



TRANSPORTATION CABINET

Frankfort, Kentucky 40622
www.kentucky.gov

Steven L. Beshear
Governor

Joseph W. Prather
Secretary

August 14, 2009

CALL NO. 300
CONTRACT ID NO. 091304
ADDENDUM # 1

Subject: Bullitt County, CB01 015 1494 B00025
Letting August 21, 2009

- (1) Revised - Plan Sheet - U1
- (2) Added - Special Note - Pages 49(a)-49(e) of 140

Proposal revisions are available at <http://transportation.ky.gov/contract/>.
Plan revisions are available at <http://www.lynnimaging.com/kytransportation/>.

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

Sincerely,

A handwritten signature in black ink that reads "Ryan Griffith".

Ryan Griffith
Director
Division of Construction Procurement

Enclosures
RG:ks



An Equal Opportunity Employer M/F/D

SPECIAL NOTE FOR NON-DESTRUCTIVE TESTING OF DRILLED SHAFTS

Bullitt County Item No. 5-4000.00 KY 1494 Bridge over Long Lick Creek - Drawing No. 26452

1.0 DESCRIPTION

Crosshole Sonic Logging (CSL) is a nondestructive method to test the integrity of drilled shafts. The Contractor will be responsible for supplying all equipment and materials necessary to perform this testing, and obtaining the services of a CSL Testing Firm using personnel experienced with CSL testing and approved by the Engineer to perform the testing.

- 1.1 The CSL tests must either be performed by or under the supervision of a responsible licensed professional engineer with:
- a minimum of three (3) years experience performing CSL tests, and
 - experience performing CSL tests on a minimum of three (3) past projects with a scope and complexity similar to this project including a minimum of 60 drilled shafts in the past three (3) years.

If the responsible professional engineer does not perform the testing, then the responsible field technician who does perform the testing must meet the same experience requirements.

- 1.2 Preliminary Submittal - At least 21 calendar days before beginning drilled shaft construction, submit a technical proposal prepared by the CSL Testing Firm that documents the personnel's experience and addresses the testing procedures. Experience documentation should include resumes, references, certifications, project lists, experience descriptions and details, etc. Within 10 working days, the Engineer will review the proposal and report to the Contractor whether the CSL Testing Firm and personnel are approved and the proposal is acceptable.
- 1.3 The Contractor will be responsible for providing:
- a. access tubes which will be used for CSL testing of the drilled shafts;
 - b. watertight shoes, watertight caps, and non-shrink grout;
 - c. suitable working space and access to every shaft;
 - d. a reliable 600 watt (minimum) generator; and
 - e. any other equipment or materials necessary to accomplish the testing.

Table 1 - Minimum Number of Access Tubes and CSL Logs			
Shaft Diameter (inches)	Number of Tubes	Diagonal Logs	Perimeter Logs
30 to 36	3	NA	3
42 to 54	4	2	4
60 to 78	6	3	6
84 to 96	8	4	8

2.0 MATERIALS

- 2.1 Supply the number of access tubes shown in the plans or in Table 1. Provide access tubes meeting the requirements below. The Engineer will accept access tubes based on visual inspection and certification that the steel pipe meets the requirements below:
 - a. 1.5 to 2.0 inch ID schedule 40 steel pipe conforming to ASTM A 53, Grade A or B, Type E, F, or S;
 - b. contains round, regular internal diameters free of defects or obstructions, including any at pipe joints;
 - c. capable of permitting the free, unobstructed passage of a 1.4 inch diameter source and receiver probes; and
 - d. watertight and free from corrosion with clean internal and external faces to ensure passage of the probes and a good bond between the concrete and the tubes.
- 2.2 Provide watertight shoes on the bottom and removable watertight caps on the top of the tubes.
- 2.3 Provide non-shrink grout to fill the access tubes and any cored holes at the completion of the CSL tests. Use grout conforming to Section 601.03.03 of the Standard Specifications.

3.0 CONSTRUCTION

- 3.1 Access Tube Installation
 - a. Install access tubes equally spaced around the perimeter of each of the drilled shafts.
 - b. Securely attach the tubes to the longitudinal reinforcement. Wire-tie the tubes a minimum of every 3 feet so they will stay in position during placement of rebar and concrete. Place the tubes so they will be parallel with each other and as near to vertical as possible in the finished shaft. Even moderate bending of the tubes will result in large regional variations in the data.
 - c. Place the tubes from 6 inches above the shaft tip to at least 3 feet above the top of shaft and at least 2 feet above ground level or top of casing. Under no circumstances may the tubes be allowed to come to rest on the bottom of the excavation.
 - d. Ensure that any joints in the tubes are watertight.
 - e. During placement of the reinforcement cage, exercise care so that the tubes will not be damaged to the extent that would prevent a 1.4-inch diameter probe from passing through them.
 - f. After placing the reinforcing cage and before beginning concrete placement, fill the tubes with clean potable water and cap or seal the tube tops to keep debris out of the tubes. Replace the watertight caps immediately after filling the tubes with water.
 - g. Before placing concrete, investigate at least one tube per shaft to make sure that there are no bends, crimps, obstructions or other impediments to the free passage of the testing probes.
 - h. During removal of the caps from the tubes, exercise care so as not to apply excess torque, hammering, or other stresses which could break the bond between the tubes and concrete.

- i. After concrete placement and before the beginning of CSL testing, inspect the access tubes and report any access tubes that the 1.4-inch diameter test probe cannot pass through to the Engineer. The Engineer will make an evaluation to determine if the CSL testing can be successfully performed without the tube(s); the Engineer may require the contractor to, at its own expense, replace one or more tubes with 2-inch diameter holes cored through the concrete for the entire length of the shaft, excluding the bottom 6 inches. Unless directed otherwise by the Engineer, locate core holes approximately 6 inches inside the reinforcement such that it does not damage the reinforcement. For each core hole drilled, record a log with descriptions of inclusions and voids in the cored holes and submit a copy of the log to the Engineer. Preserve the cores, identify as to location and make available for inspection by the Engineer.
- 3.2 Grouting - After completion of the CSL testing and evaluation of results, and only after being directed to do so by the Engineer, remove the water from the access tubes and any cored holes, completely fill the tubes and holes with approved grout. After grouting, cut the tubes flush with the tops of the drilled shafts.

4.0 TESTING AND REPORTING

The Engineer may elect to reduce the amount of testing and will pay only for the authorized quantities.

- 4.1 Testing
 - a. Perform CSL testing according to ASTM D6760, "Integrity Testing of Concrete Deep Foundations by Ultrasonic Crosshole Testing".
 - b. Provide access to the top of the shaft for testing personnel and equipment.
 - c. Perform CSL testing in accordance with generally accepted CSL Testing methods.
 - d. Obtain the minimum number of CSL logs shown in Table 1 unless otherwise directed by the Engineer.
 - e. Perform CSL testing on all completed shafts designated for testing by the Engineer, after the shaft concrete has cured at least 48 hours. Additional curing time may be necessary, depending on the concrete admixtures that are used.
- 4.2 Test Reports - Submit a test report prepared by the CSL Testing Firm and signed by the responsible professional engineer which, as a minimum, contains:
 - a. Pier No., Plan Shaft No., Station, Offset, and Top of Shaft Elevation;
 - b. Schematic showing a plan view of the access tube locations;
 - c. CSL logs presented for each tube pair tested with any defect zones indicated on the logs and discussed in the report as appropriate;
 - d. Analyses of initial pulse arrival time versus depth or velocity versus depth if requested by the Engineer; and
 - e. Analyses of pulse energy/amplitude versus depth.
- 4.3 Independent Comparison Tests - Consultants acting on behalf of the Department may perform independent comparison tests on the shafts tested by the Contractor's CSL Testing Firm.

5.0 EVALUATION OF TEST RESULTS

- 5.1 Allow direct communication between the CSL Testing Firm and the Department.
- 5.2 The Engineer will evaluate the CSL test results in the test report to determine whether or not the drilled shaft integrity is acceptable. Within 5 working days after receiving a test report, the Engineer will report to the Contractor whether the construction is acceptable or additional analyses are needed.
- 5.3 The Engineer will not require the Contractor to wait for CSL testing and evaluation to continue drilled shaft construction. However, if the CSL tests indicate that the integrity of any drilled shaft is questionable, the Engineer may direct the Contractor to suspend drilled shaft operations until the problem is resolved.
- 5.4 Continue with construction of the structure above the drilled shafts only after receiving written approval to do so, based on evaluation of the CSL test results.
- 5.5 If the CSL records are complex or inconclusive, the Engineer may require additional testing (such as Angled CSL, Crosshole Tomography, Singlehole Sonic Logging, or Sonic Echo/Impulse Response, etc.) or concrete cores to sample the concrete in question to verify shaft conditions. If core samples are needed, obtain cores with a minimum diameter of 2 inches, unless directed otherwise by the Engineer. Unless directed otherwise by the Engineer, locate core holes approximately 6 inches inside the reinforcement such that they do not damage the reinforcement. For each core hole drilled, record a log with descriptions of inclusions and voids in the cored holes and submit a copy of the log to the Engineer. Place the cores in crates properly marked showing the shaft depth at each interval of core recovery. Transport the cores and logs to the Geotechnical Branch in Frankfort for inspection and testing. Grout the core holes in accordance with Section 3.2 above.
- 5.6 If the additional testing or evaluation of cores indicate that concrete for any drilled shaft on which additional testing or coring was required is acceptable, the Department will pay for the additional testing and concrete coring and grouting on a cost plus basis. If the additional testing or evaluations of cores indicate that the concrete for any drilled shaft concrete is unacceptable, the additional testing and concrete coring and grouting will be at the expense of the Contractor.
- 5.7 If defects are found, the original structural designer will perform structural analyses, at the expense of the Contractor, based on the design criteria established for the structure to assess the effects of the defects on the structural performance of the drilled shaft. If the results of the analyses indicate that there is conclusive evidence that the defects will result in inadequate or unsafe performance under the design loads, as defined by the design criteria for the structure, the Engineer will reject the shaft.
- 5.8 If any shaft is rejected, provide a plan for remedial action to the Engineer for approval. Any modifications to the foundation shafts and/or other substructure elements caused by the remedial action will require calculations and working drawings by the original structural designer, at the expense of the Contractor. Begin remediation operations only after receiving approval from the Engineer for the proposed remediation. All remedial action will be at no cost to the Department and with no extension of contract time.

6.0 METHOD OF MEASUREMENT

The Department will pay for the accepted quantities of “CSL Testing Mobilization” at the contract unit price per each mobilization. This will constitute full compensation for all costs associated with mobilizing the CSL Testing Firm to the site, including travel to the site and per diem, regardless of the number of shafts tested during each mobilization. The bid for CSL Testing Mobilization will not count toward the maximum allowable bid for Mobilization as defined in Section 110 of the Standard Specifications.

The Department will pay for the authorized and accepted quantities of “CSL Access Tubing” at the contract unit price per each shaft. This will constitute full compensation for all costs and delays associated with installing the CSL Access Tubing in a single shaft, including but not limited to providing and installing access tubing, and providing and placing grout in access tubes.

The Department will pay for the authorized and accepted quantities of “CSL Testing” at the contract unit price per each shaft tested. This will constitute full compensation for all costs associated with providing access for testing personnel and equipment, performing the CSL Testing in a single shaft, and reporting the results to the Engineer.

The Department will pay for additional testing and concrete coring required to investigate shafts with complex or inconclusive CSL records on a cost plus basis, if evaluation of the additional testing or cores indicates that concrete for that drilled shaft is acceptable. This will constitute full compensation for all costs and delays associated with performing additional tests, obtaining and delivering concrete cores to the Division of Materials, and grouting core holes.

7.0 PAYMENT

The Department will pay for the completed and accepted quantities under the following:

Pay Item Pay Unit

CSL Testing Mobilization	Each
CSL Access Tubing	Each
CSL Testing	Each

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

STA. 29+05.00 CONSTRUCT 3-SPAN
(48'-48'-48' BEAM LENGTH) CB (48" x 17")
W/5' SLAB AND PILE END BENTS @ 20° SKEW RT.

B.M. 1 Railroad spike set in power pole located
south of entrance to Parcel number three.
Sta. 32+03.5 RT 14.9 ; Elev = 430.21

Note: Underground utilities shown are for informational purposes
only and do not represent an on the ground location.
It is the Contractor's responsibility to coordinate location of
existing underground utilities with all utility owners.

END CONSTRUCTION
STA. 30+81.46

END PROJECT
STA. 31+20.00

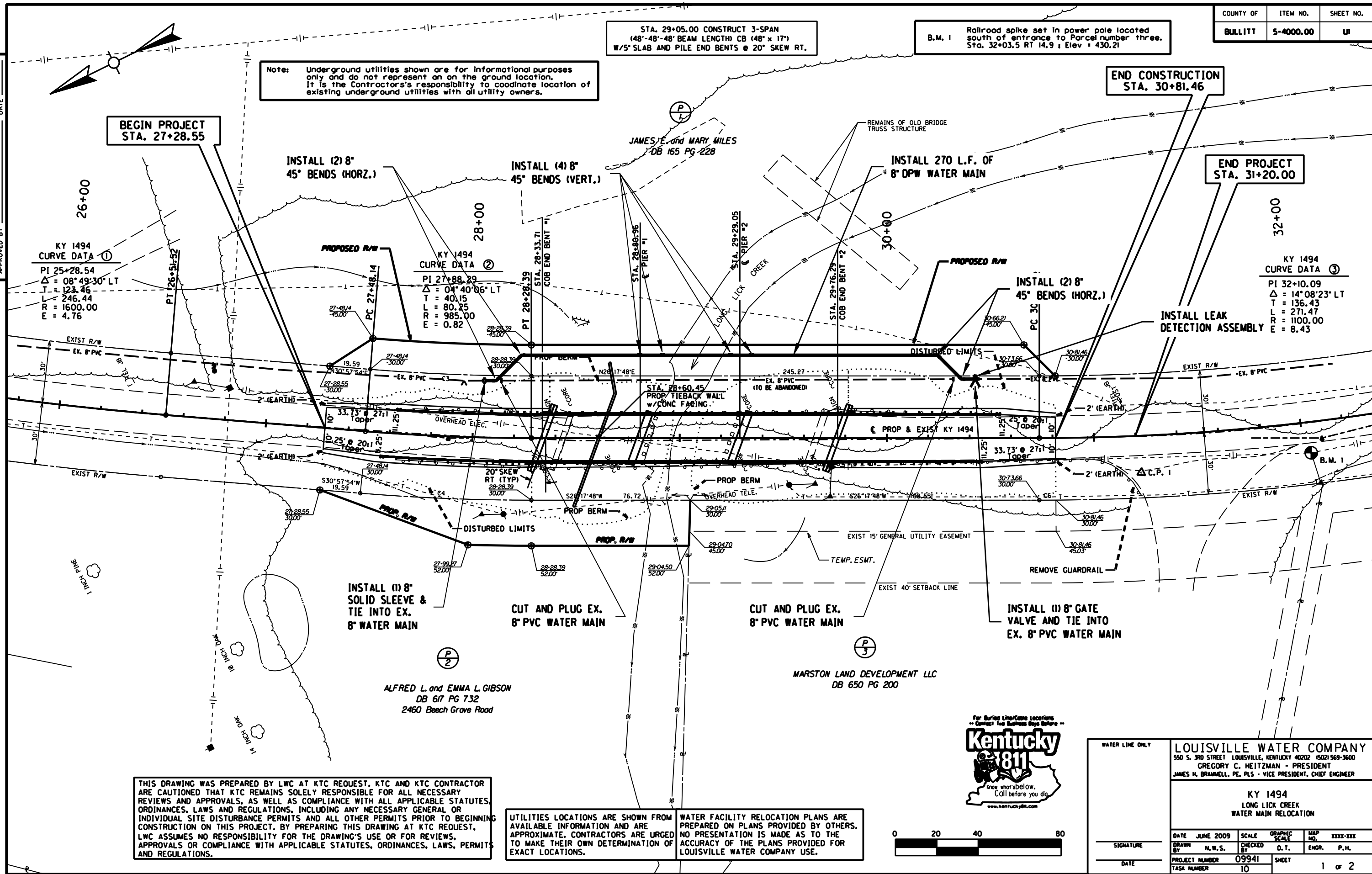
PREPARED BY _____ DATE _____
CHECKED BY _____ DATE _____
APPROVED BY _____ DATE _____

BEGIN PROJECT
STA. 27+28.55

KY 1494
CURVE DATA ①
PI 25+28.54
Δ = 08° 49' 30" LT
T = 123.46
L = 246.44
R = 1600.00
E = 4.76

KY 1494
CURVE DATA ②
PI 27+88.29
Δ = 04° 40' 06" LT
T = 40.15
L = 80.25
R = 985.00
E = 0.82

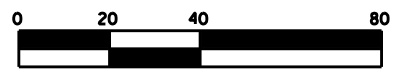
KY 1494
CURVE DATA ③
PI 32+10.09
Δ = 14° 08' 23" LT
T = 136.43
L = 271.47
R = 1100.00
E = 8.43



THIS DRAWING WAS PREPARED BY LWC AT KTC REQUEST. KTC AND KTC CONTRACTOR
ARE CAUTIONED THAT KTC REMAINS SOLELY RESPONSIBLE FOR ALL NECESSARY
REVIEWS AND APPROVALS, AS WELL AS COMPLIANCE WITH ALL APPLICABLE STATUTES,
ORDINANCES, LAWS AND REGULATIONS, INCLUDING ANY NECESSARY GENERAL OR
INDIVIDUAL SITE DISTURBANCE PERMITS AND ALL OTHER PERMITS PRIOR TO BEGINNING
CONSTRUCTION ON THIS PROJECT. BY PREPARING THIS DRAWING AT KTC REQUEST,
LWC ASSUMES NO RESPONSIBILITY FOR THE DRAWING'S USE OR FOR REVIEWS,
APPROVALS OR COMPLIANCE WITH APPLICABLE STATUTES, ORDINANCES, LAWS, PERMITS
AND REGULATIONS.

UTILITIES LOCATIONS ARE SHOWN FROM
AVAILABLE INFORMATION AND ARE
APPROXIMATE. CONTRACTORS ARE URGED
TO MAKE THEIR OWN DETERMINATION OF
EXACT LOCATIONS.

WATER FACILITY RELOCATION PLANS ARE
PREPARED ON PLANS PROVIDED BY OTHERS.
NO PRESENTATION IS MADE AS TO THE
ACCURACY OF THE PLANS PROVIDED FOR
LOUISVILLE WATER COMPANY USE.



WATER LINE ONLY		LOUISVILLE WATER COMPANY 550 S. 3RD STREET LOUISVILLE, KENTUCKY 40202 (502) 569-3600 GREGORY C. HEITZMAN - PRESIDENT JAMES H. BRANMELL, PE, PLS - VICE PRESIDENT, CHIEF ENGINEER			
		KY 1494 LONG LICK CREEK WATER MAIN RELOCATION			
DATE	JUNE 2009	SCALE	GRAPHIC SCALE	MAP NO.	XXXX-XXX
DRAWN BY	N.W.S.	CHECKED BY	D.T.	ENGR.	P.H.
PROJECT NUMBER	09941	SHEET	1 of 2		
TASK NUMBER	10				