



**COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET**

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Matthew G. Bevin
Governor

Greg Thomas
Secretary

June 14, 2019

CALL NO. 103
CONTRACT ID NO. 195103
ADDENDUM # 1

Subject: GREEN COUNTY, STP BRZ 9030 (080)
Letting June 21, 2019

- (1) Added - Special Notes - Pages 1-32 of 32
- (2) Revised - Proposal Bid Items - Pages 112-113 of 113

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

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

Sincerely,

A handwritten signature in black ink that reads "Rachel Mills".

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

RM:mr
Enclosures



An Equal Opportunity Employer M/F/D

COUNTY OF	GREEN
ITEM NO.	4-10009
SHEET NO.	UT



**WATER LINE RELOCATION
GREEN-TAYLOR WATER DISTRICT
GREEN COUNTY, KENTUCKY**

SCALE: 1"=30'
DATE: 08/25/2011

UTILITY SUMMARY/GENERAL NOTES

JOB NO. 488
SHEET 11 OF 14

WATER GENERAL NOTES

ITEM	DESCRIPTION	UNIT	US 68 OVER GREASY CREEK	PROJECT TOTAL
14003	W CAP-EXISTING MAIN	EA	1	1
14004	W DIRECTIONAL BORE	LF	415	415
14019	W PIPE HYDRANT ASSEMBLY	EA	1	1
14089	W PIPE POLYETHYLENE/PLASTIC 06 INCH	LF	495	495
14094	W TEAN 06 INCH	EA	2	2
14105	W VALVE 06 INCH	EA	2	2
24441EC	GRAVEL REPLACEMENT	LF	30	30

GENERAL NOTES

- ALL WATER MAINS SHALL BE HDPE D611 UNLESS OTHERWISE NOTED ON THE PLANS.
- UNLESS OTHERWISE NOTED, A SEPARATE BID ITEM AS NOT BEEN ESTABLISHED FOR FITTINGS, THE COUPLINGS, ETC. CONTRACTOR SHALL INCLUDE THE COST OF THESE ITEMS IN THE UNIT PRICE BID FOR THE PIPE.
- NO PAY ITEM FOR EXTRA TRENCH DEPTH HAS BEEN ESTABLISHED. CONTRACTOR SHALL INCLUDE THE COST OF EXCAVATING AND BACKFILLING THE WATER PIPE CROSSINGS UNDER AN EXISTING UTILITY, CULVERT, DRAINAGE DITCH, ROADWAY, ETC.
- FINAL LOCATION OF SERVICES, GATE VALVES AND OTHER APPURTENANCES ARE TO BE FIELD LOCATED DURING CONSTRUCTION AND APPROVED BY THE ENGINEER.
- EXISTING UTILITIES, ESPECIALLY GAS LINE AND OIL LINES MAY BE CATHODICALLY PROTECTED; THEREFORE, DUCTILE IRON PIPE, FITTINGS, GATE VALVES, AND/OR BOXES LAID WITHIN 10' OF THESE UTILITIES SHALL BE GALVANIZED. A SEPARATE ITEM HAS NOT BEEN ESTABLISHED. ALL COST FOR LABOR AND MATERIALS MUST BE INCLUDED IN THE UNIT PRICE BID FOR PIPE.
- ALL DAMAGE TO EXISTING UTILITIES CAUSED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- ALL CONCRETE THURST BLOCKS AND RESTRAINTS ARE NOT SHOWN ON THE DRAWING HOWEVER, THURST BLOCKS SHALL BE SIZED ACCORDINGLY AS SHOWN ON THE CONCRETE THURST BLOCK DRAWING. THURST BLOCKS SHALL BE COURED IN PLACE READY MIX CONCRETE (MINIMUM 3000 P.S.I.)
- THE CONTRACTOR SHALL COMBINE ALL CONSTRUCTION ACTIVITY TO THE AREA WITHIN THE EXISTING EASEMENTS AND CONSTRUCTION LIMITS, UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER.
- THE CONTRACTOR WILL BE SOLELY LIABLE FOR ALL WORK HE PERFORMS OUTSIDE OF LEGAL EASEMENTS OR CONSTRUCTION LIMITS.
- SEPTIC SYSTEMS MAY BE LOCATED IN SOME AREAS. CONTRACTOR TO USE CAUTION IN THESE AREAS. WATER MAIN TO BE ENCASED IN CONCRETE WHEN LAID WITHIN 10' OF DRAIN LINES OR FIELD. SEE DRAWING FOR DETAILS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED. THE UNIT PRICE BID FOR CONCRETE, NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THE LOCATIONS OF ANY AND ALL UTILITIES WITHIN THE PROJECT AREA. CONTRACTOR SHALL TAKE THE NECESSARY MEASURES TO PROTECT THE EXISTING UTILITIES AND TO AVOID ANY DAMAGE TO EXISTING UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED. THE UNIT PRICE BID FOR CONCRETE, NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED.
- THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND GIVE ALL NOTICES REQUIRED FOR EXECUTION OF CONSTRUCTION WORK. CONTRACTOR SHALL PAY FOR ALL FEES AND ANY APPLICABLE WATER SERVICE INSPECTION FEES.
- THE APPROVAL WHERE NECESSARY PRIOR TO LOCAL, STATE AND FEDERAL CORSES AND REVEGE

- ALL WORKS SHOWN ARE NOT NECESSARILY SHOWN ON THE DRAWINGS. ADDITIONAL WORK MAY BE NECESSARY TO CONFORM WITH ELEVATIONS SHOWN AND TO MAINTAIN ADEQUATE GROUND COVER. ANY ADDITIONAL BIDS REQUIRED SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PIPE.
- THE ENGINEER RESERVES THE RIGHT TO MAKE MINOR FIELD ADJUSTMENTS IN THE WORK IN ORDER TO ACCOMPLISH THE INTENT OF THE DESIGN.
- WHERE KYTC RIGHT-OF-WAY LINES ARE INDICATED THE LOCATION IS APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL FINAL RIGHT-OF-WAY LINES.
- EFFORTS HAVE BEEN MADE TO INDICATE ACCURATE LOCATIONS OF EXISTING STRUCTURES, PIPING AND UTILITIES. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND OTHER EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE DRAWINGS AND FIELD CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE DIMENSIONS OF EXISTING STRUCTURES AND FOR SITE RESTRICTIONS ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND OTHER EXISTING STRUCTURES AND TOPOGRAPHY IN THE FIELD NECESSARY FOR HIS CONSTRUCTION OPERATION.
- THE CONTRACTOR SHALL USE ALL POSSIBLE CARE DURING EXCAVATION ON THIS PROJECT SO AS TO AVOID DAMAGE TO EXISTING UTILITIES AND STRUCTURES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES PRIOR TO CONSTRUCTION. ANY DAMAGE TO THE EXISTING UTILITIES OR STRUCTURES CAUSED DIRECTLY OR INDIRECTLY BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL EXISTING UTILITY OWNERS AND HAVE THEM FIELD LOCATE THEIR EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION ACTIVITIES.
- EXISTING UTILITIES DEPICTED IN THE CONSTRUCTION DRAWINGS WERE LOCATED FROM ACTUAL FIELD SURVEY DATA. UTILITY OWNERS RECORDS OR OTHER AVAILABLE RECORDS, OTHER THAN THE CONSTRUCTION DRAWINGS, SHALL BE USED TO VERIFY THE LOCATION OF UTILITIES EXPRESSED OR IMPLIED AS TO ACTUAL LOCATION OF UTILITIES SHOWN HEREON, BUT NOT VERIBLE FROM THE SURFACE.
- THE CONTRACTOR SHALL COMBINE ALL CONSTRUCTION ACTIVITIES TO THE AREA WITHIN EXISTING EASEMENTS AND CONSTRUCTION LIMITS UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER.
- CONCRETE SHALL BE 3000 P.S.I. MINIMUM AND SHALL HAVE 3" (MIN) COVER AS MEASURED FROM FINISHED GRADE TO THE OUTSIDE SURFACE OF THE PIPE.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO WORK ALL APPLICABLE DRAWINGS AND THE APPROPRIATE SPECIFICATIONS AS A UNIT. ANY OMISSIONS, DELETIONS OR CONFLICTS ARISING AS A RESULT OF FAILURE TO INCORPORATE ALL DRAWINGS AND SPECIFICATIONS WHICH APPLY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED. THE UNIT PRICE BID FOR CONCRETE, NO OTHER ADDITIONAL COMPENSATION WILL BE APPROVED.
- THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND GIVE ALL NOTICES REQUIRED FOR EXECUTION OF CONSTRUCTION WORK. CONTRACTOR SHALL PAY FOR ALL FEES AND ANY APPLICABLE WATER SERVICE INSPECTION FEES.

RECORD DRAWINGS

THE CONTRACTOR SHALL SUBMIT RECORD DRAWINGS TO THE CITY OF LETCHFIELD. THE CONTRACTOR SHALL PROVIDE THE CITY OF LETCHFIELD WITH THE RECORD DRAWINGS. THESE PLANS WILL SERVE AS THE AS-BUILT FOR THE CITY.

STANDARD SPECIFICATIONS AND DRAWINGS

THE CONTRACTOR WILL COMPLY WITH ALL STANDARD SPECIFICATIONS AND DRAWINGS BY THE CITY OF CLARKSON. THE CONTRACTOR WILL CONTACT CANN-TECH, LLC FOR THE SPECIFICATIONS AND DRAWINGS.

BEFORE YOU DIG

THE CONTRACTOR IS INSTRUCTED TO CALL 480-754-6077 REACHRY #11. THE ONE CALL SYSTEM FOR KY IS 480-754-6077. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES AND STRUCTURES PRIOR TO CONSTRUCTION. ANY DAMAGE TO THE EXISTING UTILITIES OR STRUCTURES CAUSED DIRECTLY OR INDIRECTLY BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.

SUBURFACE UTILITY ENGINEERING (S.U.E.)

THE CONTRACTOR SHALL COMPLY WITH ALL STANDARD SPECIFICATIONS AND DRAWINGS BY THE CITY OF CLARKSON. THE CONTRACTOR WILL CONTACT CANN-TECH, LLC FOR THE SPECIFICATIONS AND DRAWINGS.

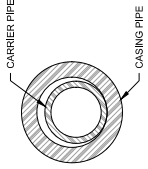
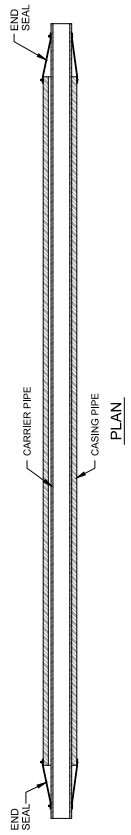
GENERAL NOTES-KYTC

THE CONTRACTOR SHALL COMPLY WITH ALL STANDARD SPECIFICATIONS AND DRAWINGS BY THE CITY OF CLARKSON. THE CONTRACTOR WILL CONTACT CANN-TECH, LLC FOR THE SPECIFICATIONS AND DRAWINGS.

UTILITY SUMMARY/GENERAL NOTES

US 68
STA. 20+00 TO STA. 25+00

AECOM



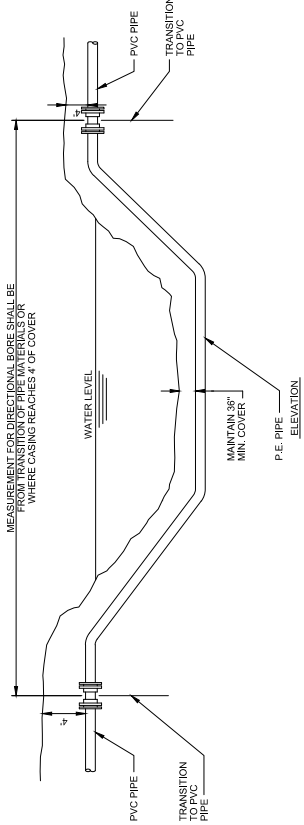
TYPICAL ROAD CROSSINGS:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. ALL JOINTS SHALL BE SOLIDLY WELDED. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
3. OPEN TRENCH NO CLOSER THAN THE DITCH LINE OR TOE OF FILL FROM THE EDGE OF THE PAVEMENT OR AS DIRECTED BY STATE, COUNTY OR MUNICIPAL SPECIFICATIONS.
4. ALL DIRECTIONAL BORE ENCASUREMENTS SHALL BE INSTALLED IN BORE HOLES NO LARGER THAN THE OUTSIDE DIAMETER OF THE HDPE ENCASUREMENT PIPE.

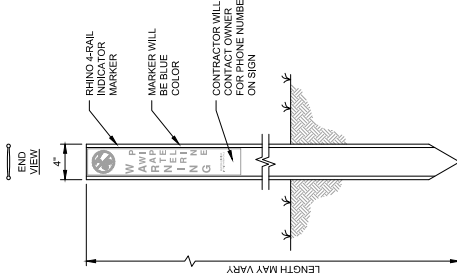
TYPICAL STREAM CROSSING NOTES:

1. ALL JOINTS SHALL BE SOLIDLY WELDED. END CASING SHALL BE SEALED AFTER LINE HAS BEEN INSTALLED AND TESTED.
2. CONCRETE ANCHORS SHALL BE INSTALLED AS SHOWN ON DIRECTIONAL BORE DETAIL.
3. STREAM CROSSINGS SHALL UTILIZE HDPE CASING PIPE. CLASSIFICATION SHALL BE DETERMINED BY THE ENGINEER.

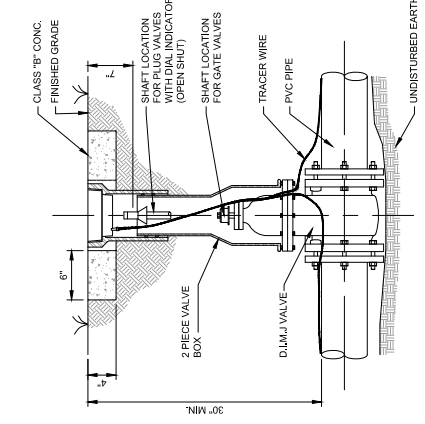
HDPE ENCASUREMENT PIPE
SCALE: N.T.S.



DIRECTIONAL BORE CREEK CROSSING
SCALE: N.T.S.

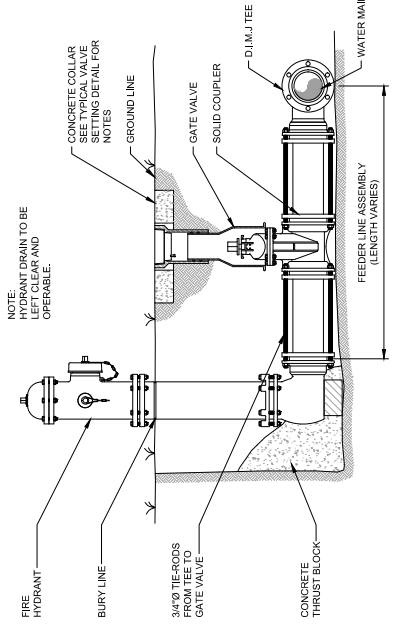


WATER LINE MARKER
SCALE: N.T.S.



NOTES:

1. NO EXTRA PAY ALLOWED FOR CONCRETE COLLAR
2. CONCRETE PAD SHALL BE SQUARE
3. CONCRETE PAD REQUIRED ON ALL VALVES



CANN-TECH, LLC
Engineers • Planners • Managers
Phone (502) 859-0007
Fax (502) 859-0668

1100 Glensboro Road
Lawrenceburg, KY 40342

PROJECT: 488	DATE: 3/29/2019
SCALE: AS NOTED	
DESIGNED BY: MAB	
DRAWN BY: JPB	
RECORD DRAWINGS: MBS	

NO.	DATE	APPROD.	DATE	REVISIONS

WATER LINE RELOCATION
GREEN-TAYLOR WATER DISTRICT
GREEN COUNTY, KENTUCKY

STANDARD DETAILS

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

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

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

PROTECTION OF EXISTING UTILITIES

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

PREQUALIFIED UTILITY CONTRACTORS

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

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

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

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

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

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

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

SUBMITTALS AND CORRESPONDENCE

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

ENGINEER

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

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

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

NOTICE TO UTILITY OWNERS OF THE START OF WORK

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

UTILITY SHUTDOWNS

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

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

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

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

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

STATIONS AND DISTANCES

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

RESTORATION

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

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

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

MATERIAL

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

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

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

TECHNICAL SPECIFICATIONS

US 68 at Greasy Creek Waterline Relocation

GREEN COUNTY
Item No. 4-10009

FOR

GREEN-TAYLOR WATER DISTRICT
GREEN COUNTY, KENTUCKY

March 2019

Prepared By



1100 Glensboro Road
Parkview Center Suite 9
Lawrenceburg, Kentucky 40342
Phone (502) 859-0907
Fax (502) 859-0668

TECHNICAL SPECIFICATIONS

WATER LINES

GENERAL INFORMATION.....TS-A-1 TO TS-A-3
RELATED PIPING MATERIALS AND EQUIPMENT.....TS-B-1 TO TS-B-2
PIPE MATERIALS.....TS-C-1 TO TS-C-3
PIPE APPURTENANCES.....TS-D-1 TO TS-D-3
PIPING WORKMANSHIP AND CONSTRUCTION METHODS.....TS-E-1 TO TS-E-6
PIPE WORK.....TS-F-1 TO TS-F-5

TECHNICAL SPECIFICATIONS

SECTION A

GENERAL INFORMATION

1. **GENERAL**

1.1 These technical specification include descriptions of materials, which may or may not be used on this project.

1.1.1 The Contractor shall carefully read the Special Provisions for statements concerning other specifications, which may be applicable to the Project.

1.2 Materials shall be of the types and constructed on the materials specified herein when identified on Plans, Bid Form or Measurement for Payment. Materials and accessories shall be of new and unused material and shall be installed in accordance with manufacturer's specification and/or as shown on the plans.

1.3 The Contractor shall be responsible for the safe storage and handling of all material furnished to or by him, and accepted by him, until it has been incorporated into the completed project and the project has been accepted by the Owner.

1.3.1 The Contractor shall handle all materials and equipment in such manner to avoid damage. All material and equipment whether moved by hand, skidways, hoists or other means shall be handled in such a manner to avoid dropping or bumping against other material or equipment.

1.3.2 In distributing material at the site of work, each piece shall be unloaded as near as possible to final installation point to minimize the number of times it must be handled.

2. **PROTECTION OF UNDERGROUND AND SURFACE STRUCTURES AND OTHER PROPERTY**

2.1 **GENERAL**

Temporary support, adequate protection and maintenance of all underground and surface utility structures, drains, sewers, and other obstruction encountered in the progress of the work shall be furnished at the Contractor's expense incidental to the project.

2.2 **Obstruction by Other Utilities**

2.2.1 Existing underground utilities shown on the plans are shown in approximate locations based on information furnished by others. Prior to beginning construction of proposed facilities the Contractor shall accurately locate existing underground utilities by whatever means necessary including excavation where required. The Contractor shall notify the Engineer where utilities, so located will interfere with proposed construction.

2.2.2 Where the limits of construction of the proposed work encroach upon existing utilities, the Contractor, where possible, shall provide temporary support or protection satisfactory to the owner of the utility to permit continuation of proposed construction and no additional payment authorized.

2.2.3 Where existing utilities are encountered which prohibit construction of proposed facilities unless relocated the Contractor shall so notify the Engineer unless the plans provide for their relocation. Relocation shall be

accomplished in a manner acceptable to the owner of the utility, and shall be furnished at the Contractor's expense incidental to the project.

2.3 Property Protection

- 2.3.1 Extreme care shall be taken to protect trees, fences, poles, crops and all other property from damage unless their removal is authorized by the Engineer. Any damaged property shall be restored to as good or better than original condition and shall meet with the approval of the Engineer and Owner.
- 2.3.2 The Contractor has the right to fully utilize the easement unless specifically stated otherwise on the plans or by the Engineer. If any irreplaceable trees, fences, poles or crops, such as tobacco, corn, soy beans and such (excluding pasture land), occur on the easement the Contractor shall obtain the engineer's and Owner's approval prior to removing or otherwise causing damage to any of these items.
- 2.3.3 Beyond the limits of the easement the contractor shall be responsible for any damage caused by his operation and/or his personnel.

3. INCIDENTAL ITEMS OF CONSTRUCTION

3.1 Barricades, Guards, and Safety Provisions

- 3.1.1 To protect the public from injury and to avoid property damage, adequate barricades, construction signs, warning lights and guards shall be placed and maintained by the Contractor during the progress of construction work until it is safe for the public to use the construction site.
- 3.1.2 The Contractor shall provide and maintain all safety facilities and devices required by the Occupational Safety and Health Act (OSHA). The Engineer is not responsible for safety provisions furnished or used by the Contractor nor will the Engineer advise or direct safety operation of the Contractor.

3.2 Traffic and Utility Control

- 3.2.1 All excavations shall be conducted in a manner to cause the least interruption to traffic. The Contractor shall provide suitable bridges at streets and driveways where traffic must cross excavated areas.
- 3.2.2 Driveways and other private and public access routes shall not be kept blocked or closed by the Contractor for more than a reasonable period of time without prior written approval from the property owner or controlling authority.
- 3.2.3 Existing fire hydrants, valve pit covers, valve boxes, meter boxes, curb-stop boxes, fire or police call boxes or other utility controls shall be kept unobstructed and accessible during the construction period.

3.3 Maintenance of Utility Service and Flow of Drains

- 3.3.1 Adequate provisions shall be made for the maintenance of flow in sewers (storm or sanitary), drains, water lines and gas lines and electrical lines encountered during construction.
- 3.3.2 No valve, switch or other control device of any utility system within the construction, area shall be operated by the Contractor without approval of the utility except in cases of an emergency. All utility customers which will be affected by the operation of any utility valve or control device shall be

notified by the Contractor in sufficient time for each customer to make arrangements for the period of no service. Each customer shall be advised as to the time service will be off and probable time when it will be resumed.

3.4 Fencing

3.4.1 When the pipe line is being constructed through fields where livestock is being held the contractor shall provide, either temporary fencing or stationing of personnel, adequate protection to livestock from machinery, and open trenches. The Contractor shall take all precautions necessary to insure that all animals are not isolated.

3.4.2 Where pipe line crosses fences in good condition and the work area is easily accessible through gates, the Contractor shall excavate or tunnel beneath the fences.

3.4.3 When it is necessary to cut existing fences, new end posts shall be installed one each side of the construction easement and old fence thoroughly stapled to these new posts before cutting fence.

After pipe is installed at this point and backfill is completed, a new fence of galvanized wire (No. 9 guage) shall be stretched between the new posts and thoroughly stapled to existing post and any new intermediate posts necessary to provide a good fence. Replacement of fences shall be on an in kind basis and shall be considered incidental to installation of the pipeline.

4. SUMMARY

4.1 The Contractor shall furnish at the site of Work, all materials, labor and equipment necessary to complete the Work in accordance with the terms of the Contract and as required hereunder. He shall make the required excavation for installing the water lines and all other appurtenant structures: do all ditching, diking, pumping, bailing and draining or otherwise lowering and disposing of water encountered in the excavation necessary for rendering the foundation firm, dry and adequate for installing the water lines and appurtenances; do, as required, all sheeting, shoring, bracing, coffer damming and supporting; provide all lighting, barricades, signs, flagmen and watchmen: make all provisions necessary to maintain and protect, buildings, paved surfaces, fences, trees, shrubs, piles, water pipes, gas pipes, sewers, water courses, surface drains, railroads, railways and other structures in, on, across or adjacent to the Work and repair all damage done to them where and as required; provide all temporary bridges, detours or other means of maintaining travel, both vehicular and pedestrian; construct all concrete, brick and like work; lay all water connections; set in place all iron and other metal work; backfill all trenches; restore walks, grass pots, shrubs, trees, flowers, fences, paved surface, etc. damaged or disturbed; clear away all rubbish and surplus materials; furnish all materials, tools, implements, machines, tracks, pumps, forms, supplies and labor required to build and put in complete and acceptable working order the water lines and appurtenances covered by the Contract Documents and described by the plans and specifications.

TECHNICAL SPECIFICATIONS

SECTION B

RELATED PIPING MATERIALS AND EQUIPMENT

1. **GENERAL DESCRIPTION**

1.1 All materials necessary for the completion of the work shall be furnished by the Contractor, as approved by the engineer to meet the requirements of the Plans and Specifications. Any materials found to be defective or not meeting the Specifications shall be rejected and replaced by approved materials at no additional cost to the Owner.

1.2 Concrete Materials

Materials used in all concrete construction shall be governed by the Concrete Section of these Technical Specifications.

2. **BACKFILL MATERIALS**

2.1 General

The following materials shall be used to backfill any trenches so designated and in any situation shown on the Plans where such materials are specified.

2.2 Sand or Sandy Materials

Sandy backfill in trenches for water lines, property service connection, and structures within the limits of existing or proposed paved surfaces and sand or sandy materials for other miscellaneous construction purposes not specified herein shall consist of natural, crushed, or conglomerate sand containing not more than twenty (20) percent clay.

2.3 Coarse Aggregates

Coarse aggregates shall conform to Kentucky Transportation Cabinet Standard Specifications (Latest Edition) Section 805, and shall be of the size and type as indicated on the Plans or Specifications.

2.4 Selected Excavated Materials

Backfill in trenches for water lines, property service connections, and structures outside the limits of existing or proposed paved surfaces, and in other specified locations shall be made with selected excavated materials taken from the trench excavation. The specified makeup of this material shall be governed by the Plans or Section e-1.17 of these Technical Specifications.

3. **PAVING MATERIALS**

3.1 General

All materials used for pavement replacement shall conform to requirements and regulations of the local governments and to Sections 403 and 805 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition) except for basis of payment.

3.2 Concrete Surface

Materials used in the construction of the concrete surface shall conform to Section 501.02 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition).

3.3 Bituminous Concrete Surface

Materials used in construction of the bituminous concrete surface shall conform to Section 403.02 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition).

3.4 Bituminous Concrete Base

Materials used in construction of the bituminous concrete base shall conform to Section 403.02 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition).

3.5 Bituminous Tack Coat

The material for the bituminous tack coat shall be type SS-1h and shall conform to Section 806 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition).

3.6 DGA Base

Materials used for the compacted dense graded aggregate base shall conform to Section 302.02 of the Kentucky Transportation Cabinet Standard Specifications (Latest Edition).

TECHNICAL SPECIFICATIONS

SECTION C

PIPE MATERIALS

1. **GENERAL**

1.1 These Specifications describe several types of pipe, which may or may not apply to the current project. All types listed herein will be acceptable alternates if no indication is otherwise given either on the Plans or in other sections of these Specifications.

1.2 Selected pipe materials will be identified either on the Plans, or Bid Form, in Special provision, or in Measurement for Payment. The Contractor shall thoroughly familiarize himself with each of the items identified above and base his bid on the pipe material given therein.

1.3 **Handling of Pipe and Accessories**

1.3.1 Pipe and accessories shall be unloaded at the point of delivery, hauled to, and distributed at the site of the Project by Contractor in such a manner to avoid damage to the materials. Whether moved by hand, skidways, or hoists, materials shall not be dropped or bumped against pipe or accessories already on the ground or against any other object.

1.3.2 In distributing material at the construction site, each piece shall be unloaded as near the installation point as possible.

1.3.3 Pipe shall be handled in such a manner as to avoid damage to the ends. When such damaged pipe cannot be repaired to the Engineer's satisfaction, it shall be replaced at the Contractor's expense. The interior of all pipe and accessories shall be kept free from dirt and foreign matter at all times. The interior of all pipe and accessories shall be checked for dirt and debris and, if necessary, thoroughly cleaned before use in the Project.

2. **CAST IRON PIPE AND FITTINGS**

3.1 **Scope**

This article covers the design, manufacture and testing of cast iron pipe centrifugally cast in metal molds and cast iron fittings for pipe sizes three (3") inch through forty-eight (48") inch.

3.2 **Specific Requirements**

Cast iron pipe shall be centrifugally cast in metal molds and shall be furnished cement lined unless otherwise noted on the Plans or in other sections of the Specification. Cast iron pipe shall be furnished with rubber-gasket push-on joints except as may otherwise be noted on the Plans or in difficult working areas and approval of the Engineer.

3.2.1 Thickness design of cast iron shall conform in all aspects to the requirements of ANSI-AWWA C101 latest revision.

3.2.2 Manufacture and testing of cast iron pipe centrifugally cast in metal molds shall comply with the requirements of the National Standard Institute and American Water Works Association designation A 21.6/AWWA C106 latest revisions.

3.2.3 Cement mortar lining shall conform to the requirements of ANSI/AWWA C104/A 21.4, latest revision for Cement-Mortar Lining for Ductile Iron Pipe and Gray Iron Pipe and Fittings for Water.

- 3.2.4 Fittings and joints for cast iron pipe shall conform to the latest revisions of ANSI/AWWA C110 “Cast Iron and Ductile Iron Fittings, Three (3”) Inches through Forty-Eight (48”) Inches, for Water and Other Liquids”, ANSI/AWWA C111/A 21.11 “Rubber-Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings”, and ANSI/AWWA C115 21.15 “Flanged Cast Iron and Ductile Iron Pipe with Threaded Flanges”.

4. DUCTILE IRON PIPE AND FITTINGS

4.1 Scope

This article covers the design manufacture, and testing of ductile iron centrifugally cast in metal molds and ductile iron fittings.

4.2 Specific Requirements

Ductile iron pipe shall be centrifugally cast in metal molds and shall be furnished cement lined unless otherwise noted on the Plans or in other sections of these Specifications. Ductile iron pipe shall be furnished with rubber gasket push-on joints except as may otherwise be noted on the Plans or in difficult working areas with approval of the Engineer.

- 4.2.1 Thickness design of ductile iron shall conform in all aspects to the requirements of ANSI/AWWA C150/A 21/50 latest revision.
- 4.2.2 Manufacture and testing of ductile iron pipe shall conform in all respects to the requirements of the latest revisions of ANSI/AWWA C151/A 21.51.
- 4.2.3 Cement Mortar Lining – See ART. 3.2.3 above.
- 4.2.4 Fittings and Joints – See ART. 3.2.4 above.

5. PVC (POLYVINYL CHLORIDE) PRESSURE PIPE

5.1 Scope

This article covers the design, manufacture and testing of PVC **1120** manufactured of Class 12454-A or Class 12454-B resin material with a hydrostatic-design-basis (HDB) rating of 4,000 psi at 73.4 degree F (23 degree

5.2 Specific Requirements

PVC pressure pipe shall be furnished, constructed of materials and to the specifications of this section. The types of PVC pipe permitted for use on the Project will be as noted on the Plans, Bid Documents or other sections of these Specifications. The selected pipe will be designated either as PVC (ASTM) or PVC (AWWA) followed by an appropriate pressure rating. The Contractor shall thoroughly review the Plans and other sections of these Specifications for the type of PVC pipe selected for the Project. All PVC pipe shall be NSF approved.

- 5.2.1 PVC (ASTM) pipe shall be furnished and installed when designated on the Plans or in the Bid Documents. When selected, by the Engineer, for use on the Project PVC (ASTM) pipe shall be designated, manufactured and tested to conform with the latest revision of the American Society for Testing and Materials designated ANSI/ASTM D-2241.
- 5.2.2 PVC (AWWA) pipe shall be furnished and installed when designated on the Plans or in the Bid Documents. When selected, by the Engineer, for use on the Project, PVC (AWWA) pipe shall be designated, manufactured, and tested in

conformance to the latest revision of the American Waterworks Association designation AWWA C900

- 5.2.3 PVC pipe joints shall be rubber gasket push-on joints either constructed integrally with the pipe or as a separate coupling constructed on the same material and to the same pressure Specifications as the pipe.
- 5.2.4 PVC (ASTM) pipe shall be furnished as SDR 26, 21, and 17 for Class 160-psi, 200-psi and 250-psi respectively.
- 5.2.5 PVC (AWWA) pipe shall be furnished as SDR 25, 18, and 14 for Class 100-psi, 150-psi and 200-psi respectively.
- 5.2.6 PVC (AWWA) pipe shall be furnished with outside dimensions (O.D.) equal to that for ductile iron and cast iron pipe.
- 5.2.7 Fittings for PVC (ASTM) pipe may be either PVC, cast or ductile iron. Those for PVC (AWWA) pipe shall be ductile iron.

6. POLYETHYLENE PIPE AND FITTINGS

6.1 Scope

This section covers the design, manufacture and testing of polyethylene high density pressure pipe manufactured of grade P34 resin material with a hydrostatic – design basis (HDB) rating of 1,600-psi at 73.4 degree F (23 degrees C)

6.2 Specific Requirements

The Contractor shall furnish and install high-density polyethylene pipe meeting these Specifications at the locations indicated on the Plans and in other sections of these Specifications.

- 6.2.1 High density polyethylene pipe shall be manufactured and tested in conformance to the requirements of the latest revision of the American Society for Testing and Materials designation ASTM D-3350 “Polyethylene Plastic Pie and Fittings Materials”.
- 6.2.2 High density Polyethylene pipe shall have a grade designation of PE 3406 and a cell classification designation of PE 355434C.
- 6.2.3 High-density polyethylene pipe shall be joined by means of butt fusion.
- 6.2.4 Fittings for high-density polyethylene pipe shall be manufactured of the same materials as the pipe. Unless otherwise indicated, all fittings shall be joined to the pipe by butt fusion techniques.

7. BALL AND SOCKET RIVER CROSSING PIPE

7.1 Scope

This article covers the design, manufacture, and testing of Ductile Iron Ball and Socket River Crossing pipe.

7.2 Specific Requirements

Joints for ductile iron river crossing pipe shall be flexible, ball and socket type, and boltless joints with rubber gaskets conforming to the ANSI Specification for “Rubber-Gasket joints for Ductile Iron Pressure Pipe and Fittings”, A 21.11 (AWWAC11), Latest Revision.

TECHNICAL SPECIFICATIONS

SECTION D

PIPING APPURTENANCES

1. **CRADLES AND ENCASEMENT**

1.1 **General**

The cradle or encasement, as required to support the pipe, shall be of crushed stone or concrete and shall be installed as specified in the Pipe Work Section of these Specifications, and as shown on the Plans.

1.2 **Crushed Stone Cradle**

In all cases where the bedding is not specified the pipe is to be laid in crushed stone cradle. The crushed stone to be used shall be Kentucky Highway No. 9 or No. 78 Crushed Stone, as specified by the Kentucky Transportation Cabinet Standard Specifications (Latest Revision).

1.3 **Concrete Cradle, Encasement, or Cap**

Where a concrete cradle, encasement, or cap is required, concrete shall conform to the Concrete Section of these Technical Specifications. Dimensions shall be as shown on the plans.

1.4 **Concrete Thrust Blocks and Anchor Blocks**

Where concrete thrust blocks and anchor blocks are required (i.e. at all pipe bends and fittings), concrete as specified in the Concrete Section of these Technical Specifications shall be used.

1.5 **Special Concrete Structures and Vaults**

Cast in place concrete structures shall be constructed of concrete conforming to the Concrete Section of these Technical Specifications to the dimensions and grades as shown on the Plans.

1.6 **Valves and Related Appurtenances**

1.6.1 **General**

All valves and related appurtenances shall be installed as shown on the Plans and specified in these Technical Specifications. Material Specifications shall be as described below. Any materials found defective, not meeting the specifications, or improperly installed, shall be rejected and so marked and shall be replaced by materials approved by the Engineer, at no additional cost to the Owner.

1.7 **Gate Valves**

Gate valves shall be non-rising stem, iron body, bronze mounted, double disc, parallel seat type with o-ring stem seals. Unless otherwise specified the valves shall be suitable for 0-150 PSI operating pressures. Valves which are to be buried for outside use shall be furnished with a 2 inch operating nut and shall have mechanical joint ends. Other valves shall have either flanged or mechanical joint ends and shall be operated by hand wheel or chain-wheel operator as shown on the Plans. All valves shall conform to the AWWA Standard C 500, Latest Revision, relative to materials, manufacture, dimensions, inspections, testing, and markings.

1.8 Gate Valves Boxes

Each buried gate valve shall be provided with a 5 ¼" shaft, slide-type, two-piece cast iron valve box. The box shall be of the length as necessary to conform to the depth of the valve. Any extension sections necessary shall be provided with the valve box. Unless shown otherwise on the Plans, the valve box cover shall be marked "Water".

1.9 Check Valves

Check valves shall be iron body, bronze mounted. They shall be outside weight and lever type (unless specified otherwise by the Engineer or indicated as such on the Plans) with bronze seat, hinge and guide busting. Unless otherwise indicated, check valves for interior use shall be flanged and those for exterior use shall be mechanical joint.

1.10 Automatic Air Release Valves

Air release valves shall be of the type, which will automatically release air which accumulates in the pipe system. The body and cover shall be case iron and the float shall be stainless steel. Unless otherwise indicated the valves shall be suitable for use in lines having an average working pressure of 150-psi.

1.11 Manual Air Release Valves

See "Detail Sheet" Plan Sheet for description of the manual air release valves.

1.12 Air Valve Pit

Air valves shall be installed in a pit as shown on the Plan Details.

1.13 Blowoff Assemblies

Blowoff assemblies shall be installed in accordance with the details and Specifications at the locations shown on the Plans or as directed by the Engineer for the purpose of removing any obstacles or impurities from the main. The blowoff assembly shall be connected to the main with a typical tapping saddle and corporation stop. The piping shall be 2 inch VC installed as shown in the details with a 2 inch iron body bronze mounted gate valve and 2 piece case iron valve box and lid marked "Water". The lid shall be secured with a pentagon lock nut.

1.14 Fire Hydrants

New fire hydrants shall be of the dry barrel type and be installed where indicated on the Drawings or otherwise directed by the Engineer. Hydrants shall be installed in such a manner as to be completely accessible and in such a position as to minimize possibilities for damage from vehicles or to pedestrians. Hydrants shall be set plumb with nozzles at least 18" above grade. The barrel shall be turned so that the pumper nozzle will face the street. When placed behind curb, the hydrant shall be set so the nozzle will be at least 12 inches from the gutter face of the curb, or at least 5 feet from the edge of the street or road where no curb exists.

Hydrants shall be supported upon a poured-in-place block of concrete as detailed. Such block shall not interfere with joint maintenance nor with proper hydrant drainage, but shall insure zero movement between the hydrant and the main.

Fire hydrants shall conform in all respects to the current Standards of the AWWA. They shall have a 6" inlet and be equipped with two (2) 2-1/2" hose nozzles and one (1) pumper nozzle; nozzles shall be standard to local governmental agencies' requirements. Each hydrant shall be equipped with traffic damage repair kits and hydrant wrenches provided for every five (5) hydrants.

1.15 Service Piping

Unless otherwise noted on plans service piping shall be high density $\frac{3}{4}$ " Polyethylene (PE 3408) tubing or approved equal.

The piping shall be Type III C 5 P 34 as designated in ASTM-D-1248 ("Polyethylene Plastics Molding and Extrusion Materials") and shall be classified as a PE 335433 according to ASTM D-3350 ("Polyethylene Plastics Pipe and Fittings Materials")

1.16 Connection to Main

Service pipe connections to the main shall be made with a tapping saddle and corporation stop as shown in the Plans.

1.17 Setters

Setters shall be Ford 70 Series with 90° brass angle meter valve and 90° coupling sized for $\frac{5}{8}$ " x $\frac{3}{4}$ " and $\frac{3}{4}$ " meter, or approved equal.

1.18 Meters

All water meters shall be $\frac{5}{8}$ " x $\frac{3}{4}$ ", plastic or bronzed bodied, of the magnetic oscillating piston or rotating piston type with a working pressure of 150 psi and shall conform to the AWWA specifications for Cold Water Meters.

The main case shall be frost-proof with a single, hinged lid cover with raised characters indicating the direction of flow and manufacturers serial number. Strainers with an effective area at least double that of the main case inlet shall be of a non-corrosive material and should fit tightly against the main case.

The measuring chamber shall be of a non-corrosive material and shall be securely positioned in the main casing. Discs shall be straight reading U.S. Gallons type with a measuring capacity of 999,999 gallons. All parts shall be as non-corrosive as possible and completely encased and hermetically sealed.

Measuring accuracy shall conform to AWWA Standard C 700, latest edition. Testing will be done at Engineers request and any meter found defective shall be returned to the manufacturer for replacement or repair at manufacturer's expense.

11.19 Meter Boxes and Covers

All meters shall be installed in new concrete boxes unless otherwise shown on the plans or approved by the Engineer.

The box shall be a precast concrete vault (18" to 21") I.D. and 24" in height. The cast iron lid shall have an 11 $\frac{1}{2}$ " minimum opening with "Water Meter" stamped on top.

1.20 Back Flow Preventers

Back Flow preventers shall be angle check valves installed on customer side of meter. Such valves shall be brass or ductile iron with stainless steel spring. Type shall be Ford, Mueller, or approved equal.

1.21 Connection to Customer Service Line

All connections to the customers existing service line shall be made at the meter Setter connection only unless otherwise directed by the Engineer.

TECHNICAL SPECIFICATIONS

SECTION E

PIPING WORKMANSHIP AND CONSTRUCTION METHODS

1. **EXCAVATIONS AND GRADING**

1.1 **General**

This section shall include all clearing and grubbing, site preparation, excavating of earth and other material, filling, site restoration and grading, and other allied work necessary for the construction required for the project.

Any construction methods not specifically outlined in these specifications will be governed by the Kentucky Transportation Cabinet Standard Specifications (Latest Revision)

1.2 **Site Preparation**

Prior to commencing construction operations the contractor shall make all the provisions necessary to assure the protection of all existing improvements, both public and private. He shall protect trees, shrubs, plantings, and grassed areas and shall make provisions for maintaining public travel in an acceptable manner.

1.3 **Protection of Existing Improvements**

Before any excavation is started, adequate protection shall be provided for all lawns, trees, shrubs, landscape work, fences, sidewalks, hydrants, utility poles, streets, 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 Contractor's operations. Shrubs, bushes, small trees and flowers, which have to be removed to permit excavation for the water lines, shall be protected and replanted or replaced when backfill is complete.

The Contractor shall exercise every precaution to prevent damage to property within the 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, etc., which are removed or damaged during construction.

Repairs, restoration or replacement of any improvements damaged or removed, whether shown on the plans or not, shall be the obligation of the Contractor at no additional cost to the owner.

1.4 **Maintenance of Public Travel**

Maintenance of all traffic shall be in accordance with any requirements of the local road department(s) and/or the Kentucky Department of Transportation. It is the responsibility of the Contractor to coordinate all work with and notify the above-named agencies, and to provide all necessary signs, barricades, lights, flagmen, and other items for maintenance of traffic.

Public travel shall be maintained, unrestricted, wherever and whenever possible. Detours shall be provided when so directed by the appropriate agency. Adequate precautions shall be taken to provide for the safety of both vehicular and pedestrian traffic. Emergency vehicles shall be provided access to construction area at all times.

Unless specifically directed otherwise by the Engineer, no more than five hundred (500') feet of trench shall be opened ahead of the pipe laying, and not more than five hundred (500') feet of open ditch shall be left behind the pipe laying. All barricades, lanterns,

watchmen, and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the contractor.

When so required, or when directed by the Engineer, only one-half (1/2) of the street crossing and road crossings shall be excavated before placing temporary bridges over the side excavated for the convenience of the traveling public.

All backfilled ditches shall be maintained in such manner that they will offer no hazard to the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridges at the direction of the Engineer. Excavated materials shall be disposed of as to cause the least interference, and in every case the disposition of excavated materials shall be satisfactory to the Engineer.

1.5 Drainage

The Contractor shall make provisions for handling all flows in existing creeks, ditches, sewers and trenches by pipes, flumes or other approved methods at all times when natural functioning of said creeks, ditches, sewers and drains. The Contractor shall at all times during construction provide and maintain sufficient equipment for the disposal of all water which enters the excavation, both in open cut trenches and in tunnels, to render such excavation firm and dry, until the structures to be built thereon are completed.

1.6 Excavation

1.6.1 General

Materials of excavation shall be unclassified and shall include whatever materials are encountered to the depth of the plans, stated in the specifications, or directed by the Engineer.

1.7 Disposal of Unsuitable Materials

Excavated materials, which are either surplus and not required or are unsuitable for backfilling shall be removed from the site of operations as soon as excavated.

All excavated materials so removed shall be disposed of, at no additional cost to the owner, on sites acquired by the Contractor and approved by the Engineer.

1.8 Storage of Suitable Materials

Excavated materials suitable and required for backfill shall be stored in neat piles adjacent to the excavation in a manner so as to interfere as little as possible with traffic, but shall not be placed at such heights above or closeness to the sidewalls of the excavation to endanger such operations due to slides or cave-ins.

1.9 Open Cut Excavation for Structures

In excavation for masonry and concrete structures, the required width shall be such as to permit forms to be constructed in the proper manner and to permit proper backfilling on completion of the structures.

Depth of excavation for footings shall be as shown on the drawings and/or as directed by the Engineer to obtain sufficient bearing.

1.10 Open Cut Excavation for Pipeline Trenches

Open Cut excavation, either in earth or rock, shall be safely supported and of sufficient width and depth to provide adequate room for the construction or installation of the work to the lines and dimensions called for by the plans.

Before laying the pipe, the trench shall be opened far enough ahead to reveal obstructions that may be necessitate changing the alignment of the pipeline.

1.11 Trench Dimension

Excavations for water pipe in both earth and rock shall have a minimum allowance trench width as shown on the details which will permit good workmanship in laying the pipe and fittings, boring and jacking and compaction of backfill at he sides of the pipe, and shall be subject to the approval of the Engineer.

The maximum allowance trench width shall be no greater than 2' – 0" + the outside pipe diameter except where such dimensions may prohibit any other construction such as the boring and jacking of service connections under paved surfaces.

Subgrade – the depth of excavation below the pipe – shall be 3" minimum in earth trench and 6" in rock trench unless other wise stated in the plans and Specifications or approved by the Engineer.

1.12 Shoring, Sheering and Bracing

The Contractor shall furnish, place, and maintain adequate sheeting and bracing as may be required to support the sides of the excavation and prevent any movements of earth which could, in any way, diminish the width of the excavation to less than that necessary for proper construction, cause damage to the waterline or structures, utilities, pavements, or walks, or cause injury to workmen or others through movement of the adjacent earth banks, or to otherwise damage or delay the work.

The design and installation of all sheeting, sheet piling, bracing and shoring shall be based on computations of pressure exerted by the materials to be retained under existing conditions. Adequate and proper shoring of all excavations shall be the entire responsibility of the Contractor, however, the Engineer may require the submission of shoring plans (accompanied by supporting computations) for approval prior to the Contractor undertaking any portion of the work.

1.13 Blasting

When blasting is required for the removal of rock, every precaution shall be used for the protection of persons and private and public property. The method of blasting will be as determined by the Contractor, subject to the approval of the engineer, prior to construction.

The Contractor shall comply with all laws, regulations, and ordinances of the local governmental agencies and the Commonwealth of Kentucky relating to the transportation, storage and use of any and all explosives or blasting agents. Compliance with all of the above stated regulations and submittal of the method of blasting as stated above does not in any way relieve the contractor of responsibility for any damage caused by the blasting. Any damage thus caused shall be promptly and satisfactorily repaired by the Contractor at no additional cost to the owner.

1.14 Unauthorized Excavation

Whenever the excavation is carried beyond or below the lines and grades given by the Engineer, the Contractor at his own expense shall refill such excavated space with such material and in such a manner as will insure stability of the structure involved.

1.15 Removal of Water

The Contractor, at his own expense, shall provide adequate facilities for promptly removing water from all excavations. No water lines shall be laid in a trench which is holding water.

1.16 Backfill, Embankment, and Grading

1.16.1 General

This section includes the filling of the excavated trenches and spaces around the completed structures or pipelines to the original grades or to finished grades as indicated on the plans.

1.16.2 Trench Backfilling in Unpaved Areas

Backfilling of Trenches in open cut shall be commenced as soon as possible after the distribution main and service taps to the main have been completed, and all jointing and alignment has been approved by the Engineer.

Selected excavated material containing no rock shall be carefully and solidly tamped around the pipe from the tip of the cradle or encasement up to a plane at least one (1) foot above the exterior of the pipe or structure. The filling of the trench shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipe line, except as may be necessary in tamping or backfilling, shall not be permitted, until the trench has been backfilled to that height.

The Contractor may use any type of earth moving equipment he has at his disposal, provided such equipment is in satisfactory condition, and of such type and capacity that the work may be accomplished properly, the grading schedule maintained, and the required density obtained. Any questionable suitability problems related to earth moving equipment shall be resolved by the Engineer.

The selected excavated backfill materials used between the plane one (1) foot above the ground surface may include rock fragments taken from the excavation.

In backfill containing rock, no rock fragment shall be larger than 1 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 the Engineer. The amount of rock in the backfill shall not exceed 33% of the total backfill. Rock fragments and surplus earth materials not used in the back fill shall be removed from the site of the work.

In filling the remainder of the trench, from the plane one (1) foot above the pipe to the top of the trench, the backfill material may be shoveled into the trench without compacting, and heaped over whenever, in the opinion of the Engineer, this method of backfilling may be used without inconvenience to the public.

Before final acceptance, the Contractor will be required to level off all trenches where backfill material has been piled up, or to bring the trench up to the level of the surrounding street, roadway, or terrain where necessary, also, the removal from the streets, roadways, and private property of all excess earth or other materials.

1.16.3 Trench Backfilling in Paved Areas

In areas where street paving is to be replaced, trenches shall be backfilled up to one (1) foot above the top of pipe or structure using the methods described

above for unpaved areas. Backfill above this level shall be placed in layers not exceeding eighteen (18) inches and firmly tamped into place by tampers or rammers to 95% of Standard Proctor Maximum Density. In lieu of tamping the trench may be backfilled with granular material and puddled and jetted under the direction of the Engineer.

1.16.3 Backfill Around Structures

Sandy backfill material or selected excavated materials containing no rock shall be placed in uniform layers around air valve pits or other structures and shall be thoroughly tamped and compacted.

1.16.4 Backfill Around Iron Pipe

Selected excavated materials composed of clay, sand, gravel or other materials non-injurious to iron pipe shall be used for backfilling within 24 inches of iron pipe. Cinders, rubbish and other materials which would be injurious to iron pipe shall not be used in such backfilling.

1.17 Restoration of Ground Surfaces and Cleanup

1.17.1 General

All ground surfaces in public rights-of-way, easements and on private property that have been damaged or destroyed by the Contractor's operations shall be restored to original contours and in accordance with the following specifications.

1.17.2 Restoration of Grassed Areas with Sod

Where so designated, all established grassed areas shall be restored with sod containing grasses of comparable quality. Sod shall be placed and rolled so that the final elevations of the area being restored are the same as existed prior to the beginning of construction. Sod shall be pegged where necessary, and shall be watered and cared for to assure its survival until final acceptance of the project.

1.17.3 Restoration of Grassed Areas with Seed and Mulch

The Contractor shall seed and mulch all disturbed areas, unless otherwise specified, in the following manner: Rye or Fescue Seeding – The ground shall be loosened approximately 3 inches deep with a disc or harrow: fertilized with 25 pounds of 10-10-10, or equivalent, and 100 pounds of agricultural lime per 1,000 square feet; sown at a rate of 75 pounds per acre with an approved grade of perennial rye or Kentucky No. 31 Fescue grass seed that will provide early growth during the season in which it was planted. The seed shall be well raked or boarded into the soil.

The time of application of the seed and fertilizer shall be at the discretion of the Engineer.

Unless otherwise permitted by the Engineer, vegetable materials for mulching shall be wheat, oat, barley or rye straw only. All material shall be reasonably free from weed seeds, foreign material, and other grasses and chaff, and shall contain no Johnson Grass. The straw shall be reasonable bright in color and shall not be musty, mouldy 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.

Mulch net shall be used, if directed by the Engineer, to hold mulch in place until turf is established. The net shall be made of a tightly twisted kraft paper yarn, leno woven with a warp count of one pair of yarns per two (2) inches and a filling count of two per inch. Salvage edges and center shall be reinforced with polyethylene filament. The material shall a minimum width of 45 inches.

1.18 Cleanup

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 condition as originally found. He shall remove all machinery, tools, surplus materials, temporary buildings and other structures from the site of work. He shall remove all organic matter and materials containing organic matter from all areas and places used by him during construction. All sewers, manholes, inlets, etc., shall be cleared of all scaffolding, sedimentation, debris, rubbish and dirt.

Where the Contractor's operations have resulted in filling existing ditches, clogging existing culverts, damaging existing bridges, ground surfaces, sidewalks, driveways, etc., the Contract shall reditch, clean culverts, repair or replace bridges, ground surfaces, sidewalks, driveways, etc., so as to return them to a condition as good as or better than existed prior to the beginning of his operations.

The Contractor's cleanup operations, which include repair, restoration or replacement of ground surfaces and existing improvements and the removal of rock, shall be performed continuously during the construction operations.

TECHNICAL SPECIFICATIONS

SECTION F

PIPING WORK

1. **PIPEWORK**

1.1 **General Description**

After the trench is excavated to subgrade as specified, it shall be filled to the proper depth with crushed stone or concrete as specified to provide a firm and satisfactory bed, hereafter referred to as the cradle or encasement, for the entire length of the pipe barrel. Pipe of designated class and required size shall be laid to form a closed joint with the next adjoining pipe, bringing the inverts continuously to the required depth of cover shown on the plans, the pipe shall be laid in an upstream direction, with bells upstream, unless otherwise permitted or directed.

In no case shall water be allowed to rise in or above the pipe before the joint has become thoroughly set. No walking on or working over the pipes after they are laid, except as may be necessary in placing and compacting the backfill, will be permitted until they are covered with backfill to a depth of one (1) foot.

The trench backfill shall be placed in accordance with backfill requirements of these Technical Specifications.

1.2 **Cradle and Encasement**

The cradle or encasement, as required to support and protect the water pipe, shall be of crushed stone or concrete and shall be installed as specified herein or as directed by the Engineer to the dimensions as shown on the plans.

1.2.1 **Crushed Stone Cradle**

Where indicated on the plans water main shall be installed with a crushed stone cradle.

Where the water pipe is to be laid in a crushed stone cradle, the crushed stone to be used shall be Kentucky Highway No. 9 or No. 78 crushed stone, as specified by the Kentucky Transportation Cabinet. The crushed stone shall be deposited in the excavated trench to depth shown on plans, allowing for the pipe wall thickness and providing "bell holes" for making joints, where pipe is of the bell and spigot type. The pipe shall be laid to the depth as shown on the plans and crushed stone shall be carefully deposited around the pipe up to a plane through the centerline of the pipe as indicated on the plan details.

1.2.2 **Concrete Cradle**

Where a concrete cradle is required as additional support for the water pipe, concrete, as specified in the concrete section of these Technical Specifications and Section 601 of the Kentucky Transportation Cabinet Standard Specifications, shall be used. First, the water pipe shall be laid accurately to the depth indicated on the plans, setting the pipe upon concrete blocks or saddles installed to provide both vertical and lateral supports for the pipe. The supporting of pipe on wooden blocks will not be permitted.

1.2.3 **Concrete Encasement**

Where a concrete encasement is specified, concrete, as specified in the Concrete Section of these Technical Specifications and Section 601 of the Kentucky Transportation Cabinet Standard Specifications, shall be used. The water pipe shall be laid and supported in accordance with the specifications for water pipe and concrete cradle, as

heretofore specified, and the concrete deposited around the pipe at the required width and depth to a plane at least 6 inches over the top of the pipe, as indicated on the Plan Details. Proper bracing of the pipe shall be provided to prevent its being floated by the concrete encasement.

1.3 Metered Service Connections

Metered service connections shall be installed to the point where the line from the customers residence or business joins the meter setter. The service piping shall be ¾" polyethylene tubing as noted in the Piping Appurtenances Section of these Technical Specifications. They shall be installed as shown on the plans or as directed by the Engineer.

1.4 Meter Boxes and Other Structures

Meter boxes shall be constructed as shown on the Plan Details. The concrete vault shall be placed on concrete bricks, with 6" crushed stone placed in the bottom for drainage.

The cast iron lid shall be set flush with existing ground or ½" maximum above ground. Backfill shall be carefully tamped around both vault and lid. Vaults placed in sidewalks, driveways, or other paved surfaces shall have lids placed flush with existing paved surfaces.

Service line depth shall be the same as the main water line with the exception that the service line may be brought up to a sufficient depth to enter the vault within 5' of the side of the vault.

Air release valve vaults shall be Type III 24" diameter Reinforced Concrete Pipe barrels set on 8 concrete bricks with 6" crushed stone in bottom for drainage. The lid shall be cast iron stamped "water" with 24 I.D. opening. Backfill shall be carefully tamped around vault and lid. The lid shall be flush or ½" maximum above existing ground in unpaved areas and flush with paved surfaces.

1.5 Branches and Fittings

Branches and Fittings shall be provided and laid as where directed.

Tapping saddles or other fittings for property service connections shall be placed on the water main at such points as to result in the property service connection having the shortest length possible between the water main and the property line unless otherwise indicated on the plans or directed by the Engineer.

1.6 Pipe Cutting

Pipe may be cut in any manner specified by the pipe manufacturer, but only when authorized and approved by the Engineer. Where a pipe is cut the Contractor shall remove the old section of pipe satisfactorily to the Engineer.

1.7 Pipe Handling and Installation

All procedures for receiving, handling, storing, and installing pipe used in the project, unless specified in these Technical Specifications, shall be governed by the Standards listed below with the approval of the Engineer.

Ductile Iron Pipe - The manufactures printed instructions.

Polyvinyl Chloride Pipe - The manufactures printed instructions.

Polyethylene Pipe - The manufactures printed instructions.

1.8 Pressure Pipe Thrust Blocking

Concrete thrust blocks shall be provided to prevent movement of pipe or appurtenances in response to the forces developed by the pressure of the piping system. In general, thrust blocking shall be provided where the pipeline changes direction (e.g. tees, bends, elbows, crosses, etc.), changes size (e.g. reducers), stops at dead ends, and/or has an appurtenance (e.g. valve or hydrant) attached at which thrust develops when closed. Thrust blocks shall be sized according to the plans.

1.9 Highway and Railroad Crossings

Steel casing pipe for road and railroad crossings shall be bored and/or jacked in place to the depth shown on the plans. Casing pipe shall also be laid in open cut where indicated on the drawings. All joints between lengths shall be solidly butt-welded with a smooth non-obstructing joint inside. The casing pipe shall be installed without bends. The water line pipe shall be installed after the casing pipe is in place, and shall be braced within the casing with structural steel members welded into place or other Engineer approved method to preclude possible floatation.

Railroad crossing material and installation shall be in strict accordance with American Railway Engineering Association Specifications.

At each end of the casing pipe, the water line pipe shall be wrapped with two layers of roofing felt. The wrapping shall extend a minimum of 12 inches in each direction from the end of the casing pipe. After the water line has been installed, inspected, tested and wrapped as specified, both ends of the casing pipe shall be closed with brick or concrete block masonry in a manner acceptable by the Engineer.

Weep holes shall be provided in the closure at the lower end of the casing pipe to facilitate drainage and shall be located within the granular pipe bedding material. Granular bedding is not required under the open cut casing pipe; however, the Contractor shall insure that casing pipe does not bear directly on rock.

1.10 Creek Crossings

River and creek crossings shall be accomplished in a method determined by the Contractor and approved by the Engineer to the lines and grades as shown on the plans. Piping shall be ductile iron or polyethylene pipe as per the pipe materials section of these Technical Specifications and as approved by the Engineer. There are multiple types of creek crossings, which shall be as shown on the plans and where indicated on the plans.

1.11 Pipeline Testing

1.11.1 General

Testing at the Contractor's expense of any water line section may be requested at any time by the Engineer to determine that the section is watertight.

1.12 Visual Inspection

During the final inspection the Engineer may inspect any section of the water lines by various methods at his disposal to determine whether the completed lines are true to line and grade as laid out or as shown on the Plans.

1.13 Hydrostatic Tests

After the pipe is laid and the line flushed, it shall be filled with water with care being exercised to expel all air from the pipe. During the test period all pipe, valves, fittings, and joints shall be examined carefully for defects. Any observed leaks or defective pipe shall be satisfactorily

repaired or replaced, at the expense of the Contractor and the test repeated until the section tested is within the limits prescribed hereinafter. The entire distribution system or parts thereof shall be tested under hydrostatic pressure of 150-psi, or pressure class of the pipe which ever is greater, for a period of 4 hours, if joints are exposed, or for an 8 hour period if joints are covered. Repairs shall be made using approved materials and new replacement fittings, specials, or gaskets where leakages occur.

Leakage shall be measured by an approved calibrated meter through which all the water required to maintain test pressure shall be pumped. All testing shall be performed in the presence of the Engineer. Allowable leakage shall not exceed 10 gallons per 24 hours per inch of diameter per mile of pipe, at the specified test pressure.

Tests shall be completed in accordance with the latest edition of AWWA C-600 except a modified herein.

1.14 Flushing

Any foreign material left in piping during construction shall be removed by flushing system prior to testing. Flushing should be accomplished by partially opening and closing valves and hydrants several times under expected line pressure with flow velocities adequate to flush foreign material out of valves and hydrants.

1.15 Disinfection

1.15.1 General

Thoroughly disinfect all water pipe on potable water lines prior to being placed in service. Follow the applicable provisions of the procedure established for the disinfection of the cast iron pipe as set forth in the latest edition of AWWA C651 entitled "Disinfecting Water Mains".

1.15.2 During the Construction

Workmen shall be required to use utmost care to see that the surface of parts of the structures, the inside of pipes, fittings, jointing materials, valves, and specials which come in contact with the local water system's water, are maintained in a sanitary condition. Every effort shall be made to keep the inside of the pipe, fittings, and valves free of all foreign matter, sticks, dirt, rocks. As each joint of pipe is being laid, it shall be swabbed so that all foreign matter is removed. All fittings and exposed open ends of pipe shall be blocked or capped until the line is completed.

When the entire pipe line or certain selected sections thereof have been completed, tested and made ready for turning over to the local water system, ready for use, the line or section of line shall be thoroughly sterilized according to the following procedure: The new pipe shall be disinfected by introducing HTH, perchloron , or a similar hypochlorite solution, through taps made by the Contractor as directed by the Engineer. The water shall be turned into the mains slowly to allow a thorough mixing of solution which shall be brought to a strength of 50 parts per million of available chlorine. All valves shall then be closed and the sterilizing solutions permitted to remain in the pipeline sections for not less than 24 hours. At the end of the 24 hour period the water in the line must have a minimum chlorine residual of 25 parts per million, or the process shall be repeated until the residual of 25-ppm is maintained. After the required chlorine residual has been maintained the mains shall be flushed thoroughly until a chlorine residual not to exceed one (1) part per million is obtained.

No water line shall be put in service either permanently or temporarily until it has been thoroughly disinfected to the satisfaction of the Engineer. The Contractor shall be responsible for all bacteriological testing should this be required by the Engineer.

1.16 Restoration of Paved Surfaces

1.16.1 General Description

After all excavations within the limits of paved surfaces have been properly backfilled and compacted in accordance with the Plans and Specifications, the paved surfaces shall be restored to a condition as good as or better than existed prior to the beginning of the work, in accordance with the following Specifications.

1.17 City, County, and State Paved Surfaces

Streets, alleys, sidewalks, curbs, and gutters originally constructed by ordinance or maintained by the City, and highways, roads, and walks constructed and/or maintained by the Kentucky Transportation Cabinet or County, which are wholly or partially removed, damaged or disturbed by the Contractor's operations, shall be promptly restored to a condition as good as or better than existed prior to the beginning of the work. Such restoration shall be performed in accordance with the pertinent Specifications and standards of the City, the County, or the Kentucky Transportation Cabinet as applicable.

1.18 Other Paved Surfaces

Streets, alleys, driveways, sidewalks, curbs, and gutters, not constructed or maintained by the City, the Kentucky Transportation Cabinet, or the County, but paved with asphalt, concrete, cinders, crushed stone, waterbound macadam, oilbound macadam, or heterogeneous paving materials, which are wholly or partially removed, damaged or disturbed by the Contractor's operations, shall be restored with like or better materials, acceptable to the Engineer, to a condition as good as or as better than existed prior to the beginning of the work, so that the movement of traffic, both vehicular and pedestrian, through the restored way shall be as free, safe and unimpeded as before.

1.19 Asphalt Roadway Paving

Existing asphalt paving in roadways shall be restored with base, binder and surfacing of the dimensions as shown in the plans. All material shall conform to the Materials section of these Technical Specifications and construction methods shall conform to Sections 300 and 400 of the Kentucky Transportation Cabinet Standard Specifications with the approval of the Engineer.

1.20 Concrete Roadway Paving

Existing concrete paving in roadways shall be restored with the dimensions shown in the plan details. All materials shall conform to the Materials section of these Technical Specifications and construction methods shall conform to Section 500 of the Kentucky Transportation Cabinet Standard Specifications with the approval of the Engineer.

1.21 Driveway Replacement

For the restoration of all paved driveways disturbed by the installation of the water lines, the materials and dimensions shall be equivalent to the original paving. However, in no case shall the dimensions be less than (a) 6" DGA base and 6" Class "A" Concrete for concrete driveways and (b) 6" DGA base and 2" Bituminous Surface for asphalt driveways.

PROPOSAL BID ITEMS

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Section: 0001 - BRIDGE - 044B00013N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	362.00	TON		\$	
0020	00100		ASPHALT SEAL AGGREGATE	7.00	TON		\$	
0030	00103		ASPHALT SEAL COAT	1.00	TON		\$	
0040	00190		LEVELING & WEDGING PG64-22	20.00	TON		\$	
0050	00212		CL2 ASPH BASE 1.00D PG64-22	156.00	TON		\$	
0060	00301		CL2 ASPH SURF 0.38D PG64-22	96.00	TON		\$	
0070	00356		ASPHALT MATERIAL FOR TACK	.30	TON		\$	
0080	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	8.00	EACH		\$	
0090	02223		GRANULAR EMBANKMENT	1,063.00	CUYD		\$	
0100	02231		STRUCTURE GRANULAR BACKFILL	244.00	CUYD		\$	
0110	02351		GUARDRAIL-STEEL W BEAM-S FACE	175.00	LF		\$	
0120	02367		GUARDRAIL END TREATMENT TYPE 1	3.00	EACH		\$	
0130	02371		GUARDRAIL END TREATMENT TYPE 7	1.00	EACH		\$	
0140	02381		REMOVE GUARDRAIL	105.00	LF		\$	
0150	02399		EXTRA LENGTH GUARDRAIL POST	40.00	EACH		\$	
0160	02429		RIGHT-OF-WAY MONUMENT TYPE 1	2.00	EACH		\$	
0170	02432		WITNESS POST	2.00	EACH		\$	
0180	02484		CHANNEL LINING CLASS III	45.00	TON		\$	
0190	02545		CLEARING AND GRUBBING Less than 1 acre	1.00	LS		\$	
0200	02555		CONCRETE-CLASS B	58.00	CUYD		\$	
0210	02585		EDGE KEY	48.00	LF		\$	
0220	02599		FABRIC-GEOTEXTILE TYPE IV	60.00	SQYD		\$	
0230	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0240	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0250	02726		STAKING	1.00	LS		\$	
0260	02731		REMOVE STRUCTURE	1.00	LS		\$	
0270	03299		ARMORED EDGE FOR CONCRETE	65.00	LF		\$	
0280	06514		PAVE STRIPING-PERM PAINT-4 IN	2,100.00	LF		\$	
0290	08003		FOUNDATION PREPARATION	1.00	LS		\$	
0300	08019		CYCLOPEAN STONE RIP RAP	358.00	TON		\$	
0310	08039		PRE-DRILLING FOR PILES	140.00	LF		\$	
0320	08046		PILES-STEEL HP12X53 (REVISED: 6-14-19)	182.00	LF		\$	
0330	08094		PILE POINTS-12 IN	14.00	EACH		\$	
0340	08100		CONCRETE-CLASS A	53.00	CUYD		\$	
0350	08104		CONCRETE-CLASS AA	29.00	CUYD		\$	
0355	08140		MECHANICAL REINF COUPLER #5 EPOXY COATED (ADDED: 6-14-19)	87.00	EACH		\$	
0360	08151		STEEL REINFORCEMENT-EPOXY COATED	8,640.00	LB		\$	
0370	08664		PRECAST PC BOX BEAM CB27-48 (REVISED: 6-14-19)	462.00	LF		\$	
0380	20418ED		REMOVE & RELOCATE SIGNS	1.00	EACH		\$	
0390	20430ED		SAW CUT	304.00	LF		\$	
0400	21289ED		LONGITUDINAL EDGE KEY	302.00	LF		\$	
0410	21415ND		EROSION CONTROL	1.00	LS		\$	

PROPOSAL BID ITEMS

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0420	24405EC		MECHANICAL REINF COUPLER-#8 EPOXY COATED	18.00	EACH		\$	
0425	24441EC		GRAVEL REPLACEMENT DRIVEWAYS (ADDED: 6-14-19)	30.00	LF		\$	
0430	24982EC		CONCRETE COATING Approx. 2850 SF	1.00	LS		\$	
0440	25017ED		RAIL SYSTEM SIDE MOUNTED MGS	126.00	LF		\$	
0441	14003		W CAP EXISTING MAIN (ADDED: 6-14-19)	1.00	EACH		\$	
0442	14004		W DIRECTIONAL BORE (ADDED: 6-14-19)	415.00	LF		\$	
0443	14019		W FIRE HYDRANT ASSEMBLY (ADDED: 6-14-19)	1.00	EACH		\$	
0444	14069		W PIPE POLYETHYLENE/PLASTIC 06 INCH (ADDED: 6-14-19)	495.00	LF		\$	
0445	14094		W TIE-IN 06 INCH (ADDED: 6-14-19)	2.00	EACH		\$	
0446	14105		W VALVE 06 INCH (ADDED: 6-14-19)	2.00	EACH		\$	

Section: 0002 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0450	02568		MOBILIZATION	1.00	LS		\$	
0460	02569		DEMOBILIZATION	1.00	LS		\$	