



Andy Beshear  
GOVERNOR

## TRANSPORTATION CABINET

200 Mero Street  
Frankfort, Kentucky 40601

Jim Gray  
SECRETARY

June 6, 2023

CALL NO. 316  
CONTRACT ID NO. 231103  
ADDENDUM # 2

Subject: Whitley County, FD04 118 0727 001-002  
Letting June 22, 2023

- (1) OMIT - Special Notes P. 14-15 of 72
- (2) ADDED - Special Notes P. 1-55 of 55

Proposal revisions are available at <http://transportation.ky.gov/Construction-Procurement/>.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

Rachel Mills,

A handwritten signature in cursive script that reads "Rachel Mills".

Rachel Mills, P.E.  
Director  
Division of Construction Procurement

RM:so  
Enclosures



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

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

**RIGHT OF WAY CERTIFICATION**

<input checked="" type="checkbox"/>	<b>Original</b>	<input type="checkbox"/>	<b>Re-Certification</b>	<b>RIGHT OF WAY CERTIFICATION</b>
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ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
11-9000.00	Whitley	1100 FD04 118 1312001R	N/A

**PROJECT DESCRIPTION**

Construct Roundabout at crossroads adjacent to school. at Corbin Primary School

**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	5	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
<b>Number of Parcels That Have Been Acquired</b>	5		
Signed Deed	5		
Condemnation	0		
Signed ROE	0		

**Notes/ Comments (Text is limited. Use additional sheet if necessary.)**  
All parcels cleared, no pending relocation, no property management activities.

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	
Signature		Signature	
Date		Date	
Right of Way Director		FHWA	
Printed Name		Printed Name	
Signature		Signature	
Date		Date	

## KENTUCKY TRANSPORTATION CABINET COMMUNICATING ALL PROMISES (CAP)

Item No. 11 - 9000 County: Statewide Route: 0 Project Manager: BLAKE COMBS  
Item No. 11 - 9000 County: Whitley Route: 727 Project Manager: BLAKE COMBS

5/1/23

CAP #	Date of Promise	Promise made to:	Location of Promise:	CAP Description
1	4/21/23	Blake Combs	N/A	There have been no promises to document in the CAP report for this project.



**Andy Beshear**  
GOVERNOR

**ENERGY AND ENVIRONMENT CABINET**  
**DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

**Rebecca W. Goodman**  
SECRETARY

300 Sower Boulevard  
Frankfort, Kentucky 40601  
Phone: (502) 564-2150  
Fax: 502-564-4245

**Anthony R. Hatton**  
COMMISSIONER

April 3, 2023

Chris Jones  
KYTC District 11  
603 Railroad Ave  
Manchester, KY 40962

Re: KYR10 Coverage Acknowledgment  
KPDES No.: KYR10R298  
11-9000: KY-727 & Black Diamond Road Roundabout  
Permit Type: Construction Stormwater  
AI ID: 177363  
Whitley County, Kentucky

Dear Chris Jones :

The discharges associated with the Notice of Intent you submitted have been approved for coverage under the “Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR100000)” master general permit. Your coverage becomes effective on the date of this letter. This coverage automatically terminates two years from the effective date of your coverage unless an extension is requested prior to the termination date, until the KYR100000 master general permit expires on November 30, 2024, or the Division of Water revokes coverage, whichever comes first. During this period of coverage all discharges shall comply with the conditions of the KYR100000 master general permit. This permit and links to the eNOI (and permit coverage extension) and eNOT forms can be found on our website:

<https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/KYR10PermitPage.pdf>.

Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470, and the regulations promulgated thereto. The request for hearing should be submitted in writing to the Energy and Environment Cabinet, Office of Administrative Hearings, 211 Sower Boulevard, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Energy and Environment Cabinet, Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

Any questions concerning the general permit and its requirements should be directed to me at 502-782-7123 or email me at Karina.Villanueva@ky.gov

Construction Site GPS Coordinates: 36.927532, -84.145683  
Receiving Water: Parks Branch, Canoe Creek

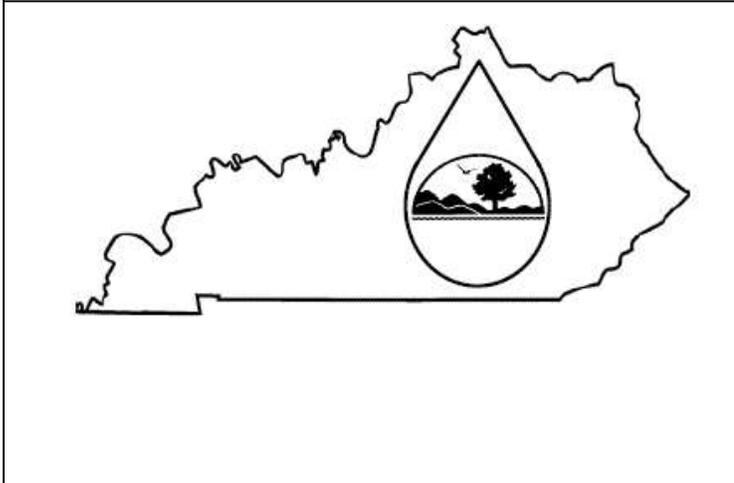
Sincerely,

**Karina Villanueva**  
Surface Water Permits Branch  
Division of Water

cc: Joshua Higgins, eNOI Preparer  
Robert Miller, London Regional Office

Thank you for submitting your information via the Kentucky Department for Environmental Protection eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file. The Submittal ID for this transaction is 351494 and was submitted on March 31, 2023 09:54 AM Eastern Time. If you need to contact EEC regarding your submission, please reference your Submittal ID.

The eForm Submittal ID allows you to use the data from this submittal as a template and/or download a copy of your submittal.



## KENTUCKY POLLUTION DISCHARGE

### ELIMINATION SYSTEM (KPDES)

Notice of Intent (NOI) for coverage of Storm Water Discharge Associated with Construction Activities Under the KPDES Storm Water General Permit KYR100000

[Click here for Instructions \(Controls/KPDES\\_FormKYR10\\_Instructions.\)](#)

[Click here to obtain information and a copy of the KPDES General Permit.](http://dep.ky.gov/formslibrary/Documents/KYR10PermitPage.pdf)

(\* indicates a required field; (✓) indicates a field may be required based on user input or is an optionally required field

**General Comments:**

**Applicant Comment:**  
**NOD 1: See Section VIII comments.**

**EEC Reviewer Comment:**  
**NOD 1 Site Map. See Section VIII**

<b>Reason for Submittal:(*)</b> <b>Response to Notice of Dis</b> ▼	<b>Agency Interest ID:</b> <b>Agency Interest ID</b>	<b>Permit Number:(✓)</b> <b>KPDES Permit Number</b>
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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)**

<b>Company Name:(✓)</b>	<b>First Name:(✓)</b>	<b>M.I.:</b>	<b>Last Name:(✓)</b>
-------------------------	-----------------------	--------------	----------------------

<b>Kentucky Transportation Cabinet - D</b>		<b>Chris</b>	<b>J</b>	<b>Jones</b>
<b>Mailing Address:(*)</b> 603 Railroad Ave.		<b>City:(*)</b> Manchester	<b>State:(*)</b> Kentucky	<b>Zip:(*)</b> 40962
<b>eMail Address:(*)</b> chrisj.jones@ky.gov		<b>Business Phone:(*)</b> 606-598-2145		<b>Alternate Phone:</b> Phone

**Section I Comments:**

**Applicant Comment:**

**EEC Reviewer Comment:**

**SECTION II -- GENERAL SITE LOCATION INFORMATION**

<b>Project Name:(*)</b> 11-9000: KY-727 & Black Diamond Road Rou		<b>Status of Owner/Operator(*)</b> State Governme	<b>SIC Code(*)</b> 1611 Highway a
<b>Company Name:(/)</b> Kentucky Transportation Cabinet - D	<b>First Name:(/)</b> Chris	<b>M.I.:</b> J	<b>Last Name:(/)</b> Jones
<b>Site Physical Address:(*)</b> KY-727, MP 1.23 - 1.50			
<b>City:(*)</b> Corbin		<b>State:(*)</b> Kentucky	<b>Zip:(*)</b> 40701
<b>County:(*)</b> Whitley	<b>Latitude(decimal degrees)(*)DMS to DD Converter</b> ( <a href="https://www.fcc.gov/media/radio/dms-decimal">https://www.fcc.gov/media/radio/dms-decimal</a> ) 36.927532		<b>Longitude(decimal degrees)(*)</b> -84.145683

**Section II Comments:**

**Applicant Comment:**

**EEC Reviewer Comment:**

**SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION**

**Section III requires part A or part B to be completed.**

**Project Description:(\*)**  
11-9000: KY-727 & Black Diamond Road Roundabout construction for hazard elimination.

**a. For single projects provide the following information**

<b>Total Number of Acres in Project:(✓)</b> 8.5	<b>Total Number of Acres Disturbed:(✓)</b> 6.2
<b>Anticipated Start Date:(✓)</b> 7/24/2023	<b>Anticipated Completion Date:(✓)</b> 7/24/2025

**b. For common plans of development provide the following information**

<b>Total Number of Acres in Project:(✓)</b> # Acre(s)	<b>Total Number of Acres Disturbed:(✓)</b> # Acre(s)
<b>Number of individual lots in development, if applicable:(✓)</b> # lot(s)	<b>Number of lots in development:(✓)</b> # lot(s)
<b>Total acreage of lots intended to be developed:(✓)</b> Project Acres	<b>Number of acres intended to be disturbed at any one time:(✓)</b> Disturbed Acres
<b>Anticipated Start Date:(✓)</b>	<b>Anticipated Completion Date:(✓)</b>

**List Building Contractor(s) at the time of Application:(\*)**

Company Name

**Section III Comments:**

**Applicant Comment:**

**EEC Reviewer Comment:**

**SECTION IV -- IF THE PERMITTED SITE DISCHARGES TO A WATER BODY THE FOLLOWING INFORMATION IS REQUIRED ?**

Complete the following table if the permitted site discharges to a water body. Please note that if you enter a row in hte below table, all columns are required to be filled out.

**Unnamed Tributary?:** Does discharge enter an unnamed tributary prior to entering a named receiving water?

**Latitude in decimal degrees:** Format must be between 36.490000 and 39.150000, with a minimum of 5 decimal points of accuracy.

**Longitude in decimal degrees:** Format must be between -89.580000 and -81.960000, with a minimum of 5 decimal points of accuracy.

**Receiving Water Name:** Recieving water name must be from the following list of possible receiving waters.(click here for a list (Controls/ReceivingStream.htm)). If the discharge flows into an unnamed tributary, please enter the first "named" receiving water for which the unnamed tributary(ies) eventually flows into.

<b>Discharge Point(s):</b>			
<u>Unnamed Tributary?</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Receiving Water Name</u>
Yes	36.927915	-84.144027	Parks Branch
Yes	36.929079	-84.144055	Parks Branch
Yes	36.929101	-84.144178	Parks Branch
Yes	36.928001	-84.145875	Parks Branch
Yes	36.925259	-84.146301	Conoe Creek
Yes	36.925355	-84.146529	Conoe Creek
Yes	36.928337	-84.147837	Conoe Creek

<b>Section IV Comments:</b>
<b>Applicant Comment:</b> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<b>EEC Reviewer Comment:</b> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

**SECTION V -- IF THE PERMITTED SITE DISCHARGES TO A MS4 THE FOLLOWING INFORMATION IS REQUIRED**

List all MS4 Discharge Points

Latitude in decimal degrees. Format must be between 36.490000 and 39.150000, with a minimum of 5 decimal points of accuracy.

Longitude in decimal degrees. Format must be between -89.580000 and -81.960000, with a minimum of 5 decimal points of accuracy.

<b>Name of MS4:</b> <div style="border: 1px solid black; height: 25px; width: 100%;"></div>			
<b>Date of application/notification to the MS4 for construction site permit coverage:</b> <div style="border: 1px solid black; padding: 5px; width: 90%; margin: 5px auto;">Date</div>	<b>Discharge Point(s):(*)</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px; width: 50%;"><u>Latitude</u></td> <td style="border: 1px solid black; padding: 2px; width: 50%;"><u>Longitude</u></td> </tr> </table>	<u>Latitude</u>	<u>Longitude</u>
<u>Latitude</u>	<u>Longitude</u>		

<b>Section V Comments:</b>
<b>Applicant Comment:</b> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<b>EEC Reviewer Comment:</b> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

**SECTION VI -- WILL THE PROJECT REQUIRE CONSTRUCTION ACTIVITIES IN A WATER BODY OR THE RIPARIAN ZONE?**

<b>Will the project require construction activities in a water body or the riparian zone?:(*)</b>	<div style="border: 1px solid black; padding: 2px; width: 90%; margin: 0 auto;">No</div>
<b>If Yes, describe scope of activity: (✓)</b>	<div style="border: 1px solid black; padding: 2px; width: 90%; margin: 0 auto;">describe scope of activity</div>
<b>Is a Clean Water Act 404 permit required?:(*)</b>	<div style="border: 1px solid black; padding: 2px; width: 90%; margin: 0 auto;">No</div>
<b>Is a Clean Water Act 401 Water Quality Certification required?:(*)</b>	<div style="border: 1px solid black; padding: 2px; width: 90%; margin: 0 auto;">No</div>

<b>Section VI Comments:</b>
<b>Applicant Comment:</b> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

EEC Reviewer Comment:

[Empty text box for EEC Reviewer Comment]

SECTION VII -- NOI PREPARER INFORMATION

First Name:(*) <b>Joshua</b>	M.I.: <b>J</b>	Last Name:(*) <b>Higgins</b>	Company Name:(*) <b>Kentucky Transportation Cabinet - D</b>	
Mailing Address:(*) <b>603 Railroad Ave.</b>		City:(*) <b>Manchester</b>	State:(*) <b>Kentucky</b> v	Zip:(*) <b>40962</b>
eMail Address:(*) <b>joshuaj.higgins@ky.gov</b>		Business Phone:(*) <b>606-598-2145</b>		Alternate Phone: <b>Phone</b>

Section VII Comments:

Applicant Comment:

[Empty text box for Applicant Comment]

EEC Reviewer Comment:

[Empty text box for EEC Reviewer Comment]

SECTION VIII -- ATTACHMENTS

Facility Location Map:(*)	<b>Upload file</b>
Supplemental Information:	<b>Upload file</b>

Section VIII Comments:

Applicant Comment:

**A call out was added showing that an UT of Parks Branch is the only blue-line stream within the limits of project mapping. A project and disturbance limit line was added with a legend**

EEC Reviewer Comment:

**Show receiving streams on a site map. Add a legend or call out delineating the project and disturbance boundaries.**

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:(*) <b>Chris J. Jones</b>		Title:(*) <b>Chief District Engineer</b>	
First Name:(*) <b>Chris</b>	M.I.: <b>J</b>	Last Name:(*) <b>Jones</b>	
eMail Address:(*) <b>chrisj.jones@ky.gov</b>	Business Phone:(*) <b>606-598-2145</b>	Alternate Phone: <b>Phone</b>	Signature Date: (*) <b>3/21/2023</b>

5/31/2024

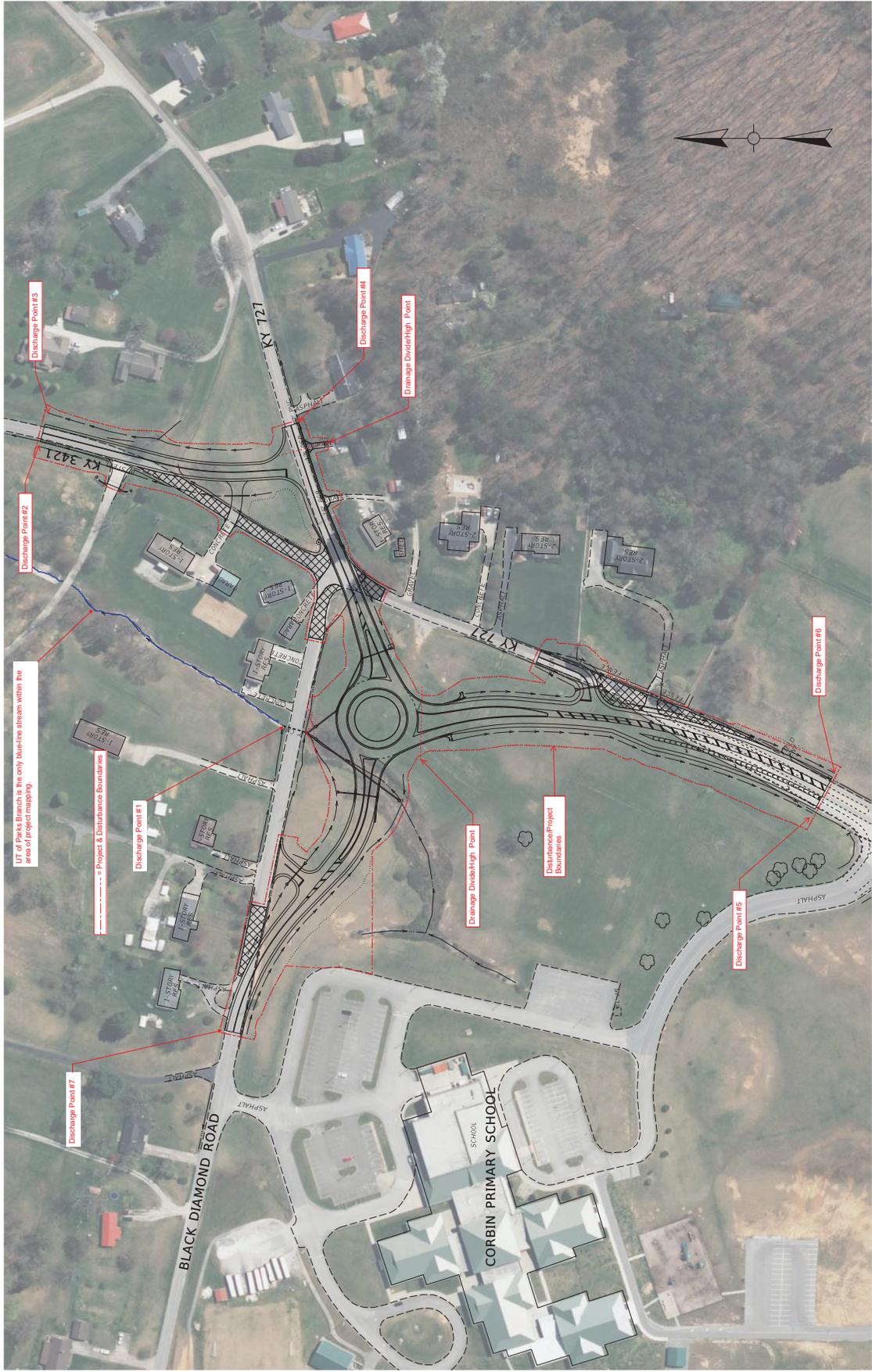
**Section IX Comments:**

**Applicant Comment:**

**EEC Reviewer Comment:**

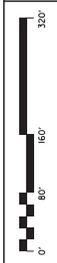
Click to Save Values for Future Retrieval

Click to Submit to EEC



ITEM NO. J1-1000.00  
SHEET NO. 1 OF 1  
COUNTY OF WHITLEY

FIFTH STREET ROAD ROUNDABOUT



HORIZONTAL SCALE  
SCALE: 1"=80'

DRAWING TITLE: DISCHARGE POINTS

COMMONWEALTH OF KENTUCKY  
DEPARTMENT OF HIGHWAYS

USER: jennamiller

FILE NAME: C:\PAWBRANS\IS\CHAS\AS111\_2001\_00\_LAYOUT.DGN

SPECIFICATIONS  
KY 727 (FIFTH STREET ROAD) UTILITY RELOCATIONS

WHITLEY COUNTY, KY

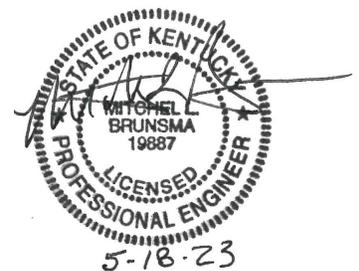
- Prepared for -

CITY UTILITIES COMMISSION  
P.O. Box 1350  
Corbin, KY 40702

- Prepared by -

JOHNSON, MIRMIRAN & THOMPSON, INC  
109 S. 24th Street  
P.O. Box 1425  
Middlesboro, Kentucky 40965  
Phone: 606/248-6600

May 2023



SPECIFICATIONS  
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## DIVISION 1 - GENERAL REQUIREMENTS

### SECTION 1.1 SUMMARY OF WORK

The work to be performed under this contract includes the furnishing of all labor, materials, and incidentals necessary for the relocation of existing waterlines and sewer force main along KY 727 in Whitley County, KY.

All work shall be in accordance with the Contract Documents. It is the intent of the Contract Documents to make a complete and workable system, whether every item is specifically mentioned or not.

### SECTION 1.2 MEASUREMENT AND PAYMENT

#### SECTION 1.2.1 GENERAL

Payment for all work covered by these Specifications, the Drawings, Supplemental General Conditions, and Addenda will be at the unit prices bid for the various items of work, installed or constructed, in place and accepted in the final work. The unit prices bid will be used as a basis for computing and checking pay estimates.

Unit prices bid for the various items of work will be used in assigning values for additions or deletions to the work.

The CONTRACTOR will be paid for bid items suitably stored which are to be incorporated into the work when the materials are stored at a specific area on the job site. The amount of payment to the CONTRACTOR will be the actual cost of the material (up to the quantities listed in the bid) less ten percent (10%) retainage. Materials which are not bid items (such as adapters, tees, ells, reducers, plugs, and other incidentals) will not be paid for as materials stored.

#### SECTION 1.2.2 ITEMS AND MEASUREMENT

The following items will be paid for as specified below and will constitute full payment for all labor, equipment, and materials necessary to complete the work. All other items and work will be considered incidental.

- PVC (C900) Waterline, per linear foot of the sizes called for
- PVC (SDR 17) Waterline, per linear foot of the sizes called for
- Steel Encasement Pipe – Open Cut, per linear foot of the sizes called for
- Tie to Existing Waterline, per each of the sizes and types called for
- Cap & Abandon Existing Waterline, per each
- Fire Hydrant, per each
- Gate Valves, per each of the sizes called for
- Insertion Valves, per each of the sizes called for
- Air Release Valves, per each
- Relocate Existing Water Meter, per each

Re-Connect Existing Water Service, per each  
PVC (SDR 21) Sewer Force Main, per linear foot of the sizes called for  
Combination Sewage Air/Vacuum Release Valve, per each

Pipe will be measured as the actual lengths installed.

The per each items will be measured in place.

### SECTION 1.3 FIELD ENGINEERING

KYTC will provide horizontal and vertical control prior to the beginning of construction.

The CONTRACTOR shall lay out his own work, lines, reference lines, measurements, levels, and grades, subject to the checking and directions of KYTC.

### SECTION 1.4 ABBREVIATIONS AND SYMBOLS

Abbreviations of standards, codes, and publications used within these Specifications are as follow:

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
KRS	Kentucky Revised Statutes
KYDOT	Kentucky Transportation Cabinet, Department of Highways, "Standard Specifications for Road and Bridge Construction"
KYTC	Kentucky Transportation Cabinet
NSF	National Sanitation Foundation

All references are to the latest available edition unless otherwise noted.

### SECTION 1.5 SHOP DRAWINGS

The CONTRACTOR shall submit six (6) copies of the shop drawings to KYTC for approval within fifteen (15) days after the award of the general contract. If such a schedule cannot be met, the CONTRACTOR may request in writing for an extension of time to the KYTC with a schedule of when they are to be submitted. This schedule must be approved by KYTC prior to the second pay estimate.

Shop drawings shall be submitted on all materials used on this project. Each item of equipment proposed shall be a standard catalog product of an established manufacturer. The shop drawing shall give complete information on the proposed equipment. Each item of the shop drawings shall be properly labeled, indicating the intended service of the material, the job name, and CONTRACTOR's name.

The shop drawings shall be submitted to KYTC with a letter of transmittal. The letter of transmittal shall list each item submitted along with the manufacturer's name. All submittals shall have signatures by the CONTRACTOR certifying that they have reviewed and approved the submittals prior to submission to the KYTC.

No material or equipment shall be incorporated in the work without having previously been submitted to KYTC for approval and having subsequently received approval in writing from KYTC.

Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the CONTRACTOR from his responsibility or necessity of furnishing material or performing work as required by the Contract Drawings and Specifications.

No material or equipment shall be incorporated in the work without having previously been submitted to KYTC for approval and having subsequently received approval in writing from KYTC.

## SECTION 1.6 PROJECT RECORD DRAWINGS

The CONTRACTOR shall accurately record the location of pipe runs, connections, meters, valves, hydrants, etc., and any uncharted utilities. These drawings shall be submitted to KYTC before or with the final payment estimate.

## SECTION 1.7 SECURITY

### SECTION 1.7.1 PROTECTION OF EXISTING IMPROVEMENTS

Prior to commencing construction operations, the CONTRACTOR shall make all the provisions necessary to assure the protection of all existing improvements.

The CONTRACTOR shall thoroughly document the existing condition of all structures, landscaping, pavement, and improvements located in all locations where work may result in actual damage or in damage claims. The method of providing this documentation of existing conditions shall be video tape, and a complete tape or set of tapes shall be available to KYTC to help settle any disputes which may arise concerning work that is required to return property to its original condition or concerning property damage. This documentation shall be submitted to KYTC prior to the first payment estimate.

Adequate protection shall be provided for all lawns, trees, shrubs, landscape work, fences, sidewalks, hydrants, utility poles, street, alley and driveway paving, curbs, storm sewers, ditches, headwalls, catch basins, surface inlets and all other improvements that are to remain in place. Such protection shall be provided as long as necessary to prevent damage from the CONTRACTOR's operations. Shrubs, bushes, small trees, and flowers which have to be removed shall be protected and replanted or replaced when the backfill is complete.

The CONTRACTOR shall exercise every precaution to prevent damage to property within and outside easements. He shall remove all debris and rock from the site and restore the ground surfaces, replace or repair all driveways, buildings, fences, retaining walls, culverts, drains, paving, sidewalks, etc., which were removed or damaged during construction to a condition as good as or better than existed before the construction.

The CONTRACTOR shall notify each property owner of his schedule to work in the easement on their property before he enters upon their property. Repair, restoration or replacement of any damaged or removed improvements shall be the obligation of the CONTRACTOR at no additional cost to KYTC.

#### SECTION 1.7.2 PROTECTION OF TREES AND SHRUBS

The CONTRACTOR shall make every effort to preserve as many trees and shrubs as possible. Where branches of trees or shrubs interfere with the CONTRACTOR'S operations, they shall be protected by tying wherever possible. No limbs or branches shall be cut without written permission of the property owner. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

If his operations will not permit saving certain trees, the CONTRACTOR shall be wholly responsible for satisfying all claims for restoration or restitution resulting from their damage or removal. Trees may be removed only when KYTC approves the cutting, based on information showing that the CONTRACTOR'S operations will be unduly restricted if the trees are not removed. KYTC will attempt to obtain the right to cut trees in the easements which interfere with normal operations of the CONTRACTOR. Any trees whose stumps will not be removed shall be cut smoothly at the ground surface. The CONTRACTOR shall dispose of all trees and brush. Burning on the site will be permitted only if approved by the property owner and with a permit from the applicable regulatory agencies.

#### SECTION 1.7.3 DANGER SIGNALS AND SAFETY DEVICES

The CONTRACTOR shall make all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the CONTRACTOR fails or neglects to take such precautions, KYTC may have such lights and barricades installed and charge the cost of this work to the CONTRACTOR. Such action by KYTC does not relieve the CONTRACTOR of any liability incurred under these Contract Documents.

#### SECTION 1.7.4 USE OF EXPLOSIVES

When the use of explosives is necessary, the CONTRACTOR shall observe all local, state and federal laws in purchasing and handling explosives. The CONTRACTOR shall take all necessary precautions to protect completed work, neighboring property, waterlines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced and the material shall be covered with suitable timber, steel or rope mats.

The CONTRACTOR shall notify all owners of public utility property of his intention to use explosives at least eight hours before blasting is done close to such property. Any supervision or direction of the use of explosives by KYTC does not in any way reduce the responsibility of the CONTRACTOR or his surety for damages that may be caused by such use.

#### SECTION 1.7.5 EXISTING UTILITIES

- 1) The CONTRACTOR shall notify all companies with existing utilities in the area prior to excavation. CONTRACTOR shall follow their procedures for crossing, repair, etc. of such utilities.
- 2) The appropriate utility companies shall be given five (5) working days advance notice before work is begun. Where revamping of facilities will be required, at least two weeks advance notice shall be given to the utility company in order to allow sufficient time for engineering work to be completed. On major revamps or relocations, longer notice may be necessary.
- 3) No blasting shall be done within 10 feet of a utility unless a representative of the affected utility company is present.
- 4) Cables, ropes or attachments of any sort shall not be attached to utility poles.
- 5) If damage to an existing utility should occur, the CONTRACTOR shall notify the appropriate utility company immediately.

##### SECTION 1.7.5.1 UNDERGROUND UTILITIES

The locations of existing underground structures are shown on the Drawings in an approximate way only. The CONTRACTOR shall verify the locations of these or any other underground structures and attempt to avoid damaging them. He shall make suitable arrangements with the utility or service company involved to cut and repair, remove and replace, abandon or relocate any structure so encountered.

The CONTRACTOR agrees to be fully responsible for any and all damages which might be caused by failure to locate and preserve any and all underground utilities.

The CONTRACTOR is advised to exercise caution in his operations in areas where the Drawings indicate the presence of a telephone conduit, gas line, or lines carrying hazardous material.

## SECTION 1.8 TEMPORARY CONTROLS

### SECTION 1.8.1 CONSTRUCTION CLEANING

The CONTRACTOR's cleanup operations shall be performed continuously during construction.

### SECTION 1.8.2 DUST CONTROL

The CONTRACTOR shall make such provisions as are necessary for controlling all dust resulting from his operations at all times when such dust would, in any way, interfere with or cause any delay or other inconvenience to traffic, both vehicular and pedestrian, or have any detrimental effect upon the environment.

### SECTION 1.8.3 EROSION AND SEDIMENTATION CONTROL

The CONTRACTOR shall exercise every reasonable precaution at all times to prevent the pollution of all streams. No partially completed item of work shall be left in a manner that will contribute to erosion during the period in which work on the item is suspended.

The CONTRACTOR shall comply with the applicable provisions of KRS Chapters 220 and 224 of the State Water Pollution Control Laws and other applicable statutes relating to the prevention or abatement of water pollution. He shall also comply with the requirements of any Federal or State agency which may have jurisdictional control over the land through which the project is constructed.

## SECTION 1.9 TRAFFIC REGULATION

### SECTION 1.9.1 INTERFERENCE WITH AND PROTECTION OF HIGHWAYS

The CONTRACTOR shall not close or obstruct any portion of any existing highway, street or alley without obtaining a written permit therefore from the proper authority, a copy of which shall be filed with KYTC, prior to the closing or obstructing thereof.

The CONTRACTOR shall store, pile and confine in a satisfactory manner materials and equipment so as not to damage any highway, street, alley, sidewalk, grassed or loamed surface, building, fence or other property, either public or private, on or adjacent to the work.

### SECTION 1.9.2 MAINTENANCE OF PUBLIC TRAVEL

Public travel shall be maintained undisturbed wherever and whenever possible. Detours shall be provided when so directed by the local officials or when required by the addenda. Emergency vehicles shall be provided access to the construction area at all times. Fire hydrants on or adjacent to the work shall be kept accessible to fire-fighting equipment at all times. The CONTRACTOR shall provide adequate signs, barricades, red lights, flagmen and watchmen and take all necessary precautions for the protection of the work and the

safety of the public as specified and in accordance with applicable federal, state, and local regulations and in conformance to the Manual on Uniform Traffic Control Devices for Streets and Highways (US Department of Transportation, Federal Highway Administration, current edition).

#### SECTION 1.10 MATERIAL AND EQUIPMENT

All materials, unless explicitly specified otherwise, shall be new and unused.

All materials used shall be suitable for the application where installed and meet the requirements of the Division of Water of the Kentucky Natural Resources and Environmental Protection Cabinet.

#### SECTION 1.11 STORAGE AND PROTECTION

The CONTRACTOR shall provide a suitable storage area at no cost to KYTC, and the CONTRACTOR shall be responsible for the protection of the stored materials until they are incorporated into the work.

#### SECTION 1.12 FINAL CLEANING

Final cleaning and dressing shall consist of removing all sediment and debris in the project area and shaping to the original ground lines or to the lines, grades, contours, or cross sections indicated on the Drawings. It shall also include filling with suitable materials all holes and depressions resulting from removal of structures or grubbing or other operations and shaping to conform to the surrounding ground. Where the CONTRACTOR's operations have resulted in filling existing ditches or clogging existing culverts, the CONTRACTOR shall reditch or clean culverts so as to return them to as good as or better condition than existed before the work began.

Before final acceptance of the work, the CONTRACTOR shall satisfactorily clean all areas within the limits of his operations including the street surfaces, walks, gutters, fences, lawns, private property and structures, leaving them in as neat, clean and usable conditions as originally found. He shall remove all structures from the site. He shall also remove organic matter and materials containing organic matter from all areas used by him during construction. All pipes or inlets shall be cleared of all scaffolding, sedimentation, debris, rubbish and dirt.

#### SECTION 1.13 REPAIR AND RESTORATION

All ground or paved surfaces or existing improvements that have been damaged or destroyed by the CONTRACTOR's operations shall be restored in accordance with these Specifications. Where bituminous or concrete materials and work are required, the CONTRACTOR shall conform also to the details on the Drawings and to requirements of the appropriate sections of KY DOT.

The repair of driveways, sidewalks, or other existing improvements shall return them to a condition as good as or better than existed prior to the beginning of the CONTRACTOR's operations.

All signs and mailboxes that will be affected by the CONTRACTOR's operations, whether they are shown on the Drawings or not, shall be removed and reinstalled by the CONTRACTOR. This work shall include the necessary removal and subsequent construction of the sign or mailbox foundation and of any other materials necessary to complete the reinstallation.

All surplus material, rock, trees, shrubs, concrete, asphalt, pipe, crushed stone, etc., that are not to be used in the CONTRACTOR's restoration operations shall be removed from the site and disposed of in an acceptable manner.

## DIVISION 2 - SITEWORK

### SECTION 2.1 SITE CLEARING

The area involved with new construction shall be cleared of all weeds, brush, briars, bushes, trees, stumps, and other protruding obstructions not designated to remain. In addition, all bushes, trees, roots, and stumps within the areas where either excavation or embankment is shown shall be grubbed except undisturbed stumps, roots, and nonperishable solid objects which will be a minimum of three feet below subgrade or slope of embankments. Stumps and nonperishable solid objects to be left under embankment shall not extend more than 6 inches above the ground line.

Work shall not be performed outside said work limits and the existing vegetation outside these limits shall not be disturbed unless authorized by KYTC.

All materials resulting from clearing and grubbing shall be completely disposed of by the CONTRACTOR. In addition, any trees cut or pushed by the geotechnical exploration and remaining at the tank site shall be disposed of by the CONTRACTOR. Any burning of perishable material shall be in conformity with regulations issued by the responsible state agency and in conformity with regulations established by local government agencies.

### SECTION 2.2 EARTHWORK

#### SECTION 2.2.1 GENERAL

Earthwork shall include removing and satisfactorily disposing of materials or filling and compacting of materials, within the limits of the work, required for construction in accordance with these Specifications and in conformity with the elevations, typical sections, cross sections, and finish contour lines shown on the Drawings.

#### SECTION 2.2.2 PRODUCTS

All suitable material taken from excavation shall be used in the formation of embankment, subgrade, and for backfilling as indicated on the Drawings or as directed by KYTC.

When the volume of excavation exceeds that required to construct embankments to the grades indicated on the Drawings, the excess shall be wasted off the project site at locations acquired by the CONTRACTOR at no expense to KYTC. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be supplied from borrow sources at locations to be acquired by the CONTRACTOR subject to the approval of KYTC.

Excess material is expected at the tank site. Any permits necessary for disposal at the site acquired by the CONTRACTOR shall be responsibility of the CONTRACTOR.

Excavation and embankment quantities shown on the Drawings are for information only. The bidder shall make his own determination of the quantity involved when preparing his bid. KYTC makes no warranty, either expressed or implied, regarding the accuracy of those quantities shown.

### SECTION 2.2.3 EXECUTION

#### SECTION 2.2.3.1 EXCAVATION

Excavation shall extend from the original ground line to the lines and grades indicated on the Drawings. During the process of excavation, the grade shall be maintained so that it will be well drained at all times. When directed by KYTC, temporary drainage ditches shall be installed to intercept or direct surface water which may affect work.

Rock, shale, hardpan, loose rock, boulders, or other materials unsatisfactory for subgrade shall be excavated to a minimum of 12 inches below designated elevation. Mulch, peat, matted roots or other yielding materials unsatisfactory for subgrade foundation shall be removed to provide a satisfactory foundation. The portion so excavated shall be refilled with suitable material in accordance with these Specifications.

Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 12 inches of the subgrade.

All loose or protruding rocks in the backslopes shall be removed to the lines or finish grades of the slopes. All cut and fill slopes shall be uniformly dressed to the slope, cross section and alignment indicated on the Drawings.

#### SECTION 2.2.3.2 EMBANKMENT

Where embankments are to be placed on natural slopes steeper than 15 percent, horizontal benches with a minimum width of 6 feet shall be constructed. These benches shall be refilled and compacted in accordance with these Specifications.

All areas where embankments are to be constructed shall be cleared and grubbed and debris subject to termite attack, rot, or corrosion shall be removed. Existing soils in these areas shall be reasonably dry and shall be precompacted by making a minimum of three overlapping runs, one being in the cross direction, with a vibrating roller or other equipment approved by KYTC.

Embankment material shall be free of all organic matter, debris and refuse and shall be of uniform character. Embankment material shall contain no stones or rock fragments larger than 4 inches in the top 12 inches of the embankment.

Embankments of soil, soft shale, or gravel shall be placed in uniform horizontal layers not more than 6 inches in uncompacted depth. Each layer shall be compacted fully and uniformly to a minimum density or a percentage of the Standard Proctor Maximum as shown below (ASTM D-698 or AASHTO Standard Method T-99):

- |  |      |
|--|------|
| 1. Under and within 10 feet of structures: | 100% |
| 2. Under streets and parking areas:        | 95%  |
| 3. Other embankment areas:                 | 85%  |

Soils in embankments where 100% of Standard Proctor Maximum is required shall have a moisture content within  $\pm 2\%$  of optimum moisture when compacted. Soils in embankment where 95% of Standard Proctor is required shall have a moisture content within  $\pm 4\%$  of optimum when compacted.

Embankment material shall be allowed to air dry to the proper moisture as each layer is placed, if necessary, prior to compaction.

No embankment material shall be placed, spread, or rolled when it is frozen or thawing, or during excessively wet weather conditions. When work is interrupted by excessively wet weather, embankment operations shall not resume until KYTC indicates that the moisture content and density of previously placed embankment are as specified.

### SECTION 2.2.3.3 SUBGRADE

Preparation of the subgrade shall include compacting to the required density and shaping to conform to the required lines, grades, or cross sections. Subgrade shall be completed to within  $\pm 0.1$  foot of the elevations or grades indicated on the Drawings, except for street subgrade. Street subgrade shall conform to Sections 208.02 and 208.03 of KY DOT.

### SECTION 2.3 EXCAVATING AND BACKFILLING FOR UTILITIES

#### SECTION 2.3.1 EXCAVATING

Excavating includes removing and disposing of all materials necessary to perform the work shown on the Drawings or as set out in these Specifications. It includes trenching to the alignment and depth as shown on the Drawings or as directed by KYTC.

All suitable material taken from excavation shall be used for backfilling as indicated on the Drawings or as directed by KYTC.

When the volume of excavation exceeds that required for backfill, the excess shall be wasted off the project site at locations acquired by the CONTRACTOR. When the volume of excavation is not sufficient for backfill, the deficiency shall be supplied from borrow sources at locations to be acquired by the CONTRACTOR subject to the approval of KYTC.

Excavation shall extend from the original ground line to the lines and grades indicated on the Drawings. During the process of excavation, the grade shall be maintained so that it will be well drained at all times. When directed by KYTC, temporary drainage ditches shall be installed to intercept or direct surface water which may effect work.

Material removed in excavation is to be unclassified. The following definitions are provided in order to determine the required dimensions of the trench (the dimensions are different for earth and rock cuts).

Earth excavation includes all clay, silt, loam, sand, gravel, slate, hard pan, river rock, stream beds, pavement rocks, and boulders less than 1/3 cubic yard in volume.

Rock excavation includes solid rock, boulders (greater than 1/3 cubic yard in volume), large stone, and concrete or masonry structures, or any other material which in the opinion of KYTC shall require drilling and blasting.

#### SECTION 2.3.1.1 TRENCHES

Trenches shall be of such width and depth to provide adequate room for the construction or installation of the pipe to the lines, grades, and dimensions called for on the Drawings. The minimum width of the trench shall be as shown on the Drawings. The trench width may vary at the ground surface depending upon the depth and characteristics of the excavated material. Excavate the trench a minimum of six (6) inches below the plan grade. Take all precautions such as sheeting and bracing to provide a safe working environment. When blasting is necessary, transport, store, handle, and use all explosives in compliance with all applicable local, state and federal regulations.

Trenches are to be dug only so far in advance of pipe laying as is practical and shall be braced and drained where necessary to insure the safety and efficiency of the workmen. No extra payment will be made for the placing of bracing and draining of trenches. No trenches shall be opened up and allowed to remain open without construction work immediately following. Trenches shall not remain open overnight or at any time the CONTRACTOR is not on the job site.

#### SECTION 2.3.2 BACKFILLING

This section includes filling of excavated trenches and spaces around the pipe and structures to the original ground elevations, unless otherwise shown on the Drawings.

Backfilling of excavated trenches in an open cut shall commence as soon as possible after the pipe is laid and the jointing and alignment are approved, but not until authorized by KYTC.

The following materials shall be used to backfill the trenches in accordance with and in the manner indicated by the requirements specified herein.

### SECTION 2.3.2.1 OUTSIDE PAVEMENT

Backfill in trenches outside the limits of existing or proposed paved surfaces shall be made with materials as specified below:

Backfill in trenches shall be made with selected materials which may be taken from the trench excavation except where stone backfill is required. The selected materials used from the top of the cradle or encasement up to a plane 2 feet above the exterior top of the pipe or structure shall contain no rock larger than 2". The backfill materials used between the plane 2 feet above the top of the pipe or structure and 6" below the ground surface may include rock fragments from the excavation.

The backfill shall consist of unfrozen materials free from rocks, concrete pieces, or clay lumps more than one cubic foot in volume, roots, stumps, tin cans, rubbish, and other similar articles whose presence in the backfill could cause settlement. In backfill containing rock, no rock fragment shall be larger than one cubic foot in size and all rock fragments shall be mixed with sufficient earth materials to completely eliminate all voids, subject to the approval of KYTC. The amount of rock in the backfill shall not exceed 33% of the total backfill. The top 6" of backfill shall be free from rock fragments. Rock fragments and surplus earth materials not used in the backfill shall be removed from the site of work at no expense to KYTC.

### SECTION 2.3.2.2 UNDER PAVEMENT

Backfill in trenches within the limits of existing or proposed paved surfaces or shoulders in city/county streets, and where defined in the Drawings or authorized by KYTC, shall be made with stone material placed as shown on the Drawings. The stone shall meet the requirements of KY DOT Section 805 for #8 stone.

### SECTION 2.3.2.3 CONSERVATION OF ACCEPTABLE BACKFILL MATERIAL

The CONTRACTOR shall conserve all acceptable materials from the trench excavation for backfilling the trenches under this contract. In the event there is not enough acceptable materials to backfill the trenches, the CONTRACTOR shall furnish additional acceptable materials as necessary to completely backfill said trenches.

### SECTION 2.3.2.4 BACKFILL FOR UNDERGROUND STRUCTURES

Backfill for underground structures shall consist of materials free from pieces of rock, concrete or clay lumps more than one cubic foot in volume, roots, stumps, tin cans, rubbish, frozen materials, and other similar articles whose presence in the backfill could cause settlement.

### SECTION 2.3.2.5 BACKFILL AROUND IRON PIPES

Well compacted clay, sand and gravel or other material non-injurious to iron pipe shall be used for backfilling within 24 inches of any iron pipe. Cinders, rubbish or any other materials which would be injurious to iron pipe shall not be used in the backfill.

### SECTION 2.3.2.6 EXECUTION

The specified backfill material shall be deposited in the trench uniformly under and on both sides of the pipe for the full width of the trench up to one-half the diameter of the pipe to provide uniform support.

Backfill materials for underground structures shall be placed in uniform layers not exceeding 12 inches for the full depth of the structure.

The specified backfill material shall be carefully deposited in uniform layers, a maximum of 6 inches thick, from the top of the trench foundation up to a plane one foot above the exterior top of the pipe. Each layer shall be leveled and evenly distributed on both sides of the pipe so as not to disturb, displace or damage the pipe before the next succeeding layer is placed. The remainder of the trench up to the ground surface shall be backfilled with materials which may be taken from the excavation or with stone material where required and place in uniform layers, a maximum of 8 inches thick.

If material for backfilling is dumped, bulldozed, or dropped from a height exceeding 5 feet above the previously placed backfill, its fall shall be broken by timber grillage or other means acceptable to KYTC to prevent possible damage to the pipe.

### SECTION 2.4 PAVEMENT REPAIR

All paved surfaces shall be restored to a condition as good as or better than existed prior to the beginning of the work. The materials and dimensions shall be the same as the original paving unless otherwise indicated on the Drawings.

#### SECTION 2.4.1 ASPHALT PAVEMENT

Existing asphalt pavement shall be restored with #8 stone backfill, bituminous base, and bituminous surface as required herein and as indicated on the Drawings and in accordance with appropriate State Highway and County Roadway Standards.

When surfacing cannot be immediately placed, the base course shall be of such compacted depth as to be level with adjacent undisturbed pavement. The roadway shall be open to traffic and maintained by the CONTRACTOR, including necessary additions of crushed stone, wedging of existing pavement, filling of potholes, dust control, etc., until the final surface course is placed.

Resurfacing or patching shall include a leveling course of asphaltic or bituminous concrete to eliminate irregularities in existing pavement. The final asphaltic or bituminous concrete course shall have a minimum compacted thickness of 4 inches in city or county roadways, unless otherwise indicated.

## SECTION 2.4.2 CONCRETE PAVEMENT

Existing concrete pavement shall be restored in accordance with the Drawings or in accordance with the appropriate State Highway and County Roadway Standards. Concrete pavement shall be a minimum of six inches thick and shall be reinforced with the same material as the existing pavement or with 6-inch by 6-inch No. 4 wire mesh, whichever is greater. When cutting of the existing pavement is required, the CONTRACTOR shall make a smooth and even joint. The repaired section shall be connected to the existing pavement by approved methods for load transfer.

## SECTION 2.5 WATER DISTRIBUTION SYSTEMS

### SECTION 2.5.1 PIPE AND FITTINGS

All pipe for the waterlines shall be SDR17 OR C900 (SDR14) Polyvinyl Chloride (PVC), unless otherwise indicated on the Drawings.

#### SECTION 2.5.1.1 POLYVINYL CHLORIDE PIPE (PVC)

Where Polyvinyl Chloride Pipe - SDR17 is indicated on the Drawings, the pipe shall be Class 250 and shall meet the following ASTM standards: D-1784 (PVC Compound), D-3139 (Joint), F-477 (Gasket), and D-2241 (PVC Pipe).

Where Polyvinyl Chloride Pipe – C900 SDR14 is indicated on the Drawings, the pipe shall be Class 305 and shall meet the following ASTM standards: D-1784 (PVC Compound), D-3139 (Joint), F-477 (Gasket), and D-2241 (PVC Pipe).

The pipe shall be rated for use in 23°C (73°F) at the maximum internal pressure as follows: SDR 17 (250 PSI) OR C900 SDR 14 (305 PSI).

The pipe shall be extruded with only Type I, Grade I, 2000 PSI design stress compound meeting ASTM D-1784 standard. The pipe shall be designed to pass, without failure, the burst test as follows: SDR 17 (800 PSI), C900 SDR 14 (985 PSI) when conducted in accordance with ASTM D-1599.

The pipe shall be designed to pass, without failure, the sustained pressure test for 1000 hours for SDR 17 (530 PSI), C900 SDR 14 (650 PSI) when conducted in accordance with ASTM D-1598. A two-inch long sample ring shall not flake or disintegrate when immersed for 20 minutes in a sealed container of acetone when conducted in accordance with ASTM D-2152. (Swelling or softening is not considered a failure).

A two-inch long sample ring shall be able to be compressed between parallel plates to 40% of the outer diameter of the pipe without evidence of splitting, cracking or breaking.

The pipe shall meet the ASTM D-2241 impact resistance when tested in accordance with specification requirements section of method ASTM D-2444.

Pipe shall be furnished in standard laying lengths of 20 feet (plus or minus 1 inch) unless otherwise noted. Each pipe shall have an integral bell formed on the pipe end and be designed to be at least as strong as the pipe wall (ASTM D2472).

An elastomeric gasket shall be designed with a retainer ring, which “locks” the gasket into integral bell groove and shall be installed at the point of manufacture. Gaskets shall be in conformance with ASTM F477.

All pipe shall carry a current certification of the National Sanitation Foundation (NSF) as acceptable to use in the transport of potable water. Each piece of pipe shall be clearly labeled to identify its size, pressure class, and manufacture date.

**SECTION 2.5.1.2 FITTINGS AND SPECIALS**

Cast iron or ductile iron fittings shall be used with all types of pipe 3 inches and larger unless otherwise shown on the Drawings. Fittings shall be mechanical joint fittings with body thickness and radii of curvature conforming to AWWA C110. Rubber gasket joints shall be in accordance with AWWA C111. Fittings shall be cement mortar lined and asphaltic coated.

GripRing pipe restraints, as manufactured by Romac Industries, Inc., or approved equal, shall be used on all mechanical joint pipe and fittings. No extra payment will be made.

**SECTION 2.5.1.3 ENCASEMENT PIPE**

Encasement pipe, where required, shall be steel pipe of the diameter called for on the Drawings. Minimum wall thickness shall be as follows:

<u>Carrier Pipe Size (Dia. – in.)</u>	<u>Encasement Pipe Nominal Wall Thickness (in.)</u>
8 and under	0.188
10 - 12	0.250
14 - 16	0.281
18	0.312
20	0.344
22	0.375
24	0.438

Carrier pipe within encasement pipe shall be supported by casing shocks equal to APS Model SSI, or approved equal. Spacing and installation shall be as recommended by the manufacturer.

The annular space at the ends of the encasement pipe shall be sealed to prevent the entrance of groundwater, silt, etc., into the casing pipe. The seals shall be “pull-on” type constructed of synthetic rubber with stainless steel banding straps. Seals shall be Model “AC” as manufactured by APS, or approved equal.

#### SECTION 2.5.1.4 HANDLING PIPE AND ACCESSORIES

Care shall be exercised in loading and unloading pipe to prevent damage to the pipe. The degree of care in handling the pipe and accessories shall meet the recommendations of the pipe manufacturer.

Proper implements, tools, and facilities shall be provided to allow safe and convenient performance of the work. Under no circumstances shall pipe or accessories be dropped into the trench.

#### SECTION 2.5.1.5 PIPE INSPECTION PRIOR TO LAYING

All pipe shall be inspected upon arrival. If any portion of a shipment is found to be defective in diameter or thickness or found to have been contaminated with fuel exhaust, the entire shipment shall be removed from the project at the CONTRACTOR'S expense.

All pipe shall be inspected just prior to laying. Polyvinyl Chloride (PVC) pipe will be inspected for joint scratches, chipped ends and imperfect gasket seats. Any defective pipe will be rejected. All such rejected pipe shall be removed from the project immediately and replaced at the expense of the CONTRACTOR.

Usable portions of the rejected pipe may be salvaged upon approval of KYTC. Minimum manufacturer's standards shall be met on all salvaged pipe.

#### SECTION 2.5.1.6 PIPE TO BE KEPT CLEAN

Care shall be exercised to keep the pipe clear of mud, dirt and debris before and during laying.

No pipe shall be laid in water, and precautions shall be taken to prevent trench water from entering the pipe.

#### SECTION 2.5.1.7 ALIGNMENT AND GRADE

All pipe shall be laid to the required grade and alignment. Any deviations from the alignment and grade shown on the Drawings shall be as directed by KYTC.

Minimum cover over water mains shall be 42 inches. Holes shall be excavated at the bell and/or coupling locations to prevent load concentration on the bells and/or couplings.

Fittings and valves shall be placed at the locations shown on the Drawings with all joints centered, spigots home, and valve stems plumb.

Waterlines shall be laid at least 10 feet horizontally from any existing or proposed sewer line. Should local conditions prevent a lateral separation of 10 feet, a waterline may be

laid closer than 10 feet to a sewer line if the elevation of the top (crown) of the sewer is at least 2 feet below the bottom (invert) of the water main. Wherever waterlines must cross over sewers, the waterline shall be laid at such elevation that the top of the sewer is at least 2 feet below the bottom of the water main.

#### SECTION 2.5.1.8 CUTTING PIPE

Cutting of pipe for the insertion of valve fittings shall be done in a manner recommended by the manufacturer so as to avoid damage to the pipe or coating.

#### SECTION 2.5.1.9 PERMISSIBLE DEFLECTION AT JOINTS

The degree of deflection of a pipe in either the horizontal or vertical planes shall not exceed the recommendations of the manufacturer.

#### SECTION 2.5.1.10 STATE HIGHWAY, DRIVEWAY AND ROADWAY CROSSINGS

Crossings under state highways shall be open cut with steel encasement, unless otherwise indicated on the Drawings. Waterlines crossing under paved or concrete private driveways shall be free-bored unless permission is given in writing from the property owner to open-cut. Pavement shall be replaced as specified in Section 2.4 of the Specifications and no extra payment will be made. No extra payment will be made for boring under private driveways or entrances.

All crossings under paved county roads/city streets may be open cut unless otherwise indicated on the Drawings. These crossings shall be made at the locations shown on the Drawings and shall conform to the Drawings. Pavement shall be replaced as specified in Section 2.4 of the Specifications and no extra payment will be made.

#### SECTION 2.5.1.11 OTHER PIPE JOINTS

In laying and joining other pipes, the recommendations of the manufacturer shall be followed closely. Any applicable provisions in this section applying to bell and spigot pipe shall be followed in laying and jointing other types of pipe and installing bell and spigot fittings to be used with other types of pipe.

#### SECTION 2.5.1.12 TIE-IN TO EXISTING WATER LINE

Tie-ins to existing waterlines shall be made under pressure with a tapping sleeve and tapping valve, unless otherwise noted. The tapping sleeve shall be Mueller Model H-615 or Ford FTSS (stainless steel) or Mueller H-304 (stainless Steel); the tapping valve shall be the same or equal to Mueller Model T-2360 Resilient Wedge (open left MJxFL).

Tapping sleeves shall be of satisfactory working pressure (minimum of 150 psi) and well supported independently from the pipe during the tapping.

A thrust block shall be used as with any other fitting or appurtenance and shall meet the bearing area requirements shown on the details for that of a 90° bend.

#### SECTION 2.5.1.13 PLUGGING DEAD ENDS

Standard plugs shall be inserted into the bells of all dead end fittings. Spigot ends shall be capped. Thrust blocking shall be provided at all dead ends of pipe that are capped or plugged.

#### SECTION 2.5.1.14 ANCHORAGE OF BENDS, TEES AND PLUGS

All pipe lines, all plugs capped, and bends exceeding 22-1/2° shall be securely anchored by thrust blocking as indicated on the Drawings. In addition, on 4" or larger pipe lines, all tees shall be similarly anchored. Thrust blocking shall be concrete of a mix not leaner than 1 part cement, 2 parts sand, 5 parts stone and a compressive strength not less than 2000 pounds per square inch. Quantities of concrete required for different bends, tees, and valves shall be as indicated on the Drawings. If permitted by KYTC, metal harness rods and pipe clamps of adequate strength to prevent movement may be used instead of concrete blocking.

Thrust blocks shall be placed so that the pipe and fitting joints will be accessible for repair.

#### SECTION 2.5.1.15 TRACER WIRE

CONTRACTOR shall install #10 bare copper tracer wire on all waterlines installed. Cost shall be incidental to the price of the installed waterline.

#### SECTION 2.5.2 VALVES

Unless otherwise specified, valves shall be designed to operate continuously under a working pressure of not less than 200 pounds per square inch. Valves suitable for other working pressures shall be furnished as indicated on the Drawings. All valves shall be mechanically jointed unless otherwise specified. A valve/line marker as shown on the Drawings shall be erected at the location of each valve unless otherwise permitted by KYTC.

All valves shall be tested in the shop at no cost to the owner under a test pressure equal to twice the working pressure and upon request the owner shall be furnished with a certificate stating that all valves have successfully passed such a test.

All valves and fittings used in the pressure reducing station shall have 250 lb. ASA high pressure flanges and shall be as specified on the Drawings.

### Gate Valves & Boxes:

Gate valves shall be Mueller Resilient Wedge Gate Valves, or approved equal, tested to 250 psi in both directions and shell tested to 500 psi. The valve shall have mechanical joint ends unless otherwise stated on the Drawings.

Valve boxes shall be cast iron screw-type with lids marked "Water". A concrete collar shall be constructed around the box, as shown on the Drawings.

### Insertion Valves:

Insertion valves shall be an all stainless steel body Resilient Wedge Gate Valve designed for permanent use in potable water, sewage, raw water, reclaimed water, irrigation and backflow control systems. The design shall allow the valve to be installed into an existing pressurized pipeline while maintaining constant pressure and service without system shutdown. No restraining devices, restraining fasteners, or transition gaskets shall be required for the installation or operation of the valve.

Insertion valves shall have a stainless steel body, bonnet and a reinforced composite polymer valve cartridge to provide superior corrosion resistance, strength and a pressure rating that meets or exceeds the requirements of resilient seated gate valves.

The insertion valve shall be stainless steel construction for corrosion resistance, maximum toughness and strength.

All valves must be capable of working on Cast/Grey Iron or Ductile Iron Class A, B, C and D, IPS PVC, C900 and C909 PVC, Steel and AC pipe diameters without changing either top or bottom portion of split valve body or using a transition gasket.

Valves must provide a solid support of the host pipe through the entire laying length of the valve body. No gaps or space between the valve body and host pipe shall be accepted.

Valves shall be rated for 250 psig maximum working pressure and hydrostatically pressure tested to 1.25 times of the system operating pressure (minimum) or 1.5 times of the valve's 250 psig maximum pressure rating. The test shall be sustained for a minimum of 15 minutes. Once the pressure test is affectively achieved, the insertion valve body must not be moved in accordance with AWWA Standards. If the insertion valve body is moved the pressure test must be completed again. Any movement, repositioning, loosening and/or retightening must be retested before the pipe is tapped.

Valves shall have an EPDM molded resilient wedge seal. The resilient wedge seal will be affixed into a re-inforced nylon composite polymer valve cartridge. The entire assembly shall be inert and impervious to corrosion. The nylon composite polymer valve cartridge shall be engineered to come into contact with the interior of the host pipe and an engineered sealing surface in the valve body to create a seal. The resilient wedge shall be reinforced to resist abrasion thus extending the life and quality of the shutdown where the wedge contacts the host pipe.

Pressure equalization on the down or upstream side of the closed wedge shall not be necessary to open the valve. The wedge shall be symmetrical and seal equally well with flow in either direction. The Resilient wedge must ride inside a minimum of four body channels to maintain wedge alignment throughout its travel and to achieve maximum fluid control regardless of high or low flow pressure or velocity.

Insertion valves shall have a full size, full port flow way that is unobstructed, and free of depressions to provide optimum flow and sealing and not trap tuberculation or debris.

Insertion valves shall have all stainless steel bodies and fasteners. The use of epoxy coatings for protection against corrosion is deemed insufficient.

#### SECTION 2.5.2.1 FIRE HYDRANTS

Fire hydrants, where indicated on the Drawings, shall be 3-way Mueller Super Centurion 250 Model (A-423), Kennedy Guardian Model K81D, or American Model B-84-3 fire hydrants, or equal, with a 4-1/2" valve opening, Safety Yellow in color, and minimum 30" bury dimension.

#### SECTION 2.5.2.2 VALVE/LINE MARKER

A fiberglass valve/line marker, Model CUM-375 as manufactured by Carsonite International Corporation, or approved equal, shall be constructed at the locations indicated on the Drawings. The markers shall be blue in color meeting the requirements shown on the details. Cost of the markers shall be incidental to the cost of the installed waterlines.

#### SECTION 2.5.2.3 SETTING VALVES, VALVE BOXES, AND FITTINGS

All gate valves and any other valves designated shall be set in cast iron Buffalo type, two-piece screw type valve boxes unless otherwise indicated on the Drawings. Wrench nuts shall be readily accessible through the opening. Valve boxes shall be firmly supported and shall be kept centered and plumb over the wrench nut of the gate valve. The box cover shall be flush with the surface of the finished pavement or any other level designated by KYTC.

Check, altitude, pressure reducing, or air release valves or any other appurtenances required in connection with the mains or their appurtenances shall be installed in accordance with applicable specifications applying to other valve fittings, and subject to any further detailed requirement included on the Drawings.

#### SECTION 2.5.3 TESTING OF WATER DISTRIBUTION SYSTEMS

##### General:

CONTRACTOR shall fully test all sections of water lines in accordance with the procedures to follow. All labor, materials and equipment used in testing procedures (including water) shall be furnished by the CONTRACTOR.

Hydrostatic Tests: After water pipe has been laid and backfilled, all newly laid pipe or any valve section thereof shall be subject to a hydrostatic pressure of not less than 200 psi or 1 ½ times anticipated line pressure, whichever is greater. The duration of the pressure tests shall be two hours. Each valve section of pipe shall be slowly filled with water. While the pipe is being filled and before the application of the specified test pressure, all air shall be expelled from the pipe. Taps may be required at points of highest elevation. These taps are to be tightly plugged after completion of the test. The test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to KYTC. The pump, pump connections, gauges, and all necessary apparatus and labor shall be furnished by the CONTRACTOR. CONTRACTOR shall calibrate the gauges in the presence of KYTC.

A test shall be made only after a part or all of the backfilling has been completed and at least 36 hours after the last concrete thrust block has been cast with high-early-strength cement or at least seven (7) days after the last thrust block has been cast using standard cement.

Any cracked or defective pipes, fittings, or valves discovered during hydrostatic pressure tests shall be removed and replaced with sound material and the test repeated until satisfactory to KYTC. No payment shall be made for the removal and replacement of defective pipes and appurtenances.

Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure. Leakage shall not be measured by a drop in pressure in a test section over a period of time. See Table 1 below:

Table 1. Allowable leakage per 1000 ft of pipeline\* - gphH

<b>NOMINAL PIPE DIAMETERBin.</b>																		
Avg. Test Pressure psi	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54	60	64
450	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60	9.56	10.19
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11	9.01	9.61
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58	8.43	8.99
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02	7.80	8.32
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72	7.47	7.97
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41	7.12	7.60
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03	6.76	7.21
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73	6.37	6.80
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36	5.96	6.36
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97	5.52	5.88
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53	5.04	5.37
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.80

\*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

H Calculated on the basis of Eq. 1.

Allowable leakage. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

In inch-pound units,

$$L = \frac{SD/P}{133,200}$$

Where:

- L = allowable leakage, in gallons per hour
- S = length of pipe tested, in feet
- D = nominal diameter of the pipe, in inches
- P = average test pressure during the leakage test, in pounds per square inch (gauge)

## SECTION 2.5.4 DISINFECTION OF WATER DISTRIBUTION SYSTEMS

Before being placed into general use, all pressure water piping and pipelines shall be flushed thoroughly, disinfected with chlorine and flushed again, in accordance with sound engineering practice. The method of disinfection shall consist of introducing a solution of hypochlorite or chlorine and water in controlled quantities into the piping system in such proportion that the chlorine water mixture entering the pipes shall contain at least 50 ppm of chlorine. Outlets in the piping shall be opened to insure complete distribution of the chlorine water mixture throughout the system to be disinfected. The mixture shall remain in the system long enough to destroy all non-spore forming bacteria. The period shall be at least 24 hours, and shall be for a longer length of time should KYTC so direct. The chlorine residual at the end of the required retention time shall be at least 25 ppm at pipe extremities. If the residual is less than 25 ppm, the procedure shall be repeated until a 25 ppm residual after retention is obtained at all pipe extremities. For the purpose of determining compliance with this regulation, samples may be considered only if they have been analyzed by a laboratory certified by the Kentucky National Resources and Environmental Protection Cabinet, Division of Water.

Upon completion of the distribution process, the chlorine water mixture shall be flushed thoroughly from the system and samples for bacteriological examination shall be taken from the system to assure that complete disinfection has been accomplished. Arrangements for bacteriological sampling and examination shall be made by the CONTRACTOR with an approved laboratory. Water samples may be taken at such locations as representatives of the County Health Department shall select, and no mains shall be placed into service until the bacteriological quality and the approval Health Department is given. All expenses for testing, disinfecting, and flushing prior to approval and acceptance of the work shall be borne by the CONTRACTOR.

The CONTRACTOR shall repeat the disinfection procedure until samples indicate proper bacteriological quality.

All expenses for testing, disinfecting and flushing prior to approval and acceptance of the work shall be borne by the CONTRACTOR. Water for testing, disinfecting and flushing will be furnished by the CONTRACTOR.

## SECTION 2.6 FORCE MAIN SYSTEMS

### SECTION 2.6.1 PIPE AND FITTINGS

All pipe for the force main shall be SDR21 Polyvinyl Chloride (PVC) unless otherwise noted on the Drawings.

#### SECTION 2.6.1.1 POLYVINYL CHLORIDE PIPE (PVC)

Polyvinyl Chloride Pipe shall be Class 200 except where otherwise noted and shall meet the following ASTM standards: D-1784 (PVC Compound), D-3139 (Joint), F-477 (Gasket), and D-2241 (PVC Pipe).

The pipe shall be rated for use in 23°C (73°F) at the maximum internal pressure as follows: SDR 21 (200 PSI).

The pipe shall be extruded with only Type I, Grade I, 2000 PSI design stress compound meeting ASTM D-1784 standard. The pipe shall be designed to pass, without failure, the burst test as follows: SDR 21 (630 PSI) when conducted in accordance with ASTM D-1599.

The pipe shall be designed to pass, without failure, the sustained pressure test for 1000 hours for SDR 21 (420 PSI) when conducted in accordance with ASTM D-1598. A two-inch long sample ring shall not flake or disintegrate when immersed for 20 minutes in a sealed container of acetone when conducted in accordance with ASTM D-2152. (Swelling or softening is not considered a failure).

A two-inch long sample ring shall be able to be compressed between parallel plates to 40% of the outer diameter of the pipe without evidence of splitting, cracking or breaking.

The pipe shall meet the ASTM D-2241 impact resistance when tested in accordance with specification requirements section of method ASTM D-2444.

All PVC pipe shall be NSF approved, white in color, and marked in accordance with ASTM D-1784 standard.

Pipe shall be furnished in 20' or 40' laying lengths.

#### SECTION 2.6.1.2 FITTINGS

Cast iron or ductile iron fittings shall be used with all types of pipe 3 inches and larger unless otherwise shown on the Drawings. Fittings shall be mechanical joint fittings with body thickness and radii of curvature conforming to AWWA C110 or AWWA C153. Rubber gasket joints shall be in accordance with AWWA C111. Fittings shall be cement mortar lined and asphaltic coated.

GripRing pipe restraints, as manufactured by Romac Industries, Inc., or approved equal, shall be used on all mechanical joint fittings. No extra payment will be made.

**SECTION 2.6.1.3 ENCASUREMENT PIPE**

Encasement pipe, where required, shall be steel pipe of the diameter called for on the Drawings. Minimum wall thickness shall be as follows:

<u>Carrier Pipe Size (Dia. – in.)</u>	<u>Encasement Pipe Nominal Wall Thickness (in.)</u>
8 and under	0.188
10 - 12	0.250
14 - 16	0.281
18	0.312
20	0.344
22	0.375
24	0.438

Carrier pipe within encasement pipe shall be supported by casing shocks equal to APS Model SSI, or approved equal. Spacing and installation shall be as recommended by the manufacturer.

The annular space at the ends of the encasement pipe shall be sealed to prevent the entrance of groundwater, silt, etc., into the casing pipe. The seals shall be “pull-on” type constructed of synthetic rubber with stainless steel banding straps. Seals shall be Model “AC” as manufactured by APS, or approved equal.

**SECTION 2.6.1.4 HANDLING PIPE AND ACCESSORIES**

Care shall be exercised in loading and unloading pipe to prevent damage to the pipe. The degree of care in handling the pipe and accessories shall meet the recommendations of the pipe manufacturer.

Proper implements, tools, and facilities shall be provided to allow safe and convenient performance of the work. Under no circumstances shall pipe or accessories be dropped into the trench.

**SECTION 2.6.1.5 PIPE INSPECTION PRIOR TO LAYING**

All pipe shall be inspected upon arrival. If any portion of a shipment is found to be defective in diameter or thickness or found to have been contaminated with fuel exhaust, the entire shipment shall be removed from the project at the CONTRACTOR’s expense.

All pipe shall be inspected just prior to laying. Any defective pipe will be rejected. All such rejected pipe shall be removed from the project immediately and replaced at the expense of the CONTRACTOR.

Usable portions of the rejected pipe may be salvaged upon approval of the ENGINEER. Minimum manufacturer's standards shall be met on all salvaged pipe.

#### SECTION 2.6.1.6 PIPE TO BE KEPT CLEAN

Care shall be exercised to keep the pipe clear of mud, dirt and debris before and during laying.

No pipe shall be laid in water, and precautions shall be taken to prevent trench water from entering the pipe.

#### SECTION 2.6.1.7 ALIGNMENT AND GRADE

All pipe shall be laid to the required grade and alignment. Any deviations from the alignment and grade shown on the Drawings shall be as directed by the ENGINEER.

Minimum cover over force mains shall be 42 inches. Holes shall be excavated at the bell and/or coupling locations to prevent load concentration on the bells and/or couplings.

Fittings and valves shall be placed at the locations shown on the Drawings with all joints centered, spigots home, and valve stems plumb.

Sewer force main shall be laid at least 10 feet horizontally from any existing or proposed water line. Should local conditions prevent a lateral separation of 10 feet, a sewer line may be laid closer than 10 feet to a water line if the elevation of the top (crown) of the sewer is at least 2 feet below the bottom (invert) of the water main. Wherever sewer lines must cross under water mains, the sewer line shall be laid at such elevation that the top of the sewer is at least 2 feet below the bottom of the water main.

#### SECTION 2.6.1.8 CUTTING PIPE

Cutting of pipe for the insertion of valve fittings shall be done in a manner recommended by the manufacturer so as to avoid damage to the pipe or coating.

#### SECTION 2.6.1.9 PERMISSIBLE DEFLECTION AT JOINTS

The degree of deflection of a pipe in either the horizontal or vertical planes shall not exceed the recommendations of the manufacturer.

#### SECTION 2.6.1.10 STATE HIGHWAY, DRIVEWAY AND ROADWAY CROSSINGS

Crossings under state highways shall be open cut with steel encasement, unless otherwise indicated on the Drawings. Force mains crossing under paved or concrete private driveways shall be free-bored unless permission is given in writing from the property owner to open-cut. Pavement shall be replaced as specified in Section 2.4 of the Specifications and no extra payment will be made. No extra payment will be made for boring under private driveways or entrances.

All crossings under paved county roads/city streets may be open cut unless otherwise indicated on the Drawings. These crossings shall be made at the locations shown on the Drawings and shall conform to the Drawings. Pavement shall be replaced as specified in Section 2.4 of the Specifications and no extra payment will be made.

#### SECTION 2.6.1.11 OTHER PIPE JOINTS

In laying and joining other pipes, the recommendations of the manufacturer shall be followed closely. Any applicable provisions in this section applying to bell and spigot pipe shall be followed in laying and jointing other types of pipe and installing bell and spigot fittings to be used with other types of pipe.

#### SECTION 2.6.1.12 ANCHORAGE OF BENDS, TEES (WYES), AND PLUGS

All pipe lines, all plugs capped, and bends exceeding 22-1/2o shall be securely anchored by thrust blocking as indicated on the Drawings. In addition, on 4" or larger pipe lines, all tees shall be similarly anchored. Thrust blocking shall be concrete of a mix not leaner than 1 part cement, 2 parts sand, 5 parts stone and a compressive strength not less than 2000 pounds per square inch. Quantities of concrete required for different bends, tees, and valves shall be as indicated on the Drawings. If permitted by the ENGINEER, metal harness rods and pipe clamps of adequate strength to prevent movement may be used instead of concrete blocking.

#### SECTION 2.6.1.13 TRACER WIRE

Contractor shall install #10 bare copper tracer wire on all force main installed. Cost shall be incidental to the price of the installed force main.

#### SECTION 2.6.2 COMBINATION SEWAGE AIR/VACUUM RELEASE VALVES

Where specified, combination sewage air/vacuum release valves shall have a single float design and be of the single housing style that combines the operating features of both an air vacuum and air release valve, ARI Model D-020 or approved equal. Bodies shall be made of stainless steel or reinforced nylon.

The valve shall have 2" NPT inlet and 1" NPT outlet connections and a 3/16" diameter orifice for a maximum 200 psi working pressure.

All materials shall meet the standards and specifications of the City Utilities Commission of Corbin. All internal parts shall be 316 stainless steel. Manhole frame and cover shall be in accordance with the standard detail shown in the Drawings.

2" tapping saddle shall be ductile iron with double stainless steel straps, bolts, nuts and washers.

Valves shall be installed in accordance with manufacturer recommendations.

### SECTION 2.6.3 TESTING OF FORCE MAIN SYSTEMS

All pipe shall be tested after backfilling has been completed and at least 36 hours after the last concrete thrust block has been cast with high-early-strength cement or at least 7 days after the last thrust block has been cast using standard cement. The newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of not less than 200 psi. The duration of the pressure tests shall be two hours. Each valved section of pipe shall be slowly filled with water. While the pipe is being filled and before the application of the specified test pressure, all air shall be expelled from the pipe. Taps may be required at points of highest elevation. These taps are to be tightly plugged after completion of the test. The test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the ENGINEER. The pump, pump connections, gauges, and all necessary apparatus and labor shall be furnished by the CONTRACTOR. The CONTRACTOR shall calibrate the gauges in the presence of the ENGINEER.

Any cracked or defective pipes, fittings or valves discovered during hydrostatic pressure tests shall be removed and replaced with sound material and the test repeated until satisfactory to the ENGINEER. No payment will be made for the removal and replacement of defective pipes and appurtenances.

Allowable leakage shall not exceed 10 gpd per mile per inch diameter. Should the leakage exceed this amount the CONTRACTOR shall, at his own expense, locate and repair the defective joint pipes or settings until the leakage is within the specified allowance.

### SECTION 2.7 SEEDING

All established grassed areas shall be restored by seeding. The disturbed areas shall be sown at a rate of three (3) pounds per 1000 square feet with an approved grade of seed in a mixture as follows:

- 50% Kentucky Blue Grass (*Poa pratensis*)
- 35% Creeping Red Fescue (*Festuca rubra*)
- 10% Red Top (*Agrostis alba*)
- 5% White Dutch Clover (*Trifolium repens*)

Seed shall be well raked or boarded into the soil.

#### SECTION 2.7.1 SURFACE PREPARATION FOR SEEDING

The seed bed shall be loosened to a depth of three (3) inches and shaped to a smooth even surface and shall be graded to an elevation so the seeded, or in place, elevation of the sod shall be flush with adjacent turfed areas, pavements, curbs or other structures except when directed otherwise by KYTC.

Fertilizer and limestone shall be applied uniformly at the rates specified and shall be harrowed, raked, or otherwise incorporated into the soil. The bed, when dry, shall be moistened to the loosened depth.

### SECTION 2.7.2 FERTILIZER AND LIME

Agricultural limestone shall be applied at the rate of 100 pounds per 1000 sq. ft. and 10-10-10 agricultural fertilizer, or equivalent, shall applied at the rate of 50 pounds per 1000 sq. ft.

### SECTION 2.7.3 MULCHING MATERIAL

Unless otherwise permitted by KYTC, vegetable materials for mulching shall be wheat, oat, barley, or rye straw only. All material shall be reasonably free from weeds, seeds, foreign materials, and other grasses and chaff, and shall contain no Johnson grass. The straw shall be reasonably bright in color and shall not be musty, moldy, caked, or of otherwise low quality. It shall be dry on delivery. Unless otherwise specified, the bituminous material to be used for "tying down" straw mulch shall be a slow setting emulsified asphalt. It shall be non-toxic to plants.

Mulching material shall be uniformly applied to approximately 2 inches loose depth (approximately 2 tons per acre). Bituminous material for tying down the straw shall be applied at the rate of 250 gallons per acre.

### SECTION 2.7.4 MULCH AND NETTING

Mulch and netting shall be used adjacent to (within 3 feet of) pavements and other areas designated by KYTC. Mulch material used under netting may be either plain or bituminous treated, unless otherwise directed, and shall be uniformly applied to approximately 2 inches loose depth (approximately 2 tons per acre).

### SECTION 2.7.5 GUARANTEE

An inspection to determine the acceptability of seeding will be made by an authorized representative of KYTC no less than 3 months but not more than 6 months after completion of the entire project, except that KYTC may delay the inspection when conditions are such that the acceptability of the seeding cannot be determined at the end of the 6 month period. The CONTRACTOR shall guarantee, at the time of this inspection, a minimum of 150 live seedings representative of the specified seed mixture per square foot on at least 90% of each seeded area, with no vacant areas larger than 250 sq. ft. each. This guarantee shall apply to all permanent seeding performed in conjunction with the project, regardless of the type protection used or the season in which the seeding was performed.

When the seeding does not meet the guarantee requirements at the time of the inspection, the CONTRACTOR will be advised of the amount and location of additional work deemed necessary. Additional work required may include preparation of a new seedbed, refertilizing, reseeding, remulching, or any erosion control items that were originally required. The CONTRACTOR shall perform all additional work as soon as favorable working conditions occur after being advised of the additional work required. The additional work and materials required to fulfill the guarantee requirements will not be paid for, except as hereinafter provided for unavoidable damage.

## DIVISION 3 - CONCRETE

### SECTION 3.1.1 GENERAL

This section shall include all concrete work except thrust blocking as shown on the Drawings or called for in these Specifications and shall include the fabrication and furnishing of all steel bars and wire mesh of the size, shape and length indicated. Concrete shall be Class "A".

### SECTION 3.1.2 PRODUCTS

**Cement:** Portland Cement shall conform to the requirements of ASTM C150 (KY DOT 801) for Type I, or Type III where high-early-strength is required.

**Fine Aggregates:** Fine aggregates for use in Portland cement concrete shall meet the requirements of KY DOT Section 804.03.

**Coarse Aggregates:** Coarse aggregates for portland cement concrete shall meet the requirements of Sections 805 of KY DOT.

**Water:** Water used in portland cement concrete shall be clean and free from injurious oils, organic materials, alkalis, or other deleterious substances, and shall conform to KY DOT Section 803.

**Reinforcing Steel:** Reinforcing steel shall meet the requirements of Section 602 of KY DOT. SECTION 3.1.3 EXECUTION

**Proportioning, Mixing and Construction Methods:** All concrete placed on this project shall be in accordance with KY DOT Section 601 for Class "A" Air Entrained Concrete.

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

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

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

## **PROTECTION OF EXISTING UTILITIES**

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

## **PREQUALIFIED UTILITY CONTRACTORS**

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

Edward Hall Trucking & Excavation  
110 Northland Drive  
Corbin, KY 40701  
(606)523-5037

Akins Excavating Co., Inc.  
182 Busy Lane  
Corbin, KY 40701  
(606)528-9144

Flo-Line Contracting LLC  
189 Sunstar Blvd.  
Monticello, KY 42633  
606-340-8000

Grant's Excavating, Inc.  
P.O. Box 298  
2006 Corporate Drive Suite 1  
Richmond, KY 40476  
859-626-3478

Power-Com, Inc.  
1175 KY3437  
Gray, KY 40734  
606-521-7571, James Foister

Buchanan Contracting, Inc.  
711 Boone Avenue  
Winchester, KY 40391  
(606)305-2638 Greg Bertram  
NOTE: Cannot bid projects with pump stations.

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

#### IF A UTILITY SUPPLIED CONTRACTOR LIST IS NOT PROVIDED

When the above list of approved subcontractors for the utility work is not provided, the utility work can be completed by the prime contractor, or a prime contractor-chosen subcontractor. In such instances, the subcontractor shall be prequalified with the KYTC Division of Construction Procurement in the work type of "Utilities" (I33). Those who would like to become prequalified may contact the Division of Construction Procurement at (502) 564-3500. Please note: it could take up to 30 calendar days for prequalification to be approved. The prequalification does not have to be approved prior to the bid, but must be approved before the subcontract will be approved by KYTC and the work can be performed.

#### CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

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

### SUBMITTALS AND CORRESPONDENCE

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

### ENGINEER

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

### INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

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

### NOTICE TO UTILITY OWNERS OF THE START OF WORK

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

### UTILITY SHUTDOWNS

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

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

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

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

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

### STATIONS AND DISTANCES

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

### RESTORATION

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

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

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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.

### SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

**1.0 DESCRIPTION.** Install barcode label on sheeting signs. Section references herein are to the Department’s Standard Specifications for Road and Bridge Construction, current edition.

**2.0 MATERIALS.** The Department will provide the Contractor with a 2 inch x 1 inch foil barcode label for each permanent sheeting sign. A unique number will be assigned to each barcode label.

The Contractor shall contact the Operations and Pavement Management Branch in the Division of Maintenance at (502) 564-4556 to obtain the barcode labels.

**3.0 CONSTRUCTION.** Apply foil barcode label in the lower right quadrant of the sign back. Signs where the bottom edge is not parallel to the ground, the lowest corner of the sign shall serve as the location to place the barcode label. The barcode label shall be placed no less than one-inch and no more than three inches from any edge of the sign. The barcode must be placed so that the sign post does not cover the barcode label.

Barcodes shall be applied in an indoor setting with a minimum air temperature of 50°F or higher. Prior to application of the barcode label, the back of the sign must be clean and free of dust, oil, etc. If the sign is not clean, an alcohol swab shall be used to clean the area. The area must be allowed to dry prior to placement of the barcode label.

Data for each sign shall include the barcode number, MUTCD reference number, sheeting manufacturer, sheeting type, manufacture date, color of primary reflective surface, installation date, latitude and longitude using the North American Datum of 1983 (NAD83) or the State Plane Coordinates using an x and y ordinate of the installed location.

Data should be provided electronically on the TC 71-229 Sign Details Information and TC 71-230 Sign Assembly Information forms. The Contractor may choose to present the data in a different format provided that the information submitted to the Department is equivalent to the information required on the Department TC forms. The forms must be submitted in electronic format regardless of which type of form is used. The Department will not accept PDF or handwritten forms. These completed forms must be submitted to the Department prior to final inspection of the signs. The Department will not issue formal acceptance for the project until the TC 71-229 and TC-230 electronic forms are completed for all signs and sign assemblies on the project.

**4.0 MEASUREMENT.** The Department will measure all work required for the installation of the barcode label and all work associated with completion and submission of the sign inventory data (TC 71-229 and TC 71-230).

The installation of the permanent sign will be measured in accordance to Section 715.

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

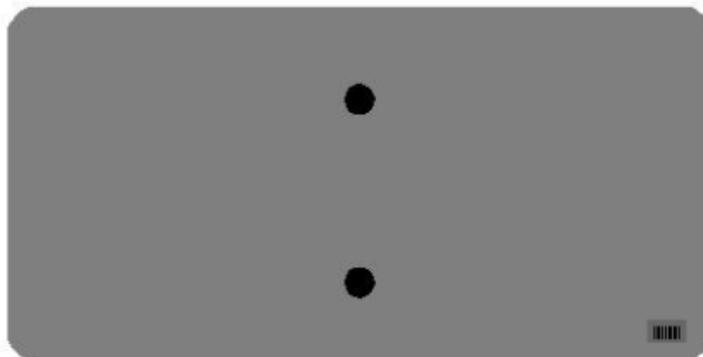
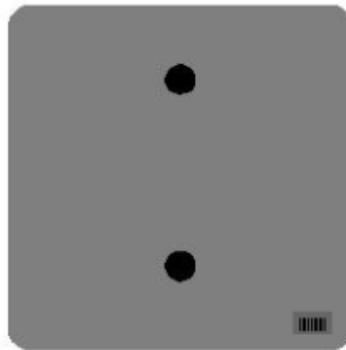
<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24631EC	Barcode Sign Inventory	Each

The Department will not make payment for this item until all barcodes are installed and sign inventory is complete on every permanent sign installed on the project. The Department will make payment for installation of the permanent sign in accordance to Section 715. The Department will consider payment as full compensation for all work required under this special note.

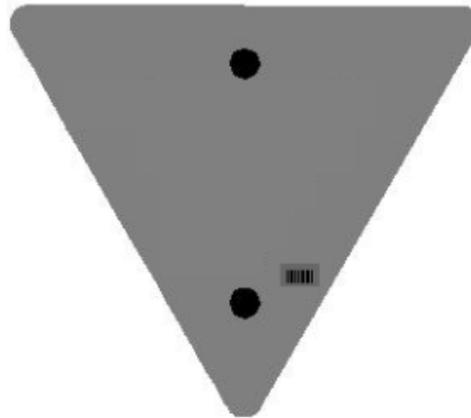
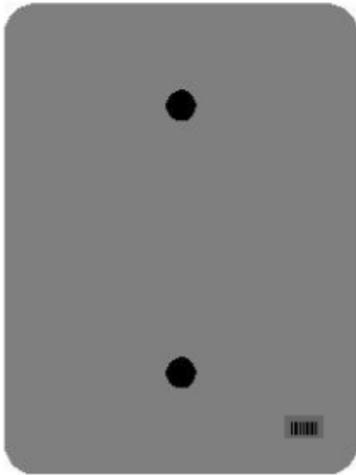
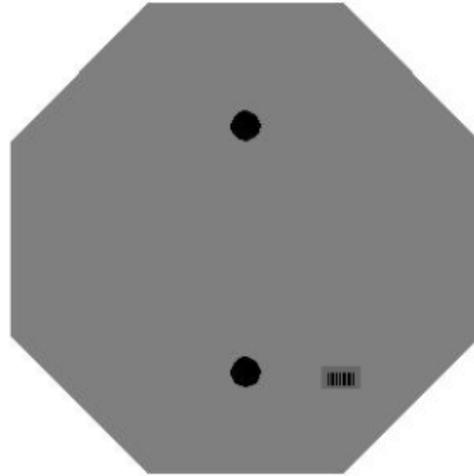
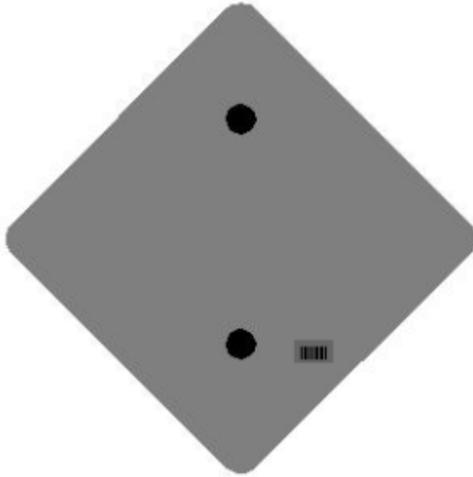
### One Sign Post



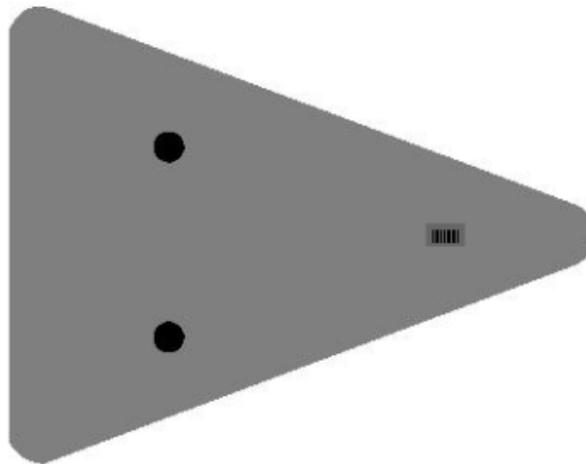
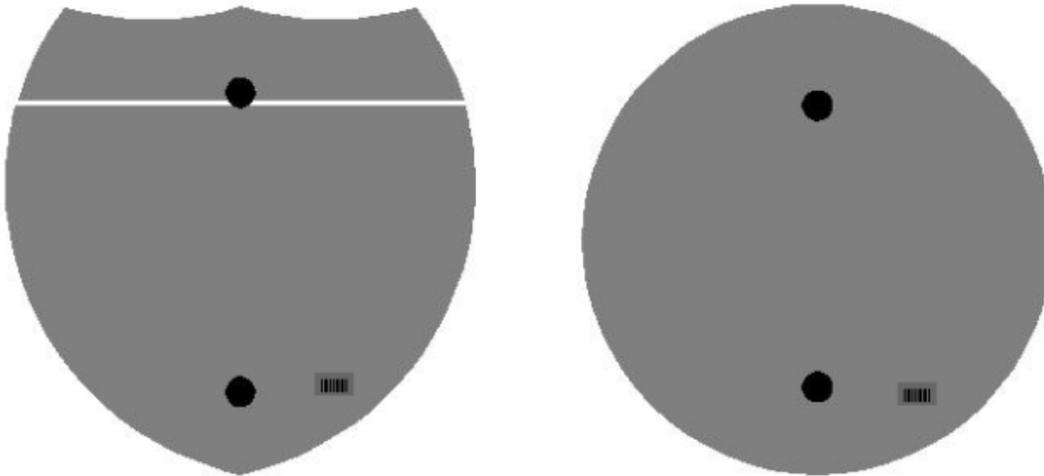
↑  
2" Wide Post



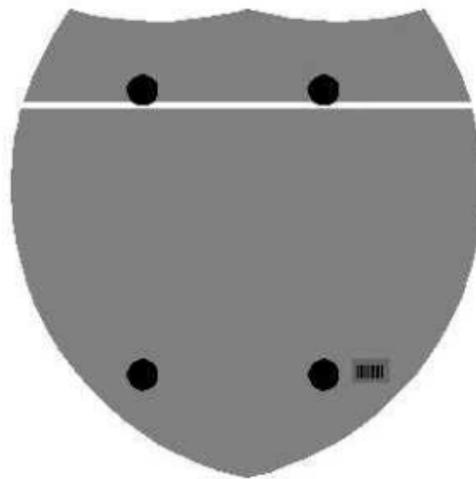
### One Sign Post



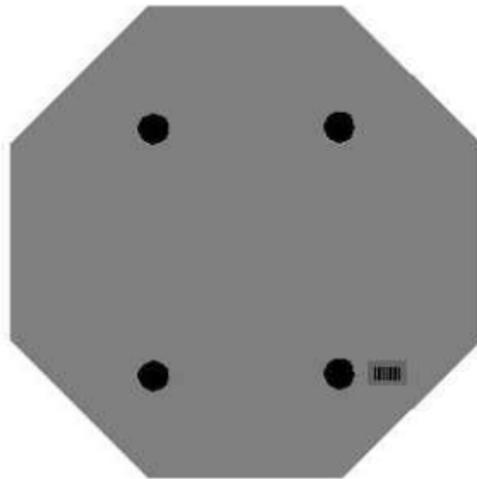
### One Sign Post



### Double Sign Post



Interstate  
Shield



48" Stop

### 2 Post Signs



↑  
2" Wide Post

