 | | REMOVE HEADWALL | 1.00 | EACH | | \$ | |
| 0490 | 02650 | | MAINTAIN & CONTROL TRAFFIC | 1.00 | LS | | \$ | |
| 0500 | 02671 | | PORTABLE CHANGEABLE MESSAGE SIGN | 4.00 | EACH | | \$ | |
| 0510 | 02690 | | SAFELOADING | 37.20 | CUYD | | \$ | |
| 0520 | 02701 | | TEMP SILT FENCE | 4,507.00 | LF | | \$ | |
| 0530 | 02703 | | SILT TRAP TYPE A | 29.00 | EACH | | \$ | |
| 0540 | 02704 | | SILT TRAP TYPE B | 29.00 | EACH | | \$ | |
| 0550 | 02705 | | SILT TRAP TYPE C | 29.00 | EACH | | \$ | |
| 0560 | 02706 | | CLEAN SILT TRAP TYPE A | 29.00 | EACH | | \$ | |
| 0570 | 02707 | | CLEAN SILT TRAP TYPE B | 29.00 | EACH | | \$ | |
| 0580 | 02708 | | CLEAN SILT TRAP TYPE C | 29.00 | EACH | | \$ | |
| 0590 | 02720 | | SIDEWALK-4 IN CONCRETE | 5,946.90 | SQYD | | \$ | |
| 0600 | 02726 | | STAKING | 1.00 | LS | | \$ | |
| 0610 | 02731 | | REMOVE STRUCTURE (BRIDGE OVER CSX RAILROAD) | 1.00 | LS | | \$ | |
| 0620 | 02775 | | ARROW PANEL | 1.00 | EACH | | \$ | |
| 0630 | 03171 | | CONCRETE BARRIER WALL TYPE 9T | 880.00 | LF | | \$ | |
| 0640 | 05950 | | EROSION CONTROL BLANKET | 1,716.00 | SQYD | | \$ | |
| 0650 | 05952 | | TEMP MULCH | 92,298.00 | SQYD | | \$ | |
| 0660 | 05953 | | TEMP SEEDING AND PROTECTION | 69,922.00 | SQYD | | \$ | |
| 0670 | 05963 | | INITIAL FERTILIZER | 2.40 | TON | | \$ | |
| 0680 | 05964 | | MAINTENANCE FERTILIZER | .10 | TON | | \$ | |
| 0690 | 05985 | | SEEDING AND PROTECTION | 77,893.00 | SQYD | | \$ | |
| 0700 | 05990 | | SODDING | 1,000.00 | SQYD | | \$ | |
| 0710 | 05992 | | AGRICULTURAL LIMESTONE | 92.00 | TON | | \$ | |
| 0720 | 06510 | | PAVE STRIPING-TEMP PAINT-4 IN | 62,818.00 | LF | | \$ | |
| 0730 | 06514 | | PAVE STRIPING-PERM PAINT-4 IN | 34,546.00 | LF | | \$ | |
| 0740 | 06565 | | PAVE MARKING-THERMO X-WALK-6 IN | 1,539.00 | LF | | \$ | |
| 0750 | 06567 | | PAVE MARKING-THERMO STOP BAR-12IN | 295.00 | LF | | \$ | |
| 0760 | 06568 | | PAVE MARKING-THERMO STOP BAR-24IN | 107.00 | LF | | \$ | |
| 0770 | 06572 | | PAVE MARKING-DOTTED LANE EXTEN | 399.00 | LF | | \$ | |
| 0780 | 06573 | | PAVE MARKING-THERMO STR ARROW | 4.00 | EACH | | \$ | |
| 0790 | 06574 | | PAVE MARKING-THERMO CURV ARROW | 59.00 | EACH | | \$ | |
| 0800 | 06576 | | PAVE MARKING-THERMO ONLY | 2.00 | EACH | | \$ | |
| 0810 | 06580 | | PAVEMENT MARKER TYPE IV-MW | 28.00 | EACH | | \$ | |
| 0820 | 06582 | | PAVEMENT MARKER TYPE IV-BY | 180.00 | EACH | | \$ | |
| 0830 | 08901 | | CRASH CUSHION TY VI CLASS BT TL2 | 4.00 | EACH | | \$ | |
| 0840 | 10020NS | | FUEL ADJUSTMENT | 47,408.00 | DOLL | \$1.00 | \$ | \$47,408.00 |
| 0850 | 10030NS | | ASPHALT ADJUSTMENT | 49,110.00 | DOLL | \$1.00 | \$ | \$49,110.00 |
| 0860 | 20550ND | | SAWCUT PAVEMENT | 47.00 | LF | | \$ | |
| 0870 | 21289ED | | LONGITUDINAL EDGE KEY | 12,253.00 | LF | | \$ | |
| 0880 | 21532ED | | RAIL SYSTEM TYPE III | 120.00 | LF | | \$ | |

PROPOSAL BID ITEMS

Report Date 8/22/19

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|------------|-----|--|-----------|------|-----------|----|--------|
| 0890 | 21541NN | | CORED HOLE DRAINAGE BOX CON- 18 IN | 1.00 | EACH | | \$ | |
| 0900 | 22664EN | | WATER BLASTING EXISTING STRIPE | 25,867.00 | LF | | \$ | |
| 0910 | 23158ES505 | | DETECTABLE WARNINGS | 517.00 | SQFT | | \$ | |
| 0920 | 23274EN11F | | TURF REINFORCEMENT MAT 1 | 2,325.00 | SQYD | | \$ | |
| 0930 | 23607EC | | PAVE MARK THERMO-LANE REDUCTION ARROW | 3.00 | EACH | | \$ | |
| 0940 | 24814EC | | PIPELINE INSPECTION | 4,556.00 | LF | | \$ | |
| 0950 | 24880EC | | REMOVE PAVEMENT MARKER | 90.00 | EACH | | \$ | |

Section: 0003 - DRAINAGE

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|------------------------------------|----------|------|-----------|----|--------|
| 0960 | 00440 | | ENTRANCE PIPE-15 IN | 389.00 | LF | | \$ | |
| 0970 | 00461 | | CULVERT PIPE-15 IN | 147.00 | LF | | \$ | |
| 0980 | 00462 | | CULVERT PIPE-18 IN | 50.00 | LF | | \$ | |
| 0990 | 00464 | | CULVERT PIPE-24 IN | 151.00 | LF | | \$ | |
| 1000 | 00520 | | STORM SEWER PIPE-12 IN | 121.00 | LF | | \$ | |
| 1010 | 00521 | | STORM SEWER PIPE-15 IN | 5,458.00 | LF | | \$ | |
| 1020 | 00522 | | STORM SEWER PIPE-18 IN | 2,434.00 | LF | | \$ | |
| 1030 | 00524 | | STORM SEWER PIPE-24 IN | 302.00 | LF | | \$ | |
| 1040 | 01001 | | PERFORATED PIPE-6 IN | 5,163.30 | LF | | \$ | |
| 1050 | 01011 | | NON-PERFORATED PIPE-6 IN | 653.00 | LF | | \$ | |
| 1060 | 01021 | | PERF PIPE HEADWALL TY 1-6 IN | 6.00 | EACH | | \$ | |
| 1070 | 01025 | | PERF PIPE HEADWALL TY 2-6 IN | 8.00 | EACH | | \$ | |
| 1080 | 01202 | | PIPE CULVERT HEADWALL-15 IN | 7.00 | EACH | | \$ | |
| 1090 | 01204 | | PIPE CULVERT HEADWALL-18 IN | 9.00 | EACH | | \$ | |
| 1100 | 01208 | | PIPE CULVERT HEADWALL-24 IN | 3.00 | EACH | | \$ | |
| 1110 | 01210 | | PIPE CULVERT HEADWALL-30 IN | 1.00 | EACH | | \$ | |
| 1120 | 01432 | | SLOPED BOX OUTLET TYPE 1-15 IN | 1.00 | EACH | | \$ | |
| 1130 | 01434 | | SLOPED BOX OUTLET TYPE 1-24 IN | 1.00 | EACH | | \$ | |
| 1140 | 01450 | | S & F BOX INLET-OUTLET-18 IN | 2.00 | EACH | | \$ | |
| 1150 | 01456 | | CURB BOX INLET TYPE A | 56.00 | EACH | | \$ | |
| 1160 | 01459 | | CURB BOX INLET TYPE A MOD | 1.00 | EACH | | \$ | |
| 1170 | 01487 | | CURB BOX INLET TYPE F | 1.00 | EACH | | \$ | |
| 1180 | 01490 | | DROP BOX INLET TYPE 1 | 6.00 | EACH | | \$ | |
| 1190 | 01493 | | DROP BOX INLET TYPE 2 | 1.00 | EACH | | \$ | |
| 1200 | 01544 | | DROP BOX INLET TYPE 11 | 17.00 | EACH | | \$ | |
| 1210 | 01550 | | DROP BOX INLET TYPE 12A | 55.00 | LF | | \$ | |
| 1220 | 01642 | | JUNCTION BOX-18 IN | 2.00 | EACH | | \$ | |
| 1230 | 01691 | | FLUME INLET TYPE 2 | 1.00 | EACH | | \$ | |
| 1240 | 01756 | | MANHOLE TYPE A | 1.00 | EACH | | \$ | |
| 1250 | 01791 | | ADJUST MANHOLE FRAME TO GRADE | 1.00 | EACH | | \$ | |
| 1260 | 22581EN | | ENTRANCE PIPE-36 IN | 81.00 | LF | | \$ | |
| 1270 | 24862EC | | PVC FOLD AND FORM PIPE LINER-18 IN | 208.00 | LF | | \$ | |

Section: 0004 - BRIDGE - CSX RR & STREAM - DWG. 26737

PROPOSAL BID ITEMS

Report Date 8/22/19

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|---|------------|------|-----------|----|--------|
| 1280 | 02231 | | STRUCTURE GRANULAR BACKFILL | 128.00 | CUYD | | \$ | |
| 1290 | 02998 | | MASONRY COATING | 996.00 | SQYD | | \$ | |
| 1300 | 03299 | | ARMORED EDGE FOR CONCRETE | 102.00 | LF | | \$ | |
| 1310 | 08001 | | STRUCTURE EXCAVATION-COMMON | 529.00 | CUYD | | \$ | |
| 1320 | 08019 | | CYCLOPEAN STONE RIP RAP | 1,100.00 | TON | | \$ | |
| 1330 | 08020 | | CRUSHED AGGREGATE SLOPE PROT | 395.00 | TON | | \$ | |
| 1340 | 08033 | | TEST PILES | 185.00 | LF | | \$ | |
| 1350 | 08037 | | COFFERDAM (PIER 1) | 1.00 | LS | | \$ | |
| 1360 | 08037 | | COFFERDAM (PIER 2) | 1.00 | LS | | \$ | |
| 1370 | 08046 | | PILES-STEEL HP12X53 | 942.00 | LF | | \$ | |
| 1380 | 08050 | | PILES-STEEL HP14X73 | 605.00 | LF | | \$ | |
| 1390 | 08094 | | PILE POINTS-12 IN | 18.00 | EACH | | \$ | |
| 1400 | 08095 | | PILE POINTS-14 IN | 26.00 | EACH | | \$ | |
| 1410 | 08100 | | CONCRETE-CLASS A | 324.00 | CUYD | | \$ | |
| 1420 | 08104 | | CONCRETE-CLASS AA | 539.00 | CUYD | | \$ | |
| 1430 | 08130 | | MECHANICAL REINF COUPLER #5 | 4.00 | EACH | | \$ | |
| 1440 | 08133 | | MECHANICAL REINF COUPLER #8 | 32.00 | EACH | | \$ | |
| 1450 | 08134 | | MECHANICAL REINF COUPLER #9 | 14.00 | EACH | | \$ | |
| 1460 | 08135 | | MECHANICAL REINF COUPLER #10 | 16.00 | EACH | | \$ | |
| 1470 | 08140 | | MECHANICAL REINF COUPLER #5 EPOXY COATED | 22.00 | EACH | | \$ | |
| 1480 | 08150 | | STEEL REINFORCEMENT | 55,887.00 | LB | | \$ | |
| 1490 | 08151 | | STEEL REINFORCEMENT-EPOXY COATED | 154,967.00 | LB | | \$ | |
| 1500 | 08500 | | APPROACH SLAB | 212.00 | SQYD | | \$ | |
| 1510 | 08711 | | BRIDGE CHAIN LINK FENCE-6 FT | 486.00 | LF | | \$ | |
| 1520 | 21532ED | | RAIL SYSTEM TYPE III | 486.00 | LF | | \$ | |
| 1530 | 23963EC | | PPC I-BEAM TYPE HN 36-49 | 1,434.00 | LF | | \$ | |
| 1540 | 24405EC | | MECHANICAL REINF COUPLER-#8 EPOXY COATED | 8.00 | EACH | | \$ | |

Section: 0005 - SEWER

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|---|----------|------|-----------|----|--------|
| 1550 | 15011 | | S DIRECTIONAL BORE (UNCASED DRIVEWAY BORE 2-IN) | 370.00 | LF | | \$ | |
| 1560 | 15014 | | S ENCASEMENT STEEL BORED RANGE 1 ((8-IN CS / 2-IN CR) | 185.00 | LF | | \$ | |
| 1570 | 15057 | | S FORCE MAIN PVC 02 INCH | 1,112.00 | LF | | \$ | |
| 1580 | 15058 | | S FORCE MAIN PVC 03 INCH | 1,112.00 | LF | | \$ | |
| 1590 | 15081 | | S FORCE MAIN TIE-IN SPECIAL (CONNECT TO EXISTING MANHOLE) | 2.00 | EACH | | \$ | |
| 1600 | 15091 | | S LATERAL SPECIAL (1-1/4-IN SDR 21 PVC PIPE AT 116 LF) (REVISED: 8-22-19) | 1.00 | EACH | | \$ | |
| 1610 | 15094 | | S MANHOLE ADJUST TO GRADE | 1.00 | EACH | | \$ | |
| 1620 | 15119 | | S PUMP STATION | 3.00 | EACH | | \$ | |

PROPOSAL BID ITEMS

Report Date 8/22/19

Section: 0006 - SIGNALIZATION

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|------------|-----|----------------------------------|----------|------|-----------|----|--------|
| 1630 | 04792 | | CONDUIT-1 IN | 25.00 | LF | | \$ | |
| 1640 | 04793 | | CONDUIT-1 1/4 IN | 150.00 | LF | | \$ | |
| 1650 | 04795 | | CONDUIT-2 IN | 80.00 | LF | | \$ | |
| 1660 | 04811 | | ELECTRICAL JUNCTION BOX TYPE B | 4.00 | EACH | | \$ | |
| 1670 | 04820 | | TRENCHING AND BACKFILLING | 255.00 | LF | | \$ | |
| 1680 | 04830 | | LOOP WIRE | 2,350.00 | LF | | \$ | |
| 1690 | 04844 | | CABLE-NO. 14/5C | 1,725.00 | LF | | \$ | |
| 1700 | 04850 | | CABLE-NO. 14/1 PAIR | 2,250.00 | LF | | \$ | |
| 1710 | 04885 | | MESSENGER-10800 LB | 385.00 | LF | | \$ | |
| 1720 | 04895 | | LOOP SAW SLOT AND FILL | 905.00 | LF | | \$ | |
| 1730 | 04932 | | INSTALL STEEL STRAIN POLE | 4.00 | EACH | | \$ | |
| 1740 | 20093NS835 | | INSTALL PEDESTRIAN HEAD-LED | 4.00 | EACH | | \$ | |
| 1750 | 20188NS835 | | INSTALL LED SIGNAL-3 SECTION | 12.00 | EACH | | \$ | |
| 1760 | 20390NS835 | | INSTALL COORDINATING UNIT | 1.00 | EACH | | \$ | |
| 1770 | 21743NN | | INSTALL PEDESTRIAN DETECTOR | 4.00 | EACH | | \$ | |
| 1780 | 23157EN | | TRAFFIC SIGNAL POLE BASE | 17.27 | CUYD | | \$ | |
| 1790 | 24908EC | | INSTALL SIGNAL CONTROLLER-TY ATC | 1.00 | EACH | | \$ | |
| 1800 | 24955ED | | REMOVE SIGNAL EQUIPMENT | 1.00 | EACH | | \$ | |

Section: 0007 - WATERLINE

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|--|----------|------|-----------|----|--------|
| 1810 | 14000 | | W AIR RELEASE VALVE 1 INCH | 2.00 | EACH | | \$ | |
| 1820 | 14003 | | W CAP EXISTING MAIN (12-IN) | 5.00 | EACH | | \$ | |
| 1830 | 14003 | | W CAP EXISTING MAIN (6-IN) | 9.00 | EACH | | \$ | |
| 1840 | 14003 | | W CAP EXISTING MAIN (8-IN) | 1.00 | EACH | | \$ | |
| 1850 | 14004 | | W DIRECTIONAL BORE (UNCASED 12-IN DRIVEWAY BORE) | 560.00 | LF | | \$ | |
| 1860 | 14004 | | W DIRECTIONAL BORE (UNCASED 6-IN DRIVEWAY BORE) | 380.00 | LF | | \$ | |
| 1870 | 14006 | | W ENCASEMENT STEEL BORED RANGE 1 (12-IN CS / 6-IN CR) | 150.00 | LF | | \$ | |
| 1880 | 14007 | | W ENCASEMENT STEEL BORED RANGE 2 (20-IN CS / 12-IN CR) | 330.00 | LF | | \$ | |
| 1890 | 14019 | | W FIRE HYDRANT ASSEMBLY (W/ NEW 6-IN VALVE) | 10.00 | EACH | | \$ | |
| 1900 | 14030 | | W METER RELOCATE (ALL ITEMS EXCEPT NEW METER) | 14.00 | EACH | | \$ | |
| 1910 | 14036 | | W PIPE DUCTILE IRON 06 INCH (INCLUDING FITTINGS) | 4,439.00 | LF | | \$ | |
| 1920 | 14037 | | W PIPE DUCTILE IRON 08 INCH (INCLUDING FITTINGS) | 60.00 | LF | | \$ | |
| 1930 | 14039 | | W PIPE DUCTILE IRON 12 INCH (INCLUDING FITTINGS) | 5,325.00 | LF | | \$ | |
| 1950 | 14085 | | W SERV PE/PLST SHORT SIDE 3/4 IN (COPPER: TAP TO METER) | 19.00 | EACH | | \$ | |
| 1960 | 14089 | | W TAPPING SLEEVE AND VALVE SIZE 1 (6-IN X 6-IN) | 9.00 | EACH | | \$ | |

PROPOSAL BID ITEMS

Report Date 8/22/19

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|--|----------|------|-----------|----|--------|
| 1970 | 14089 | | W TAPPING SLEEVE AND VALVE SIZE 1 (8-IN X 8-IN) | 1.00 | EACH | | \$ | |
| 1980 | 14090 | | W TAPPING SLEEVE AND VALVE SIZE 2 (12-IN X 12-IN) | 4.00 | EACH | | \$ | |
| 1990 | 14105 | | W VALVE 06 INCH | 1.00 | EACH | | \$ | |
| 2000 | 14108 | | W VALVE 12 INCH | 1.00 | EACH | | \$ | |
| 2010 | 14124 | | W VALVE SPECIAL (INSERTION METHOD - 6-IN) | 1.00 | EACH | | \$ | |
| 2020 | 14154 | | W SPECIAL ITEM (CREEK CROSSING - 10 LF) (REVISED: 8-22-19) | 3.00 | EACH | | \$ | |
| 2025 | 14154 | | W SPECIAL ITEM (PIPE DUCTILE IRON 12-IN RESTRAINING GASKETS) (ADDED: 8-22-19) | 6.00 | EACH | | \$ | |

Section: 0008 - DEMOBILIZATION &/OR MOBILIZATION

| LINE | BID CODE | ALT | DESCRIPTION | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|----------------|----------|------|-----------|----|--------|
| 2030 | 02568 | | MOBILIZATION | 1.00 | LS | | \$ | |
| 2040 | 02569 | | DEMOBILIZATION | 1.00 | LS | | \$ | |