



CALL NO. 107

CONTRACT ID. 194226

PIKE COUNTY

FED/STATE PROJECT NUMBER HSIP 5361 (008)

DESCRIPTION KY HIGHWAY 632 (KY 632)

WORK TYPE ASPHALT PAVEMENT & ROADWAY REHAB

PRIMARY COMPLETION DATE 10/31/2020

LETTING DATE: November 22,2019

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME November 22,2019. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

DBE CERTIFICATION REQUIRED - 9%

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

TABLE OF CONTENTS

PART I	SCOPE OF WORK
	<ul style="list-style-type: none">• PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES• CONTRACT NOTES• FEDERAL CONTRACT NOTES• ASPHALT MIXTURE• DGA BASE• COMPACTION OPTION B• SPECIAL NOTE(S) APPLICABLE TO PROJECT• LIQUIDATED DAMAGES• WASTE AND BORROW SITES• COORDINATION OF WORK WITH OTHER CONTRACTS• EDGE KEY (BY LINEAR FEET)• GUARDRAIL• ASPHALT MILLING AND TEXTURING• TYPICAL SECTION DIMENSIONS• TRAFFIC CONTROL PLAN• DURABLE PAVEMENT EDGE DETAILS• RIGHT OF WAY NOTES• UTILITY IMPACT & RAIL CERTIFICATION NOTES• GENERAL UTILITY NOTES• WATER STANDARD UTILITY BID ITEMS• WATERLINE SPECIFICATIONS• DEPT OF ARMY - NATIONWIDE PERMIT• KPDES STORM WATER PERMIT, BMP AND ENOI• SKETCH MAP(S)• SUMMARY SHEET(S)• TYPICAL SECTION(S)• DETAIL SHEET(S)• DETAIL SHEETS FOR SLIDE REPAIR• GUARDRAIL DELIVERY VERIFICATION SHEET• DOUBLE SAFETY TYPE BOX INLET
PART II	SPECIFICATIONS AND STANDARD DRAWINGS
	<ul style="list-style-type: none">• SPECIFICATIONS REFERENCE• SUPPLEMENTAL SPECIFICATION• [SN-11M] BARCODE LABEL ON PERMANENT SIGNS• 2016 STANDARD DRAWINGS THAT APPLY• CENTERLINE RUMBLE STRIPS• CENTERLINE RUMBLE STRIP 6 INCH STRIPING• TYPICAL GUARDRAIL INSTALLATIONS• INSTALLATION OF GUARDRAIL END TREATMENT TYPE I• STEEL BEAM GUARDRAIL ("W" BEAM)• STEEL GUARDRAIL POSTS• GUARDRAIL END TREATMENT TYPE I• GUARDRAIL END TREATMENT TYPE 4A• DELINEATORS FOR GUARDRAIL• GUARDRAIL SYSTEM TRANSITION
PART III	EMPLOYMENT, WAGE AND RECORD REQUIREMENTS
	<ul style="list-style-type: none">• FEDERAL-AID CONSTRUCTION CONTRACTS - FHWA 1273

- NONDISCRIMINATION OF EMPLOYEES
- EXECUTIVE BRANCH CODE OF ETHICS
- PROJECT WAGE RATES LOCALITY 2 / FEDERAL
- NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EEO
PIKE

PART IV INSURANCE

PART V BID ITEMS

PART I
SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 12

CONTRACT ID - 194226

HSIP 5361 (008)

COUNTY - PIKE

PCN - 1209806321901

HSIP 5361 (008)

KY HIGHWAY 632 (KY 632) (MP 0.000) FROM KY 194 EXTENDING EAST TO 0.263 MILES EAST OF KY 199 (MP 7.000), A DISTANCE OF 07.00 MILES.ASPHALT PAVEMENT & ROADWAY REHAB SYP NO. 12-09002.00.
GEOGRAPHIC COORDINATES LATITUDE 37:29:13.30 LONGITUDE 82:17:57.30

COMPLETION DATE(S):

COMPLETED BY 10/31/2020

APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

BID SUBMITTAL

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

JOINT VENTURE BIDDING

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

UNDERGROUND FACILITY DAMAGE PROTECTION

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

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

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

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

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

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

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

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

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

HARDWOOD REMOVAL RESTRICTIONS

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

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

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

ACCESS TO RECORDS

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

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

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

April 30, 2018

FEDERAL CONTRACT NOTES

The Kentucky Department of Highways, in accordance with the Regulations of the United States Department of Transportation 23 CFR 635.112 (h), hereby notifies all bidders that failure by a bidder to comply with all applicable sections of the current Kentucky Standard Specifications, including, but not limited to the following, may result in a bid not being considered responsive and thus not eligible to be considered for award:

- | | |
|--------------------------------|----------------------------------------------|
| 102.02 Current Rating | 102.08 Preparation and Delivery of Proposals |
| 102.13 Irregular Bid Proposals | 102.14 Disqualification of Bidders |
| 102.09 Proposal Guaranty | |

CIVIL RIGHTS ACT OF 1964

The Kentucky Department of Highways, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Federal Department of Transportation (49 C.F.R., Part 21), issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin.

NOTICE TO ALL BIDDERS

To report bid rigging activities call: 1-800-424-9071.

The U.S. Department of Transportation (DOT) operates the above toll-free “hotline” Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the “hotline” to report such activities.

The “hotline” is part of the DOT’s continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

SECOND TIER SUBCONTRACTS

Second Tier subcontracts on federally assisted projects shall be permitted. However, in the case of DBE’s, second tier subcontracts will only be permitted where the other subcontractor is also a DBE. All second tier subcontracts shall have the consent of both the Contractor and the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

It is the policy of the Kentucky Transportation Cabinet (“the Cabinet”) that Disadvantaged Business Enterprises (“DBE”) shall have the opportunity to participate in the performance of highway construction projects financed in whole or in part by Federal Funds in order to create a level playing field for all businesses who wish to contract with the Cabinet. To that end, the Cabinet will comply with the regulations found in 49 CFR Part 26, and the definitions and requirements contained therein shall be adopted as if set out verbatim herein.

The Cabinet, contractors, subcontractors, and sub-recipients shall not discriminate on the basis of race, color, national origin, or sex in the performance of work performed pursuant to Cabinet contracts. The contractor shall carry out applicable requirements of 49 CFR 26 in the award and administration of federally assisted highway construction projects. The contractor will include this provision in all its subcontracts and supply agreements pertaining to contracts with the Cabinet.

Failure by the contractor to carry out these requirements is a material breach of its contract with the Cabinet, which may result in the termination of the contract or such other remedy as the Cabinet deems necessary.

DBE GOAL

The Disadvantaged Business Enterprise (DBE) goal established for this contract, as listed on the front page of the proposal, is the percentage of the total value of the contract.

The contractor shall exercise all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises participate in a least the percent of the contract as set forth above as goals for this contract.

OBLIGATION OF CONTRACTORS

Each contractor prequalified to perform work on Cabinet projects shall designate and make known to the Cabinet a liaison officer who is assigned the responsibility of effectively administering and promoting an active program for utilization of DBEs.

If a formal goal has not been designated for the contract, all contractors are encouraged to consider DBEs for subcontract work as well as for the supply of material and services needed to perform this work.

Contractors are encouraged to use the services of banks owned and controlled by minorities and women.

CERTIFICATION OF CONTRACT GOAL

Contractors shall include the following certification in bids for projects for which a DBE goal has been established. BIDS SUBMITTED WHICH DO NOT INCLUDE CERTIFICATION OF DBE PARTICIPATION WILL NOT BE ACCEPTED. These bids will not be considered for award by the Cabinet and they will be returned to the bidder.

“The bidder certifies that it has secured participation by Disadvantaged Business Enterprises (“DBE”) in the amount of _____ percent of the total value of this contract and that the DBE participation is in compliance with the requirements of 49 CFR 26 and the policies of the Kentucky Transportation Cabinet pertaining to the DBE Program.”

The certification statement is located in the electronic bid file. All contractors must certify their DBE participation on that page. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted.

DBE PARTICIPATION PLAN

Lowest responsive bidders must submit the *DBE Plan/ Subcontractor Request*, form TC 14-35 DBE, within **5** days of the letting. This is necessary before the Awards Committee will review and make a recommendation. **The project will not be considered for award prior to submission and approval of the apparent low bidder’s DBE Plan/Subcontractor Request.**

The DBE Participation Plan shall include the following:

1. Name and address of DBE Subcontractor(s) and/or supplier(s) intended to be used in the proposed project;
2. Description of the work each is to perform including the work item, unit, quantity, unit price and total amount of the work to be performed by the individual DBE. The Proposal Line Number, Category Number, and the Project Line Number can be found in the “material listing” on the Construction Procurement website under the specific letting;
3. The dollar value of each proposed DBE subcontract and the percentage of total project contract value this represents. DBE participation may be counted as follows:
 - a. If DBE suppliers and manufactures assume actual and contractual responsibility, the dollar value of materials to be furnished will be counted toward the goal as follows:
 - The entire expenditure paid to a DBE manufacturer;
 - 60 percent of expenditures to DBE suppliers that are not manufacturers provided the supplier is a regular dealer in the product involved. A regular dealer must be engaged in, as its principal business and in its own name, the sale of products to the public, maintain an inventory and own and operate distribution equipment; and
 - The amount of fees or commissions charged by the DBE firms for a bona fide service, such as professional, technical, consultant, or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials, supplies, delivery of materials and supplies or for furnishing bonds, or insurance, providing such fees or commissions are determined to be reasonable and customary.

- b) The dollar value of services provided by DBEs such as quality control testing, equipment repair and maintenance, engineering, staking, etc.;
 - c) The dollar value of joint ventures. DBE credit for joint ventures will be limited to the dollar amount of the work actually performed by the DBE in the joint venture;
4. Written and signed documentation of the bidder's commitment to use a DBE contractor whose participation is being utilized to meet the DBE goal; and
 5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment.

UPON AWARD AND BEFORE A WORK ORDER WILL BE ISSUED

Contractors must submit the signed subcontract between the contractor and the DBE contractor, along with the DBE's certificate of insurance. If the DBE is a supplier of materials for the project, a signed purchase order must be submitted to the Division of Construction Procurement.

Changes to DBE Participation Plans must be approved by the Cabinet. The Cabinet may consider extenuating circumstances including, but not limited to, changes in the nature or scope of the project, the inability or unwillingness of a DBE to perform the work in accordance with the bid, and/or other circumstances beyond the control of the prime contractor.

CONSIDERATION OF GOOD FAITH EFFORTS REQUESTS

If the DBE participation submitted in the bid by the apparent lowest responsive bidder does not meet or exceed the DBE contract goal, the apparent lowest responsive bidder must submit a Good Faith Effort Package to satisfy the Cabinet that sufficient good faith efforts were made to meet the contract goals prior to submission of the bid. Efforts to increase the goal after bid submission will not be considered in justifying the good faith effort, unless the contractor can show that the proposed DBE was solicited prior to the letting date. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted. One complete set (hard copy along with an electronic copy) of this information must be received in the Division of Contract Procurement no later than 12:00 noon of the tenth calendar day after receipt of notification that they are the apparent low bidder.

Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a sample representative letter along with a distribution list of the firms solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the Cabinet considers in judging good faith efforts. This documentation may include written subcontractors' quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The Good Faith Effort Package shall include, but may not be limited to information showing evidence of the following:

1. Whether the bidder attended any pre-bid meetings that were scheduled by the Cabinet to inform DBEs of subcontracting opportunities;
2. Whether the bidder provided solicitations through all reasonable and available means;
3. Whether the bidder provided written notice to all DBEs listed in the DBE directory at the time of the letting who are prequalified in the areas of work that the bidder will be subcontracting;
4. Whether the bidder followed up initial solicitations of interest by contacting DBEs to determine with certainty whether they were interested. If a reasonable amount of DBEs within the targeted districts do not provide an intent to quote or no DBEs are prequalified in the subcontracted areas, the bidder must notify the Disadvantaged Enterprise Business Liaison Officer (DEBLO) in the Office of Civil Rights and Small Business Development to give notification of the bidder's inability to get DBE quotes;
5. Whether the bidder selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise perform these work items with its own forces;
6. Whether the bidder provided interested DBEs with adequate and timely information about the plans, specifications, and requirements of the contract;
7. Whether the bidder negotiated in good faith with interested DBEs not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached;
8. Whether quotations were received from interested DBE firms but were rejected as unacceptable without sound reasons why the quotations were considered unacceptable. The fact that the DBE firm's quotation for the work is not the lowest quotation received will not in itself be considered as a sound reason for rejecting the quotation as unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a DBE quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy DBE goals;
9. Whether the bidder specifically negotiated with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be subcontracted includes potential DBE participation;
10. Whether the bidder made any efforts and/or offered assistance to interested DBEs in obtaining the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal; and
11. Any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include DBE participation.

FAILURE TO MEET GOOD FAITH REQUIREMENT

Where the apparent lowest responsive bidder fails to submit sufficient participation by DBE firms to meet the contract goal and upon a determination by the Good Faith Committee based upon the information submitted that the apparent lowest responsive bidder failed to make sufficient reasonable efforts to meet the contract goal, the bidder will be offered the opportunity to meet in person for administrative reconsideration. The bidder will be notified of the Committee's decision within 24 hours of its decision. The bidder will have 24 hours to request reconsideration of the Committee's decision. The reconsideration meeting will be held within two days of the receipt of a request by the bidder for reconsideration.

The request for reconsideration will be heard by the Office of the Secretary. The bidder will have the opportunity to present written documentation or argument concerning the issue of whether it met the goal or made an adequate good faith effort. The bidder will receive a written decision on the reconsideration explaining the basis for the finding that the bidder did or did not meet the goal or made adequate Good Faith efforts to do so.

The result of the reconsideration process is not administratively appealable to the Cabinet or to the United States Department of Transportation.

The Cabinet reserves the right to award the contract to the next lowest responsive bidder or to rebid the contract in the event that the contract is not awarded to the low bidder as the result of a failure to meet the good faith requirement.

SANCTIONS FOR FAILURE TO MEET DBE REQUIREMENTS OF THE PROJECT

Failure by the prime contractor to fulfill the DBE requirements of a project under contract or to demonstrate good faith efforts to meet the goal constitutes a breach of contract. When this occurs, the Cabinet will hold the prime contractor accountable, as would be the case with all other contract provisions. Therefore, the contractor's failure to carry out the DBE contract requirements shall constitute a breach of contract and as such the Cabinet reserves the right to exercise all administrative remedies at its disposal including, but not limited to the following:

- Disallow credit toward the DBE goal;
- Withholding progress payments;
- Withholding payment to the prime in an amount equal to the unmet portion of the contract goal; and/or
- Termination of the contract.

PROMPT PAYMENT

The prime contractor will be required to pay the DBE within seven (7) working days after he or she has received payment from the Kentucky Transportation Cabinet for work performed or materials furnished.

CONTRACTOR REPORTING

All contractors must keep detailed records and provide reports to the Cabinet on their progress in meeting the DBE requirement on any highway contract. These records may include, but shall not be limited to payroll, lease agreements, cancelled payroll checks, executed subcontracting agreements, etc. Prime contractors will be required to complete and submit a **signed and notarized** Affidavit of Subcontractor Payment (TC 18-7) and copies of checks for any monies paid to each DBE subcontractor or supplier utilized to meet a DBE goal. These documents must be completed and signed within 7 days of being paid by the Cabinet.

Payment information that needs to be reported includes date the payment is sent to the DBE, check number, Contract ID, amount of payment and the check date. Before Final Payment is made on this contract, the Prime Contractor will certify that all payments were made to the DBE subcontractor and/or DBE suppliers.

******* IMPORTANT *******

Please mail the original, signed and completed TC (18-7) Affidavit of Subcontractor Payment form and all copies of checks for payments listed above to the following address:

Office of Civil Rights and Small Business Development
6th Floor West 200 Mero Street
Frankfort, KY 40622

The prime contractor should notify the KYTC Office of Civil Rights and Small Business Development seven (7) days prior to DBE contractors commencing work on the project. The contact in this office is Mr. Melvin Bynes. Mr. Bynes' current contact information is email address – melvin.bynes2@ky.gov and the telephone number is (502) 564-3601.

DEFAULT OR DECERTIFICATION OF THE DBE

If the DBE subcontractor or supplier is decertified or defaults in the performance of its work, and the overall goal cannot be credited for the uncompleted work, the prime contractor may utilize a substitute DBE or elect to fulfill the DBE goal with another DBE on a different work item. If after exerting good faith effort in accordance with the Cabinet's Good Faith Effort policies and procedures, the prime contractor is unable to replace the DBE, then the unmet portion of the goal may be waived at the discretion of the Cabinet.

7/19/2019

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – CARGO PREFERENCE ACT (CPA).

(REV 12-17-15) (1-16)

SECTION 7 is expanded by the following new Article:

102.10 **Cargo Preference Act – Use of United States-flag vessels.**

Pursuant to Title 46CFR Part 381, the Contractor agrees

- To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

- To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph 1 of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

- To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

ASPHALT MIXTURE

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

DGA BASE

Unless otherwise noted, the Department estimates the rate of application for DGA Base to be 115 lbs/sy per inch of depth.

OPTION B

Be advised that the Department will control and accept compaction of asphalt mixtures furnished on this project under OPTION B in accordance with Sections 402 and 403.

Special Notes Applicable to Project – General Notes & Description of Work

CAUTION

The information in this proposal and the type of work listed herein are approximate only and are not to be taken as an exact evaluation of the materials and conditions to be encountered during construction; the bidder must draw his/her own conclusions. The Department does not give any guarantee as to the accuracy of the data and no claim for money or time extension will be considered if the conditions encountered are not in accordance with the information shown.

STATIONING

The contractor is advised that the planned locations of work were established from a beginning station number which is STA 0+00.00 at the intersection of KY 194 and KY 632 near the L&M Mart gas station. Milepoints were established from a beginning Milepoint which is MP 0 at the intersection of KY 194 and KY 632. The existing mile marker signs may not correspond to the proposed work locations.

SURVEY DATA

All survey information was obtained from either available KYTC Aerial LIDAR data or field located ground data. All information should be field verified as appropriate during construction and prior to incorporating the various project work items. Refer to the Special Note for Staking concerning staking operations required to control and construct the work.

ON-SITE INSPECTION

Before submitting a bid for the work, make a thorough inspection of the site and determine existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid to be evidence of this inspection having been made. The Department will not honor any claims for money or time extension resulting from site conditions.

RIGHT OF WAY LIMITS

The Department has not established the exact limits of the Right-of-Way (other than the area described further in the section below entitled "Curve Improvements near MP 3.0".) Unless a consent and release form is obtained from the adjoining property owner, limit work activities to the obvious Right-of-Way and staging areas secured by the Contractor at no additional cost to the Department. In the event that private improvements (i.e. fences, buildings, etc.) encroach upon the Right-of-Way, the contractor shall notify the Engineer and limit work activities in order to NOT disturb the improvements. If they become necessary, the Department will secure consent and releases from property owners through the Engineer. Be responsible for all encroachments onto private lands.

CONTROL

Perform all work under the absolute control of the Department of Highways. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to have other work performed by other contractors and its own forces and to permit public utility companies and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with such other work will be reduced to a minimum. The Department will not honor any claims for money or time extension created by the operations of such other parties. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general.

General Notes & Description of Work
Page 2 of 4

harmony and in a satisfactory manner, and his/her decision shall be final and binding upon the Contractor.

DESCRIPTION OF WORK

Except as specified herein, perform all work in accordance with the Department's Standard Specifications, Supplemental Specifications, applicable Special Notes and Special Provisions, and applicable Standard and Sepia Drawings, current editions. Furnish all materials, labor, equipment, and incidentals for the following work:

Curve Improvements near MP 3.0. The project includes a section of curve realignment and improvement near MP 3.0. These improvements include changes to the horizontal and vertical alignment, roadway template, drainage ditches and pipe structures, etc. Please refer to the geotechnical drilling info, detailed plan, profile, and cross sections for more information relating to this proposed work. The proposed typical section for these improvements is included to show detailed information on pavement thicknesses and types. Acquisition of Proposed Right of Way is required for these improvements. In addition, the 8" PVC water line in this area will require relocation.

Sight Distance Improvement near MP 4.0. The project includes hillside excavation near MP 4.0. The purpose of this excavation is to provide improved sight distance around the existing curve on KY 632 at the KY 1758 Long Fork Road Intersection. The existing roadway geometry and driving lanes are not proposed to be changed with this improvement. All earthwork quantities for this improvement are paid by way of bid item "Special Excavation". See the included cross sections for more information relating to the cut layout. The assumed cut slope on the cross sections is ¼:1; however, the actual cut slope will be determined in the field under the direction of the Section Engineer. The actual quantity of roadway excavation will be paid based on measurements in the field.

No acquisition of right of way is expected to be required with this improvement. A 4" metal gas line that runs perpendicular down the face of the hillside will remain in place. The 8" PVC water line in this area will not require relocation. The water line is to be protected via measures such as metal plating over the line to avoid disturbance. No direct payment will be allowed for the metal plating. The cost of protecting the existing water line shall be accounted for through the "Special Excavation" bid item.

Embankment Failure repair near MP 5.3. The project includes repair for an existing section of drilled steel and cribbing near MP 5.3. See the plan sheet and the detailed cross sections for more information relating to the work involved with this improvement. Bid items included for this work include Railroad Rails (Drilled), Cribbing, Excavation & Backfill, and Geotextile Fabric Type IV. Please note that the quantity calculations assumed a depth to rock as shown on the Embankment Repair Summary. Please refer to the geotechnical drilling info for rock depths and other information. Actual location and quantities of all materials will be determined by the Engineer in the field.

Superelevation Improvements. There are multiple curves where Superelevation Improvements are being proposed. The intent of this work is to bring a consistent pavement cross slope through the identified curves. Refer to the Superelevation Improvement Summary for locations and approximate quantities. The Contractor will need to utilize Leveling & Wedging and/or Asphalt Base in order to achieve the desired superelevation improvements at the identified curves. In certain areas where the superelevation improvement will only require adding 1-3 inches of additional pavement depth, Leveling & Wedging PG64-22 will be required. In areas where the superelevation improvement will require 3 or more inches of additional pavement depth, Class 3 Asphalt Base 1.00D PG 64-22 will be required. The Superelevation

General Notes & Description of Work

Page 3 of 4

Improvement Summary lists the estimated quantities of Asphalt Base and Leveling & Wedging for each curve; however, the Engineer will make the final determination as to which bid items will be required at each superelevation improvement area, as well as the appropriate lift thicknesses and number of lifts based on the existing conditions encountered at the time of construction. After placement of the Leveling & Wedging and Asphalt Base, the identified curves will be overlaid with a surface course. As a result of these superelevation improvements within the identified curves, the roadside shoulders and fill slopes will have to be modified to match the final pavement elevations and tie in with the existing ground lines. The quantities for these modifications have been included within the Ditching & Shouldering bid item.

NOTE: Some field adjustments of the shoulder, fill slope, and/or superelevation improvement may be required. The resulting shoulder and fill slope grading is intended to occur within Right-Of-Way and NOT disturb any sensitive obstructions (i.e. fences, buildings, utility poles, etc.). Superelevation improvements with sensitive obstructions along the roadside shall still require the roadside shoulder and fill slope to be modified, but the slope may have to be constructed steeper than what is shown on the superelevation typical section. The desire of the Department is to keep the fill slopes at 3:1 or flatter. When slopes need to be constructed steeper than 3:1, and the existing fill slope is steeper than 3:1, the slope can be constructed steeper than 3:1, but the slope shall not be constructed steeper than the existing condition. Further, if a desired superelevation improvement will result in a fill slope having to be graded steeper than the existing fill slope in order to not impact a sensitive obstruction, then the superelevation rate should be modified (reduced) in order to reduce the final change in pavement edge elevation, thereby reducing the height of the new fill slope grading, and allowing for a flatter fill slope.

High Friction Surface Treatment. There are locations within the project where High Friction Surface Treatment is to be installed. Locations are noted on the High Friction Surface Summary. Refer to the Special Note for Polymer Concrete Overlay Systems and the Special Note for Striping on High Friction Surface for more information on this item of work.

Ditching and Shouldering. Several areas throughout the project are set up for Ditching & Shouldering. Perform Ditching & Shouldering at the locations identified elsewhere in the Proposal, or the locations as directed by the Engineer. The proposed shoulder, ditch, and/or roadside dimensions are detailed on the Typical Sections. Perform Ditching & Shouldering according to the Special Note for Ditching & Shouldering. For details of the conditions and situations commonly encountered when performing Ditching & Shouldering, refer to the detail sheets titled: DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS.

Pipe Replacements & Extensions. There are locations throughout the project where culvert pipes and box culverts are being replaced and/or extended. Locations are noted on the Culvert Pipe Replacement & Extension Summary. Other items that may be associated with the pipe replacements and/or extensions include: Ditching & Shouldering, Channel Lining, Geotextile Fabric, etc. Refer to the Special Note for Pipe Replacements / Extensions for more information on this item of work.

Channel Lining. A quantity of 222 Tons of Channel Lining Class II and 154 Tons of Channel Lining Class III has been included in the Pipe Drainage Summary for use at the locations indicated on the Pipe Drainage Summary. These channel lining quantities are included in the contract for various potential drainage uses at locations such as drop box inlets, safety box inlets, inlets and outlets of pipes, and other areas as

General Notes & Description of Work

Page 4 of 4

directed by the Engineer. The Contractor and Engineer should work together to determine the location and best use of Channel Lining throughout this project. The Engineer will make the final determination as to the needed quantities and placement of Channel Lining.

Guardrail Replacement. Existing guardrail within the project will be replaced. Refer to the Guardrail Summary for the approximate locations for guardrail replacement. The work will include removal of the existing guardrail, placement of a crushed stone base shoulder at a four foot width (with one foot of depth) and 2:1 side slopes to accommodate installation of the new guardrail and end treatments, double asphalt seal coat, placement of geotextile fabric, roadway excavation, embankment-in-place, and tree removal. See the Special Note for Guardrail for more information on this work.

Utility Relocation. An existing 8" PVC water line owned by Mountain Water District is located along KY 632 throughout the project. This line will be impacted at various locations of pipe culvert improvements, box culvert extensions, inlet improvements, etc. In addition, the water line will require relocation throughout the curve improvements proposed near MP 3.0. The proposed water line design and items required for the relocation, such as PVC water line, fittings, service connections, etc., shall be included within the contract with appropriate bid items.

Removal of Existing Curve Signing and Installation of Proposed Curve Signing. A quantity of 93 each of "Remove Sign" has been included in the Signing Summary for removal of existing curve signing along the corridor. An estimated quantity of new curve signing and sign post is included on the Signing Summary. Once final surfacing operations are complete, the District Traffic Section will perform ball bank readings along the route to determine the curves requiring curve signing and the appropriate advisory speeds of those curves. Refer to the Special Note for Signing, Special Note for Staking, and Special Note for Signage for more details.

Remove, Store & Reinstall Signs. A quantity of 3 each of "Remove-Store and Reinstall Sign" has been included in the contract for existing sheet signs that may obstruct or interfere with proposed construction activities. Do not remove an existing sign until just prior to working in the vicinity of the sign. Reinstall the sign as soon as possible once the construction activities in the vicinity of the sign has reached a stage that the sign will no longer be an obstruction or interfere with the work. For example, there are various locations where Ditching and Shouldering is to be performed, followed by installation of a DGA wedge and chip seal. If a sign is within such area, it will likely need to be removed for the ditching and shouldering operations. However, the sign could be reinstalled after the ditching and shouldering operations, but before the DGA and chip seal operations, as these operations occur much closer to the edge of pavement, and signing is typically installed 6-12 feet from the edge of pavement. The intent is for the sign to be "down" the minimum length of time necessary.

Trim & Remove Trees, Stumps, and Brush. There are locations within the project where Trees, Stumps, or Brush are to be removed and/or trimming. Locations are noted on the Tree Removal & Trimming Summary. Refer to the Special Note for Tree, Stump, and Brush Removal for more information.

SPECIAL NOTES FOR PIPE REPLACEMENTS / EXTENSIONS

I. DESCRIPTION

Except as provided herein, perform all work in accordance with the Department's Standard Specifications, interim Supplemental Specifications, Standard and Sepia Drawings, and Special Notes and Special Provisions, current editions. Article references are to the Standard Specifications. This project shall consist of furnishing all labor, equipment, materials, and incidentals for the following:

(1) Maintaining and Controlling Traffic; (2) Constructing pipe replacements and/or pipe extensions; (3) Embankment and/or Excavation; (4) Erosion Control; and (6) Any other work as specified by this contract.

II. MATERIALS

Provide for sampling and testing of all materials in accordance with the Department's Sampling Manual. Make materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these notes.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Culvert Pipe. Furnish pipe meeting the requirements of Section 810. Select pipe for pH range Medium and minimum fill cover height according to the applicable Standard or Sepia Drawings, current editions. Verify maximum and minimum fill cover height required for new pipe prior to construction and obtain the Engineer's approval of the class or gauge of pipe and type of coating prior to delivering pipe to project. Furnish approved connecting bands or pipe anchors and toe walls.

C. Flowable Fill. Furnish Flowable Fill for Pipe Backfill per Section 601.03.03(B).

D. Erosion Control. See Special Note for Erosion Control.

III. CONSTRUCTION METHODS

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Erosion Control. See Special Note for Erosion Control.

C. Site Preparation. Be responsible for all site preparation including, but not limited to, saw cutting and removing pavement; clearing and grubbing; staking; incidental excavation and backfilling; common and solid rock excavation; embankment in place; removal of obstructions, or any other items; restoration of pavements, slopes, and all disturbed areas; final dressing and cleanup; and disposal of materials. Limit clearing and grubbing to the absolute minimum required to construct the drainage features. Perform all site preparation only as approved or directed by the Engineer.

Pipe Replacements/Extensions
Page 2 of 4

- D. Removing Headwalls, Pipe, and Excavation.** Remove existing headwalls and lengths of culvert and/or entrance pipes at the approximate locations noted on the summary. The Engineer will determine the exact locations and lengths of pipe to be removed at the time of construction. When removing pipe, or any portion of pipe under the roadway, saw cut the existing asphalt pavement and base to a neat edge prior to excavation and removal of the existing pipe. NOTE: Saw cutting the pavement shall be incidental. Obtain the Engineer's approval of trench width and/or saw cutting limits prior to saw cutting the pavement. Excavate the trench and remove the pipe as directed, or approved, by the Engineer without disturbing existing underground utilities.
- E. Constructing Pipe, Headwalls, and Drainage Boxes.** Construct culvert and/or entrance pipes, pipe extensions, headwalls, drainage boxes, and other drainage structures at the locations shown in the proposal or as designated by the Engineer. The contractor will establish, with the approval of the Engineer, the final centerlines, flow lines, and skews to obtain the best fit with the existing and/or proposed ditches and other proposed improvements. (See the Special Note for Staking.) Construct pipe bedding according to Section 701 and the applicable Standard or Sepia Drawings, current editions. Use approved connecting bands or concrete anchors as required. Prior to backfilling pipe, obtain the Engineer's approval of the pipe installation. Provide Positive drainage upon completion of pipe installation.
- F. Pipe Backfill.** Backfill entrance pipes according to Section 701.03.06. Contrary to Section 701.03.06, backfill culvert pipes with flowable fill for the width of the roadway and as shown on the Pipe Replacement Detail. Steel plates will likely be required to maintain traffic while the flowable fill cures. Once the flowable fill has sufficiently cured, place the Asphalt Base in lifts with thicknesses of 3-4 inches, up to the surface of the existing pavement. Seal with Leveling & Wedging. Allow the asphalt base and leveling & wedging to be exposed to traffic for a minimum of 14 days to allow for settlement. During the waiting period, level & wedge any settlement as directed by the Engineer. After the waiting period has been met for the last pipe replacement constructed, the final surfacing operations can begin, unless directed otherwise by the Engineer.
- G. Embankments.** Backfill pipe and culvert extensions, and construct shoulder embankments as directed by the Engineer. The contractor shall bench into the existing slope and apply proper compaction according to Section 206. For more information and details on benching, refer to Note 2 on the detail sheet titled: DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS, found elsewhere in the Proposal. Provide positive drainage of ditches, shoulders, and slopes at all times during, and upon completion of construction.
- H. Property Damage.** Be responsible for all damage to public and/or private property resulting from the work. Repair or replace damaged roadway features in like kind materials and design as directed by the Engineer at no additional cost to the Department. Repair or replace damaged private property in like kind materials and design to the satisfaction of the owner and the Engineer at no additional cost to the Department.

Pipe Replacements/Extensions
Page 3 of 4

- I. Coordination with Utility Companies.** Locate all underground, above ground, and overhead utilities prior to beginning construction. Be responsible for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. In the event that it is discovered that the work requires that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities. Be responsible for repairing all utility damage that occurs as a result of pipe replacement and pipe extension operations at no additional cost to the Department. NOTIFY THE ENGINEER AND THE UTILITY OWNER(S) IMMEDIATELY WHEN IT IS DISCOVERED OR ANTICIPATED THAT ANY UTILITY CONFLICT COULD DELAY THE CONTRACTOR'S OPERATIONS. If the total delay exceeds ten working days, an extension of the specified completion date will be negotiated with the Contractor for delay to the Contractor's work; however, no extension will be granted for any delay caused by the Contractor's failure to notify the Engineer and/or the utility company as specified above when a conflict is discovered or anticipated as specified.
- J. Right-of-Way Limits.** The Department has not established exact limits of the Right-of-Way. Unless a consent and release form is obtained from the adjoining property owner, limit work activities to the obvious Right-of-Way and staging areas secured by the Contractor at no additional cost to the Department. In the event that private improvements (i.e. fences, buildings, etc.) encroach upon the Right-of-Way, the contractor shall notify the Engineer and limit work activities in order to NOT disturb the improvements. If they become necessary, the Department will secure consent and releases from property owners through the Engineer. Be responsible for all encroachments onto private lands.
- K. Clean Up, Disposal of Waste.** Clean up the project area as work progresses. Dispose of all removed concrete, pipe, pavement, debris, excess and unsuitable excavation, and all other waste at approved sites off the Right of Way obtained by the Contractor at no additional cost to the Department. See the Special Provision for Waste and Borrow Sites.
- L. Final Dressing, Seeding and Protection.** Grade all disturbed areas to blend with the adjacent roadways features and to provide a suitable seed bed. Apply Class A Final Dressing to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.
- M. Erosion Control.** See the Special Note for Erosion Control.

IV. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See the Traffic Control Plan.
- B. Site Preparation.** Other than the bid items listed, site preparation will NOT be measured for payment, but shall be incidental to culvert and/or entrance pipe bid items, as applicable.

Pipe Replacements/Extensions
Page 4 of 4

- C. Remove Headwall.** The Department will measure the removal of existing headwalls as Each.
 - D. Remove Pipe.** Removal of existing culvert and entrance pipe shall be measured according to Section 701.04.14. Any excavation necessary to remove existing pipe will NOT be measured for payment, but shall be incidental to the bid item "Remove Pipe".
 - E. Culvert and Entrance Pipe.** The Department will measure the quantities according to Section 701.04. Any excavation necessary to install culvert or entrance pipe shall be incidental to the corresponding pipe bid items.
 - F. Headwalls, Drainage Boxes.** The Department will measure according to Section 710.
 - G. Excavation, Pipe Backfill, Embankments.** The Department will NOT measure for payment the following items: any excavation necessary to remove the existing pipe and/or install the proposed culvert and/or entrance pipes, pipe backfill material, flowable fill, and re-constructing shoulder embankments, but shall consider these items incidental to the bid items for culvert and entrance pipe.
 - H. Clean Up, Disposal of Waste, Final Dressing, Seeding and Protection.** The Department will NOT measure for payment the following activities: Clean Up, Disposal of Waste, and Final Dressing. These activities shall be incidental to the project bid items. Seeding and Protection shall be measured according to Section 212.
 - I. Erosion Control.** See the Special Note for Erosion Control.
- V. BASIS OF PAYMENT**
- A. Maintain and Control Traffic.** See the Traffic Control Plan.
 - B. Remove Headwall.** The Department will make payment for the completed and accepted quantities of Each headwall removed.
 - C. Remove Pipe.** The Department will make payment according to Section 701.05. Payment at the Contract unit price per linear foot shall be full compensation for furnishing all labor, materials, equipment, and incidentals for removing the existing pipe.
 - D. Culvert and Entrance Pipe.** The Department will make payment according to Section 701.05. Payment at the Contract unit price per linear foot shall be full compensation for furnishing all labor, materials, equipment, and incidentals necessary for installing and backfilling new culvert and entrance pipe.
 - E. Headwalls, Drainage Boxes.** The Department will make payment according to Section 710.
 - F. Erosion Control.** See the Special Note for Erosion Control.

SPECIAL NOTE FOR HDPE PIPE LINER

The bid item(s) "HDPE Pipe Liner (__ Inch)" is to be used to line the existing culvert pipes at the locations noted in the Proposal.

The diameter of the HDPE Pipe Liner(s) shall be compatible and appropriate for the size(s) of the existing culvert pipe(s) to be lined, based on the recommendations of the manufacturer, and as approved by the Engineer. Some, or all, of the existing pipes may have proposed pipe extensions. If an existing pipe is proposed to be extended, the existing pipe shall be extended prior to lining. Additionally, HDPE Pipe Liner shall adhere to the following specifications:

Material Specifications:

Except as provided herein, conform to all requirements of AASHTO Designation: M 326-08 and ASTM Designation: F894 as specified by size in contract.

Method of Measurement:

The completed and accepted quantities of HDPE Pipe Liner will be measured in linear feet.

Pipe:

The Contractor must provide one trained and experienced technician to assist the Engineer in determining the needed pipe liner size (length and diameter) and to help determine blocking and grout tube placement. This will be provided at no cost to the Department.

Grout:

Grout shall meet specifications of the Kentucky Standard Specifications for Road and Bridge Construction, current edition. Grout ingredients and proportions may be adjusted by the Engineer to meet field conditions. Work shall include installing grout material into annular space between existing pipe and pipe liner. The Contractor will be responsible for providing any needed traffic control, constructing bulkheads, vent tubes, grout tubes, and blocking if needed. The Contractor shall provide a concrete pump and air foam generator to deliver desired pressure and material as determined by the Engineer. The Contractor shall supply at least **two** (2) trained and experienced technicians per job. The Contractor shall ensure all voids are filled by pumping grout from upstream or downstream of culvert and continue pumping until grout is expelled from the highest vent pipe on the inlet end. The Contractor shall take appropriate precautions to avoid over pressurization, buckling, and floating of the pipe liner during the grouting process. The Contractor shall comply with the pipe manufacture's recommendations for grouting procedures. Multiple grout lifts may be required to avoid buckling the liner pipe. The Contractor shall take all necessary precautions to protect and preserve the interior of the pipe from damage. Spills shall be minimized and cleaned up immediately. Any damage to the pipe caused by or occurring during the grouting operation shall be repaired by a method approved by the Engineer at no additional cost to the Department.

12-9002.00 SPECIAL NOTE FOR BOX CULVERT EXTENSIONS

I. DESCRIPTION.

Except as provided herein, perform all work in accordance with the Department's 2019 Standard Specifications, interim Supplemental Specifications, Standard and Sepia Drawings, and Special Notes and Special Provisions, current editions. Section references are to the Standard Specifications. This project shall consist of furnishing all labor, equipment, materials, and incidentals for the following:

(1) Contractor staking; (2) Site preparation; (3) Removing existing concrete masonry headwalls and wing walls; (4) Foundation preparation and construction of reinforced concrete culvert extensions; (5) Guardrail; (6) Temporary and permanent erosion and water pollution control; and (7) Any other work specified as part of this contract.

II. MATERIALS.

Provide for sampling and testing of all materials in accordance with the Department's Sampling Manual. Make materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these notes.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Erosion Control. See Special Note for Erosion Control.

C. Foundation Preparation. Furnish materials according to Section 603, the drawings, and as directed by the Engineer.

E. Reinforced Concrete Culvert Extensions. Furnish Class A Concrete and deformed Steel Reinforcement according to Sections 601 and 602. Contrary to Section 602.03.03, field bending bars will be allowed; however, obtain the Engineers approval of proposed field bending methods prior to bending. Furnish additional reinforcement to provide adequate splice lengths with existing culvert steel as determined by the Engineer.

F. Channel Lining. At the Contractor's option, the Engineer will allow reuse of suitable solid rock excavation and/or concrete and stone masonry removed from existing structures, with all reinforcing steel removed and rubblized to the approximate size of cyclopean stone. Obtain the engineers approval of the materials to be reused prior to placement. Furnish additional Channel Lining Class II as required to complete the work.

G. Guardrail. See Special Note for Guardrail.

Box Culvert Extensions

Page 2 of 7

H. Traffic Bound Base. Use Crushed Limestone Size Number 2, 57, and 610 as directed by the Engineer.

I. Steel Reinforcement. See Section 811

III. CONSTRUCTION.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Erosion Control. See Special Note for Erosion Control.

C. Site Preparation. Be responsible for all Site Preparation, including but not limited to Clearing and Grubbing; Removing pavement; Tree and Stump removal; Temporary Fencing; Roadway Excavation and Structure Excavation; Embankment and Embankment in Place; removal of obstructions or any other items (other than concrete masonry); Grading, Reshaping, and Compacting; Ditching and Shouldering, obtaining borrow and waste sites and disposal of materials, waste, and debris; cleaning inlet and outlet ditches; and restoration, cleanup and final dressing.

Prior to beginning work at each site, remove existing fencing, construct temporary fencing, and maintain during construction to provide positive barrier to adjacent property owners livestock. Clear and Grub only the minimum area required for construction and/or as directed by the Engineer. Limit clearing and grubbing to the absolute minimum required to construct the culvert extensions, roadway approaches, and guardrail. Obtain the Engineer's approval before removing trees and stumps from the cleared areas.. Phase construction such that the potential for erosion is as minimal as possible.

Excavate as necessary to remove the portion of the existing structure necessary for construction of the extension. Perform any other ditching or grading as directed by the Engineer. Stockpile suitable materials for incorporation into the work as approved by the Engineer.

Be responsible for all excavation (common, roadway, structure, solid rock, and unclassified) required for foundation preparation, toe walls, and all other excavation required for the culvert extensions. Excavate rock in channel as required to allow for construction of foundation and construction of culvert extensions.

Be responsible for all embankment, embankment in place, and borrow required for backfilling culvert extension, constructing widened roadway and shoulder transitions, widened shoulders for guardrail, entrances and road approaches, and all other embankment required to complete the work as shown on the drawings.

Box Culvert Extensions

Page 3 of 7

Provide positive drainage of slopes and ditches at all times during and upon completion of construction. Waste all removed materials not incorporated into the work at sites off the right of way obtained by the Contractor at no additional cost to the Department (see Special Note for Waste and Borrow). Perform all excavation and removal of obstructions only as approved or directed by the Engineer.

Sheeting, shoring, cofferdams, and/or dewatering methods may be necessary for construction of the culvert. Include all costs in the unit price bid for Foundation Preparation.

D. Culvert Extensions. As directed by the Engineer, remove headwalls and wingwalls at the existing culvert ends to sound concrete masonry. The Engineer may direct that the headwalls and wings shall remain, in which case the parapet should be removed to 6" below proposed roadway elevation. Coat exposed ends of cut reinforcing with a bituminous product to prevent corrosion of the ends of the exposed reinforcement. See Drawings for splicing detail. If the Engineer directs the headwalls and wings to be removed, before removing any concrete masonry saw around the perimeter of the removal area on the interior and exterior of the culvert barrel to a depth of 1 inch; however take care not to cut into steel reinforcement in the existing culvert. Do not kink or unnecessarily bend exposed steel reinforcement. Remove structure excavation to solid rock or as directed by the Engineer, and prepare foundation. Straighten existing steel reinforcement prior to splicing. Place additional reinforcement in the splice area to provide adequate splices with the existing reinforcement as determined by the Engineer. Construct the culvert extensions as shown on the drawings. Obtain the Engineer's approval of the final centerline, flow line, length, and skew, and revised dimensions and steel pattern, if any, of each extension prior to placing concrete. Quantities for headwall removal are given on the plans, but may not be used if the Engineer directs that the headwalls are to remain. If the headwalls remain, quantities for Remove Concrete Masonry are included in the plans to remove portions of the parapets. Not all quantities may be required and paid on each culvert.

E. Embankments. Backfill culvert extensions and construct embankments, slopes, roadway, shoulders and ditches as shown on the drawings. Construct entrances and road approaches so that adequate sight distance over guardrail is provided for vehicles entering the roadway. Warp and tie the embankment slopes into the adjacent existing roadway to match existing slopes and ditches. Provide positive drainage of slopes and ditches at all times during and upon completion of construction.

F. Ditching and Shouldering. Construct ditches and shoulders to provide positive drainage. Transition ditching and shouldering between existing typical section and the reconstructed roadway at culvert extension sites according to Section 209. Remove and replace entrance pipe or construct new entrance pipe as necessary to provide proper drainage. Clean all new and existing cross drainage and entrance structures within the limits of ditching areas and the new construction according to Section 209.03.B.

Box Culvert Extensions

Page 4 of 7

G. Channel Lining. Place Class III Channel Lining to protect wing walls and slopes as directed by the Engineer. In addition to the requirements of section 703, the Engineer may require additional hand placement.

H. Clean Culvert. Remove all deleterious material and objects not native to the culvert barrel that are present prior to the construction of the structure.

I. Guardrail. See Special Note for Guardrail.

J. Fencing. Remove existing fencing and construct temporary fencing prior to beginning any work that could damage existing fence. Maintain temporary fencing during construction to provide positive barrier to adjacent property owners' livestock at all times. Upon completion of all other work at each site, remove Temporary Fencing and construct Woven Wire Fence Type Type 2 between the culvert wing walls and the existing fences.

K. Entrances and Approaches. Reconstruct entrances and approaches to provide sight distance over guardrail for vehicles entering the roadway. Obtain the engineer's approval of the final line and grade of each entrance and approach. Install entrance pipe and maintain and restore surfacing on entrances and road approaches with Traffic Bound Base; use compacted Crushed Limestone Size No. 2, 57, and 610 as directed by the Engineer.

L. Final Dressing, Clean Up, Seeding and Protection, and Restoration. See Special Note for Erosion Control..

M. Right-of-Way Limits. The Department has not determined exact Right-of-Way limits. Limit work activities and operations to obvious Right-of-Way; Permanent or Temporary Easements; work areas secured by the Department through consent and release of the adjacent property owners; and staging areas secured by the Contractor at no additional cost to the Department. Be responsible for encroachments onto private lands.

N. Property Damage. Be responsible for all damage to public and/or private property resulting from the work. Repair or replace damaged roadway features in like kind materials and design as directed by the Engineer at no additional cost to the Department. Repair or replace damaged private property in like kind materials and design to the satisfaction of the owner and the Engineer at no additional cost to the Department.

O. Disposal of Waste. Dispose of all removed concrete masonry not incorporated into channel lining, reinforcing steel, excess and unsuitable excavation, and other waste and debris off the right-of-way at sites obtained by the Contractor at no additional cost to the Department (see Special Note for Waste and Borrow).

P. On-Site Inspection. Before submitting a bid for the work, make a thorough inspection of the site and determine existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid to be evidence

Box Culvert Extensions

Page 5 of 7

of this inspection having been made. The Department does not warrant or give any guarantee as to the accuracy of the data and information shown and no claims for money or time extensions will be considered if the conditions encountered, items used or omitted, and final quantities required are not in accordance with the information shown.

Q. Caution. Consider the information shown on the drawings and the type of work listed on the summaries and herein as approximate only. Verify all dimensions and designs and obtain the Engineer's approval of any changes required to accomplish the work. Understand that any reference to rock, earth, or any other material on the drawings, cross sections, summaries, and these notes, whether in numbers or words, letters, or lines, is solely for the Department's information and do not take the information as an accurate evaluation of the materials and conditions to be encountered during construction. The bidder must draw his own conclusions as to the conditions to be encountered.

R. Utilities. See utility Clearance Notes.

S. Control. Perform all work under the absolute control of the Department of Highways. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to have other work performed by other contractors and its own forces and to permit public utility companies and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with such other work will be reduced to a minimum. The Department will not honor any claims for money or time extension created by the operations of such other parties.

Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and his decision shall be final and binding upon the Contractor.

T. Pipes. Where necessary, pipes may be required to extend through the sidewalls or wings of the culvert. Shift, cut, add, and/or bend reinforcement as necessary for pipe. Maintain 2" clearance around the pipe to reinforcement. Place pipe at proper elevation and location and pour concrete around pipe. All costs for this work and/or extra reinforcement required shall be incidental to Box Culvert or Headwall as applicable.

IV. MEASUREMENT.

Quantities shown on the summaries and drawings are approximate only. The Department will measure for payment only the bid items listed and the actual quantities of each incorporated in the work. All other items required to complete the construction shall be incidental to the listed bid items.

Box Culvert Extensions

Page 6 of 7

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Site Preparation. The Department will not measure Site Preparation for culvert payment and will consider it incidental to Box Culvert

C. Erosion Control. See Special Note for Erosion Control.

D. Guardrail. See Special Note for Guardrail.

E. Channel Lining Class III. The Department will measure Channel Lining Class II obtained off site in tons; however, the Department will not measure solid rock excavation, structure excavation, and rubblized masonry reused as channel lining, but shall be incidental to Site Preparation and Remove Concrete masonry as applicable.

F. Entrances and Approaches. The Department will measure Entrance Pipe and Traffic Bound Base according to the Standard Specifications. The Department will not measure other items used to maintain and construct entrances and approaches, but shall be incidental to Site Preparation.

G. Clean Culvert. See previous note and will be measured for each culvert.

H. Foundation Preparation. The Department will measure Foundation Preparation of box culvert extensions for payment as Lump Sum. This includes all extensions to a given box culvert, not as individual units per inlet or outlet. The Department will NOT measure Foundation Preparation for any other work and shall consider it incidental to that item of work.

I. Box Culvert. The box culvert will be measured from the face of the existing barrel, after headwall removal, to the beginning of the new culvert headwall in linear feet.

V. PAYMENT.

The Department will make payment only for the bid items listed. All other items required to complete the construction shall be incidental to the listed bid items.

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Box Culvert. Payment at the linear foot price shall be full compensation for furnishing all labor, materials, equipment and incidentals for Site Preparation and the construction of the culvert extension barrel.

C. Erosion Control. See Special Note for Erosion Control.

Box Culvert Extensions
Page 7 of 7

D. Guardrail. See Special Note for Guardrail.

E. Channel Lining Class III. Payment at the Contract unit price per ton shall be full compensation for all labor, materials, equipment and incidentals to furnish and place Class II Channel Lining obtained off site, including hand placement if necessary.

F. Clean Culvert. See previous note and will be paid as each culvert.

G. Box Culvert Headwall. Payment at the lump sum price shall be full compensation for furnishing all labor, materials, equipment and incidentals for Site Preparation and the construction of each culvert headwalls.

H. Remove Headwall. Payment at the lump sum price shall be full compensation for furnishing all labor, materials, equipment and incidentals for the removal of the each existing culvert headwall and wings as required.

SPECIAL NOTE FOR EMBANKMENT SLIDE REPAIR

I. DESCRIPTION

Except as specified herein, perform all work in accordance with the Department's Standard and Supplemental Specifications and Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications.

Furnish all equipment, labor, materials, and incidentals for the following work items:

- (1) Site preparation;
- (2) Furnish and install railroad rails;
- (3) Furnish and install cribbing;
- (4) Excavate, place geotextile material, and backfill the area around the railroad rails and on the fill slope;
- (5) Reconstruct shoulder area;
- (6) Install guardrail;
- (7) Maintain and Control Traffic; and
- (8) any other work as specified by this contract.

Repairs using drilled railroad steel and guardrail cribbing are to occur at locations indicated on the Plan Sheets and/or Summary Sheets. Begin and End limits at each area are to be field verified with approval from the Engineer.

II. MATERIALS

All materials shall be sampled and tested in accordance with the Department's Sampling Manual and the materials shall be available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these Notes.

- A. Railroad Rails.** Use recycled (used) railroad rails classified with a nominal weight of 130 lb/yd (pounds per yard) size or greater. Use only visibly straight recycled railroad rails with no splices. The Engineer will verify rail nominal weights (Manufacturer's Stamp with lb/yd, date, etc.) Provide Certification for nominal weight if the Manufacturer's Stamp is unidentifiable.
- B. Wall Cribbing.** Use recycled (used) steel "W" beam guardrail. **Cribbing material will be furnished by the Contractor. Please note that the contractor may be able to use removed guardrail from the project for cribbing purposes (with the approval of the Engineer.)**
- C. Backfill material for Drilled Sockets.** Use the following for backfill material for Drilled sockets: concrete, free flowing sand, pea gravel, crushed limestone, or crushed sandstone. Use backfill material with one hundred percent (100%) passing a one-half (1/2) inch sieve. Do not use auger tailings. Engineer will use visual inspection and/or material testing, as applicable to determine acceptability.
- D. Fill Material for CRIBBING.** Use one of the following backfill materials: Kentucky Aggregate Gradation No. 2's or larger. Backfill material shall meet requirements of

Embankment Slide Repair
Page 2 of 6

Section 805. The Engineer will use visual inspection and/or material testing, as applicable, to determine acceptability.

- E. DGA.** Furnish DGA as per Section 805. Do not use Crushed Stone Base.
- F. Final Dressing, Seed and Protection.** Use seed mixture(s) according to Section 212.
- G. Geotextile Fabric.** Furnish Geotextile Fabric Type IV as per Section 843.
- H. Erosion Control.** See Special Note for Erosion Control.

III. CONSTRUCTION METHODS

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Staking.** Establish proper slope elevations and ratios, shoulder widths, existing ditch profile and final ditch profile to insure positive drainage. Be responsible for field layout. Positive drainage is required upon completion of the project and is the responsibility of the Contractor.
- C. Site Preparation.** Prepare repair sites. This includes clearing and grubbing, if necessary. Remove all obstructions. Sweep and remove debris, if necessary. The area to be cleared has not been measured by the Department and the bidder must draw his own conclusions. Construct silt checks, temporary silt fence, or other erosion control devices, as necessary to satisfy the BMP, at locations directed by the engineer. The engineer shall approve all site preparation. The Department will not make direct payment for site preparation.
- D. Installation of Railroad Rails.** See attached summary for site locations and estimated quantities of materials required. The depth to rock shown on the summary is approximate. No geotechnical borings were advanced, and, as such, rock depths may differ from those estimated. Therefore the contractor is responsible for determining actual depth to rock and providing to the department to be approved by the engineer. The embankment failures at these sites are caused by erosion from steep slopes and poor drainage.

NOTE TO ENGINEER AND CONTRACTOR: ABSOLUTELY NO CHANGE IN SCOPE OF WORK OR INCREASE IN QUANTITIES WILL BE ALLOWED ON THIS PROJECT WITHOUT PRIOR WRITTEN APPROVAL FROM THE TEBM (Transportation Engineering Branch Manager) OR HIS REPRESENTATIVE IN THE DISTRICT OFFICE.

Embankment Slide Repair
Page 3 of 6

THE DEPARTMENT SHALL NOT BE LIABLE FOR PAYMENTS DUE TO ADDITIONAL WORK THAT HAS NOT BEEN AUTHORIZED BY THE AFOREMENTIONED PERSONS.

Install used railroad rail piling in drilled sockets in rock or stable material under the landslides (see figure 1) or the eroded areas (see figure 2) as project location dictates or as directed by the Engineer.

Drill the socket, furnish, and install the railroad rails into holes at slide locations. If the Engineer determines from sounding obtained at a drilled socket that railroad rail piling cannot be used in that socket, the depth of the socket shall be measured and 50% of the depth shall be paid as "Railroad Rail-Drilled". Drill sockets into solid rock, if possible. The Department will monitor each hole, which will serve as a sounding for the rail to be installed in it. Embed the railroad rail into solid rock no less than one-half the free end length of the rail. (See figure 1 and figure 2). If solid rock cannot be obtained, the Engineer will determine the length of embedment required in other stable foundation. Allow adequate size of the drilled socket to allow free insertion of the railroad rail, but the maximum socket size is 1 foot in diameter.

After each hole is drilled, install railroad rail immediately with the flanges positioned perpendicular to the direction of the landslide or break (see figure 3). Determine the height of rail that is needed to reestablish pavement and shoulder typical section. Cut off excess rail flush with the proposed ground line that is not needed. Use cutoffs elsewhere in the project if possible; unusable cutoffs remain the property of the Contractor.

After railroad rail is installed, immediately backfill the drilled hole with the approved materials. Shovel the backfill material into the hole in small amounts. Avoid bridging between the rail and the sides of the hole. Do not use Auger tailings as backfill material.

When double or triple rows are required, stagger the rows to obtain the required spacing. Keep the spacing between the rows of rails as close as is practical; do not space between the rows of more than 2 feet, if possible. See figure 3 (Case II and Case III) for the diagrams showing two (2) or three (3) rows of rails. Select the spacing as per Table 1 for all 130 pound per yard rail or greater. The Department shall approve the selection prior to work being performed.

Crib any exposed portion of railroad rail before placing backfill.

- E. Excavation and Backfill.** Excavate each repair area to provide a platform for drilling the used railroad rails, if necessary. Excavate for roadway ditches as necessary for slope, shoulder and pavement drainage. Place geotextile fabric, then construct embankment behind railroad rails, cribbing, and on slope, as per Section 206. Construct embankment up to the approximate existing pavement elevation.

Embankment Slide Repair
Page 4 of 6

Reconstruct the shoulder area with DGA up to the approximate existing elevation and width of the surrounding typical section or to a minimum width of 2 Feet at each slide location. Do not pond water on the shoulder area or at the shoulder edge. Reconstruct the shoulder before installing guardrail.

DO NOT USE EXCAVATED MATERIAL FROM THE SITE AS FILL MATERIAL. Excess excavation may be wasted at sites on the right-of-way, ONLY if approved by the Engineer. Material may NOT be wasted in flood prone areas or in streams.

If the Engineer deems no suitable sites are available within the right-of-way, the Contractor will be required to waste excess material off the right-of-way at sites obtained by the Contractor at no cost to the Department.

- F. Installation of Wall Cribbing.** Install Cribbing as shown on Figure 1 or Figure 2 as slide location dictates or as directed by the Engineer. Extend wall cribbing 2 feet below the existing ground line. If bedded rock is encountered, install the cribbing to the bedded rock only. If necessary, the Engineer will direct changes to this procedure. Furnish all labor and equipment to deliver and install wall cribbing on the recycled (used) railroad rail piling. Wall cribbing shall be lapped, bolted, and attached solid to the drilled railroad rails.
- G. Final Dressing, Seeding and Protection.** Apply Final Dressing, Class A to all disturbed areas, both on and off the right-of-way. Sow with Seed Mixture No. 1. The Department will NOT make direct payment for final dressing, or seeding and protection, but shall be incidental to Erosion Control.
- H. On-Site Inspection.** Each Contractor submitting a bid for this work shall make a thorough inspection of the site prior to submitting his bid and shall thoroughly familiarize themselves with the existing conditions so that the work can be expeditiously performed after a contract is awarded. Submission of a bid will be considered evidence of this inspection having been made.
- I. Right-of-Way Limits.** The Department has not established exact limits of the Right-of-Way. The Contractor shall make every effort to limit his activities to obvious right-of-way and permanent or temporary easements and shall be responsible for encroachments onto private lands.
- J. Property Damage.** The Contractor will be responsible for all damage to public and/or private property resulting from his work.
- K. Erosion Control.** See Special Note for Erosion Control.

Embankment Slide Repair
Page 5 of 6

IV. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Staking.** See Special Note for Staking.
- C. Site Preparation.** Other than the bid items listed, site preparation will NOT be measured for payment, but shall be incidental to the bid item Excavation and Backfill.
- D. Railroad Rail-Drilled.** The Department will measure the finished in-place length of this item in Linear Feet. Laps, cutoffs, excess, and waste will NOT be measured for payment. If the Engineer determines from the sounding obtained at a drilled socket that railroad rail piling cannot be used in that socket, the depth of the socket shall be measured and 50% of the depth shall be paid as Railroad Rail-Drilled.
- E. Excavation and Backfill.** The Department will measure this item in cubic yards. The Department will measure the quantity in the field as per Section 204 (Roadway Excavation) or other accepted methods of measurement as directed by the Engineer.
- F. Wall Cribbing.** The Department will measure this item in square feet finished in placed area. Laps, cutoffs, excess and waste will not be measured for payment.
- G. Geotextile Fabric.** The Department will measure Geotextile Fabric Type IV according to Section 214.
- H. DGA.** The Department will measure according to Section 302.
- I. Clean Up, Disposal of Waste.** The Department will NOT measure for payment the operation of Clean Up and Disposal of Waste. These activities shall be incidental to project bid items.
- J. Final Dressing, Seeding and Protection.** The Department will NOT measure for payment the operation of Final Dressing. This shall be incidental. The Department will measure Seeding and Protection according to Section 212.
- K. Erosion Control.** See Special Note for Erosion Control.

V. BASIS OF PAYMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.

Embankment Slide Repair
Page 6 of 6

- B. Staking.** See Special Note for Staking.

- C. Railroad Rail-Drilled.** The Department will make payment for the completed and accepted quantities under the bid item: Railroad Rail-Drilled. The Department will consider payment full compensation for all work required in these notes and elsewhere in the Contract.

- D. Excavation and Backfill.** The Department will make payment for the completed and accepted quantities under the bid item: Excavation and Backfill. Payment will be based on quantity measured in the field. The Department will consider payment full compensation for all work and incidentals necessary to excavate and backfill the areas indicated on the plans or as directed by the Engineer.

- E. Wall Cribbing.** The Department will make payment for the completed and accepted quantities under the bid item: Cribbing. Payment will be based on the quantity installed in the field. The Department will not make separate payment for the hauling of the wall cribbing to the project site(s). The Department will consider payment full compensation for all work required on the project.

- F. Geotextile Fabric.** The Department will make payment of Geotextile Fabric Type IV according to Section 214.

- G. DGA.** The Department will make payment according to Section 302.

- H. Erosion Control.** See Special Note for Erosion Control.

SPECIAL NOTE

For Tree Removal

**PIKE COUNTY
Safety Improvements to KY632
Item No. 12-9002**

**NO CLEARING OF TREES 5 INCHES OR
GREATER (DIAMETER BREAST HEIGHT)
FROM APRIL 1- OCTOBER 14.**

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

SPECIAL NOTE FOR TREE, STUMP, AND BRUSH REMOVAL

I. DESCRIPTION

All work shall be performed in accordance with the Department's current Standard Specifications for Road and Bridge Construction and applicable Special Provisions, except as hereafter specified. Article references are to the Standard Specifications.

This work shall consist furnishing all equipment, labor, materials, and incidentals for the following: (1) Site Preparation; (2) Maintaining and controlling traffic; (3) Temporary erosion control and temporary pollution control; (4) Cutting, trimming, and/or removing trees, stumps, and/or brush as specified or directed by the Project Engineer; (5) Treating all cut stumps required by Project Engineer to prevent re-sprouting; (6) Clean up and disposal of waste; (7) Final dressing and seeding and protection; and (8) all other work specified in the Contract.

II. MATERIALS

All materials shall be sampled and tested in accordance with the Department's Sampling Manual and the materials shall be available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these Notes.

- A. Maintain and Control Traffic.** The Contractor shall maintain and control traffic in accordance with the Traffic Control Plan.
- B. Seeding and Protection.** Use applicable Seed Mixture as specified per Section 212.03.03.
- C. Erosion Control.** See the Special Note for Erosion Control.

III. CONSTRUCTION METHODS

- A. Maintain and Control Traffic.** The Contractor shall maintain and control traffic in accordance with the Traffic Control Plan.
- B. Cutting, Trimming, and/or Removing Trees, Stumps, and/or Brush.** The Contractor shall cut trees and/or bushes as close to the ground as possible; three inches (3") or less from ground line. The tree trimming listed in the summary shall be cleared as shown on the Tree Trimming Detail. Grinding of all tree stumps within the mowing zone shall be required as directed by the Engineer. All stumps that are listed on the summary and/or directed by the Engineer to be removed, are to be removed via mechanical grinding, or other methods approved by the Engineer, to a minimum depth of four (4) inches below the surrounding grade line. For trees that are cut, but will not be required to have their stump removed, treat the stump, within one hour of cutting, with the specified herbicide solution.

Tree, Stump, & Brush Removal
Page 2 of 5

Replace and level any and all soil disturbed during the tree, stump, and brush removal and trimming operations. Leave the soil in a condition suitable for seeding that is level with surrounding soil grade, with no holes or indentions to catch water or present unsafe mowing conditions. This work will be incidental to the bid items "Remove Trees or Stumps" and "Trim and Remove Trees and Brush."

NOTE: Tree cutting restrictions apply. See the Special Note for Tree Removal for the date restrictions. See the Special Note for Completion Dates & Liquidated Damages concerning damages if trees and/or bushes are cut outside of the specified time frame.

- C. Removal of Tree, Stump, and Brush Debris.** The Contractor will remove all debris and biomass from the trimming and/or removal of trees, stumps, and/or brush from the work site and dispose of such off the right-of-way in accordance with local, state, and federal solid waste laws and regulations. Cleanup and remove all existing down trees and brush located within the designated areas. At the discretion of the Project Engineer, the contractor may be permitted to chip and blow biomass onto non-mowing zones. Chips shall not be blown onto areas that would potentially restrict the flow of water in drainage ditches. All un-chipped biomass must be removed from roadway right-of-ways.

The Contractor shall keep the work zone free of accumulated waste material and debris at all times. Remove and dispose of all tree, stump, and brush chips off the right-of-way. Remove and dispose of all debris and waste material off the right-of-way as work is completed and at the end of each workday. Remove desirable wood pieces from the right-of-way at the end of each workday. Stockpile trees and brush off the right-of-way. At the discretion of the Project Engineer, the Contractor may be permitted to stockpile trees and brush at approved locations along the right-of-way.

The Contractor shall immediately correct any disturbance to all drainage features and structures caused by the Contractor's work.

- D. Stump Treatment.** Within one hour of cutting, the Contractor shall apply a stump treatment mix consisting of fifty percent (50%) Glyphosate (EPA Reg. No. 524-579) with water and add twelve (12) ounces of Imazapyr (EPA Reg. No. 241-431), as specified, per gallon of solution. The addition of a non-ionic surfactant 5% (v/v) shall be added to the solution to increase uptake of the herbicide solution into the root system. Generic formulations are not acceptable. Mix the herbicide solution in the presence of the Inspector. Include a color indicator in the herbicide solution to mark the treated stumps. Spray or paint the herbicide solution onto all cut stumps within one hour after cutting. Apply the herbicide solution in a manner to avoid drift onto surrounding vegetative ground cover. Stumps in the mowing zone, designated for mechanical grinding treatment, need not receive the herbicide treatment.

Tree, Stump, & Brush Removal
Page 3 of 5

Provide herbicide material for the treatment of cut stumps meeting the following criteria:

a. Glyphosate

Active ingredient: **(Glyphosate)**

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its potassium salt.....	48.7%
Inert ingredients	51.3%
Total	100.0%

* Contains 660 grams per liter or 5.5 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its potassium salt. Equivalent to 540 grams per liter or 4.5 pounds per U.S. gallon of the acid, glyphosate.
EPA Reg. No. 524-579

b. Imazapyr

Active ingredient: **(Imazapyr)**

*Isopropylamine salt of Imazapyr 2-[4,5-dihydro-4-methyl-4-(1methylethyl)-5oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid	26.7%
Inert ingredients	73.3%
Total	100%

* Equivalent to 21.8 percent 2-[4,5-dihydro-4-methyl-4-(1methylethyl)-5oxo-1H-imidazolyl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.
EPA Reg. No. 241-431

KRS 217B requires that any individual who applies pesticides to Kentucky Highway Right-of-Way areas must be certified as a Pesticide Applicator under Category 6 guidelines. Comply with all current laws and regulations established by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and by KRS 217B that regulate the handling, use, and application of pesticides.

E. Property Damage. The Contractor will be responsible for all damage to public and/or private property resulting from his work.

F. Coordination with Utility Companies. NOTICE: Utility locations shown in the plans are approximate and have not been specifically located by the Department. Locate all underground, above ground and overhead utilities prior to beginning construction. The Contractor shall have the responsibility for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. In the event that it is discovered that the work requires that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Utility Owner while they relocate their facilities. The Contractor shall be responsible for repairing all utility damage that occurs as a result of his operations.

G. Right-of-Way Limits. The exact limits of the Right-of-Way have not been established by the Department. The Contractor shall limit his activities to obvious Right-of-Way,

Tree, Stump, & Brush Removal
Page 4 of 5

permanent or temporary easements, and any work areas secured by consent and release of the adjacent property owners. The Contractor shall be responsible for all encroachments onto private lands.

- H. Clean Up, Disposal of Waste.** Clean up and dispose of all removed debris by the end of each work day, and other waste as per Section 204.03.08. The Department will incur no cost to obtain the disposal sites. The Department will NOT make direct payment for clean up or disposal of waste and debris from the project. See the Special Provision for Waste and Borrow Sites.
- I. Final Dressing, Seeding and Protection.** Apply final dressing, class A to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas with the appropriate Seed Mixture as specified in Section 212.03.03.
- J. Erosion Control.** See the Special Note for Erosion Control.

IV. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See the Traffic Control Plan.
- B. Site preparation.** Other than the bid items listed, site preparation will NOT be measured for payment, but shall be incidental to the bid items "Remove Trees or Stumps" and/or "Trim & Remove Trees & Brush".
- C. Remove Trees or Stumps.** The Department will measure the quantity as each tree or stump removed. Trees or stumps to be removed under this bid item are those listed on the Plans or in this Proposal, or as directed by the Engineer.
- D. Trim & Remove Trees & Brush.** The Department will measure the quantity as per linear foot, per side of the highway. See the Tree Trimming Detail for the horizontal and vertical trimming dimensions. The horizontal width is taken from the edge of pavement measured perpendicular to the roadway but not to extend beyond the obvious Right-of-Way limits, or as directed by the Engineer.
- E. Stump Treatment.** The Department will NOT measure for payment the operation of Stump Treatment. This activity shall be incidental to the bid items "Remove Trees or Stumps" and/or "Trim & Remove Trees & Brush".
- F. Clean Up, Disposal of Waste.** The Department will NOT measure for payment the operations of Clean Up and Disposal of Waste. These activities shall be incidental to the project bid items.
- G. Final Dressing, Seeding and Protection.** The Department will NOT measure for payment

Tree, Stump, & Brush Removal
Page 5 of 5

the operations of Final Dressing. Seeding and Protection will be measured according to Section 212.

H. Erosion Control. See the Special Note for Erosion Control.

V. BASIS OF PAYMENT

A. Maintain and Control Traffic. See the Traffic Control Plan.

B. Remove Trees or Stumps. The Department will make payment for the completed and accepted quantities of each tree or stump removed. The Department will consider payment at the contract unit price as full compensation for furnishing all materials, equipment, labor, other expenses, and all incidentals necessary to complete the work of removing the trees and/or stumps.

C. Trim & Remove Trees & Brush. The Department will make payment for the completed and accepted quantities per linear foot. The Department will consider payment at the contract unit price as full compensation for furnishing all materials, equipment, labor, other expenses, and all incidentals necessary to complete the work of trimming and removing the trees and/or brush.

D. Erosion Control. See the Special Note for Erosion Control.

SPECIAL NOTE FOR EROSION CONTROL

I. DESCRIPTION

Perform all erosion and water pollution control work in accordance with any other notes in the Proposal, the Department's Standard and Interim Supplemental Specifications, the Special Provisions and Special Notes, and the Standard and Sepia Drawings, current editions, or as directed by the Engineer. Section references are to the Standard Specifications. This work shall consist of:

(1) Developing and preparing a Best Management Practices Plan (BMP) tailored to suit the specific construction phasing for each site within the project; (2) Preparing the project site for construction, including locating, furnishing, installing, and maintaining temporary and/or permanent erosion and water pollution control measures as required by the BMP prior to beginning any earth disturbing activity on the project site; (3) Clearing and grubbing and removal of all obstructions as required for construction; (4) Removing all erosion control devices when no longer needed; (5) Restoring all disturbed areas as nearly as possible to their original condition; (6) Preparing seedbeds and permanently seeding all disturbed areas; (7) Providing a Kentucky Erosion Prevention and Sediment Control Program (KEPSC) qualified inspector; and (8) Performing any other work to prevent erosion and/or water pollution as specified by this contract, required by the BMP, or as directed by the Engineer.

II. MATERIALS

Furnish materials in accordance with these notes, the Standard Specifications and Interim Supplemental Specifications, applicable Special Provisions and Special Notes, and the Standard and Sepia Drawings, current editions. Provide for all materials to be sampled and tested in accordance with the Department's Sampling Manual. Unless directed otherwise by the Engineer, make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing.

III. CONSTRUCTION

Be advised, these Erosion Control Notes do not constitute a BMP plan for the project. Jointly with the Engineer, prepare a site specific BMP plan for each drainage area within the project in accordance with Section 213. Provide a unique BMP at each project site using good engineering practices taking into account existing site conditions, the type of work to be performed, the construction phasing, methods, and the techniques to be utilized to complete the work. Be responsible for all erosion prevention, sediment control, and water pollution prevention measures required by the BMP for each site. Represent and warrant compliance with the Clean Water Act (33 USC Section 1251 et seq.), the 404 Permit, the 401 Water Quality Certification, and applicable state and local government agency laws, regulations, rules, specifications, and permits. Contrary to Section 105.05, in case of discrepancy between these notes, the Standard Specifications, Interim Supplemental Specifications, Special Provisions and Special Notes, Standard and Sepia Drawings, and such state and local government agency requirements, adhere to the most restrictive requirement.

Erosion Control Page 2 of 3

Conduct operations in such a manner as to minimize the amount of disturbed ground during each phase of the construction and limit the haul roads to the minimum required to perform the work. Preserve existing vegetation not required to be removed by the work or the contract. Seed and/or mulch disturbed areas at the earliest opportunity. Use silt fence, silt traps, temporary ditches, brush barriers, erosion control blankets, sodding, channel lining, and other erosion control measures in a timely manner as required by the BMP and as directed or approved by the Engineer. Prevent sediment laden water from leaving the project, entering an existing drainage structure, or entering a stream.

Provide for erosion control measures to be in place and functioning prior to any earth disturbance within a drainage area. Compute the volume and size of silt control devices necessary to control sediment during each phase of construction. All silt control devices shall be sized to retain a volume of 3,600 cubic feet per disturbed contributing acre. Remove sediment from silt traps before they become a maximum of ½ full. Maintain silt fence by removing accumulated trappings and/or replacing the geotextile fabric when it becomes clogged, damaged, or deteriorated, or when directed by the Engineer. Properly dispose of all materials trapped by erosion control devices at approved sites off the right of way obtained by the Contractor at no additional cost to the Department. See the Special Provision for Waste and Borrow Sites.

As work progresses, add or remove erosion control measures as required by the BMP, applicable to the Contractor's project phasing, construction methods, and techniques. Update the volume calculations and modify the BMP as necessary throughout the duration of the project. Ensure that an updated BMP is kept on site and available for public inspection throughout the life of the project.

The required volume at each Silt Trap shall be computed based on the Up Gradient Contributing Areas that are disturbed and/or stabilized to the satisfaction of the Engineer. The required volume calculation for each Silt Trap shall be determined by the Contractor and verified by the Engineer. The required volume at each Silt Trap may be reduced by the following amounts:

- Up Gradient Areas not disturbed (acres)
- Up Gradient Areas that have been reclaimed and protected by Erosion Control Blanket or other ground protection material such as Temporary Mulch (acres)
- Up Gradient Areas that have been protected by Silt Fence (acres) – Areas protected by Silt Fence shall be computed at a maximum rate of 100 square feet per linear foot of Silt Fence
- Up Gradient Areas that have been protected by Silt Traps (acres)

The use of Temporary Mulch is encouraged.

Silt Trap Type B shall always be placed at the collection point prior to discharging into a Blue Line Stream or onto an adjacent Property Owner. Where overland flow exists, a Silt Fence or other filter devices may be used.

After all construction is complete, restore all disturbed areas in accordance with Section 212. Completely remove all temporary erosion control devices not required as part of the permanent erosion control from the construction site. Prior to removal, obtain the Engineer's concurrence of items to be removed. Grade the remaining exposed earth (both on and off the Right-of-Way) as nearly

Erosion Control
Page 3 of 3

as possible to its original condition, or as directed by the Engineer. Prepare the seed bed areas and sow all exposed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.

IV. MEASUREMENT

The Department will measure the various erosion control items according to Section 212.04 and Section 213.04, as applicable.

V. BASIS OF PAYMENT

The Department will make payment for the various erosion control items according to Section 212.04 and Section 213.04, as applicable.

SPECIAL NOTE FOR SIGNAGE

The final advisory speeds and some sign types will have to be determined after the curve superelevation improvements and final surfacing operations have been completed. The Contractor shall notify the Engineer and District Traffic Engineer when all of the superelevation improvements and surfacing operations have been completed. Once notified, the District Traffic Engineer will ball-bank the newly surfaced route to determine the appropriate advisory speeds and work with the Contractor to determine the final Signing Plan. The Engineer and/or District Traffic Engineer will provide the Contractor with the final advisory speeds, any changes to proposed sign types, and the final quantities within three (3) weeks of being notified by the Contractor that final surfacing operations are complete. After the Contractor has received this information from the Engineer and/or the District Traffic Engineer, the Contractor shall then proceed to layout and stake the signing according to the Special Note for Staking, included elsewhere in this proposal.

All sign sheeting shall be from the Cabinet's List of Approved Materials.

The following signs and sign components shall be fabricated using Type IX sheeting:

- White sign legends on panel signs
- STOP (R1-1) signs
- ALL WAY (R1-3P) signs
- YIELD (R1-2) signs
- DO NOT ENTER (R5-1) signs
- WRONG WAY (R5-1a) signs

The following signs and sign components shall be fabricated using Type IX fluorescent yellow sheeting:

- Horizontal Alignment Signs and Plaques, including signs shown in Figure 2C-1 of the MUTCD
- All Advisory Speed (W13-1P) plaques

The following signs shall be fabricated using Type IX fluorescent yellow-green sheeting:

- School and school bus warning signs, including the fluorescent yellow-green signs shown in Figures 7B-1 and 7B-6 of the MUTCD and other school-related warning signs that are not included in the MUTCD.
- Bicycle Warning (W11-1) signs and SHARE THE ROAD (W16-1P) plaques or diagonal downward point arrow (W16-7P) plaques that supplement Bicycle Warning signs.
- In-Street Pedestrian Crossing (R1-6) signs and Overhead pedestrian Crossing (R1-9) signs
- Supplemental plaques to any of the previously listed signs

All other permanent signs shall be fabricated using Type III or Type IV sheeting.

SPECIAL NOTE FOR SIGNING

I. DESCRIPTION

Except as provided herein, this work shall be performed in accordance with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD), the Department's current Standard Specifications and Interim Supplemental Specifications, applicable Standard and Sepia Drawings, and applicable Special Provisions. Article references are to the Standard Specifications. This project shall consist of furnishing all labor, equipment, materials, and incidentals for the following:

- (1) Maintaining and Controlling Traffic; (2) Furnish, Fabricate, and Erect Signs; and (3) All other work specified in the Contract.

II. MATERIALS

All materials shall be sampled and tested in accordance with the Department's Sampling Manual and the materials shall be available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these Notes.

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Erosion Control.** See Special Note for Erosion Control.

III. CONSTRUCTION METHODS

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Site Preparation.** Be responsible for all site preparation including, but not limited to: clearing and grubbing, staking, excavation, backfill, and removal of obstructions or any other material not covered by other items. Perform all site preparation only as approved, or directed, by the Engineer.
- C. Staking.** See Special Note for Staking.
- D. Signs and Posts.** Before beginning installation, the Contractor shall furnish to the Engineer drawings, descriptions, manufacturer's cuts, etc. covering all material to be used. Mill test reports for beams, steel panels, and each different gauge of aluminum or steel sheeting used must be submitted to the Division of Construction and approved prior to erection.

Fabricate sheet signs from .080 or .125 gauge aluminum alloy 5052-H38 or 6061-T6, in accordance with ASTM B-209, and to the size and shape specified. Prepare the side of

Signing

Page 2 of 6

the sheet to be used as the sign face to receive the retroreflective background material according to the recommendations of the sheeting and retroreflective material manufacturer(s). Sheeting used as background material for sign faces is to be the color specified and visually in accordance with the standard requirements of ASTM D-4956, and meet the requirements of Section 830 of the Standard Specifications. Contrary to Section 830.02.06, only the types and colors of sheeting as specified in the proposal will be accepted. All retroreflective material shall be fabricated and assembled in accordance with the specifications and/or recommendations of the manufacturer(s).

All hardware for the erection of sheeting signs shall be rust resistant: stainless steel, zinc coated, aluminum, or an Engineer approved material. All beams and posts shall be of sufficient lengths to extend from the top of the sign to the required embedment in the anchor. Splicing of the sign post shall NOT be allowed. For installations in soil, Type I steel posts shall be mounted on either a standard anchor, with soil stabilizer plate, or on a Type D breakaway sign support. Refer to Sheeting Sign Detail Sheet 1 of 2 for installation details for a standard anchor with soil stabilizer plate. When installing a standard anchor with soil stabilizer plate, if solid rock is encountered, the Contractor shall drill a hole to the required depth into the rock, install the anchor into the hole, and backfill the anchor post with concrete, or other method approved by the Engineer. The cost shall be incidental to Type I steel post, and a soil stabilizer plate will not be required. Refer to Standard Drawing RGX-065, current edition, for installation details of Type D breakaway sign supports. Approved manufacturers for Type D breakaway sign supports have been placed on the list of approved materials. For installations on existing concrete, such as a sidewalk, concrete median, etc., Type I steel posts shall be mounted on a Type D surface mount. For Type D surface mounts there are two permissible alternatives: Kleen Break Model 425 for Surface Mount Concrete Installations by Xcessories Squared of Auburn, IL or Snap n Safe Model S200s for 2" Sign Post by Designovations Inc. of Stilman Valley, IL. Prior to installation, the Contractor shall submit to the Engineer shop drawings of the Type D surface mount(s). Install the Type D surface mount(s) according to all the applicable requirements of the manufacturer (see shop drawings). All steel post shall meet the requirements of Section 832. All hardware including, but not limited to, sign post anchors, soil stabilizer plates, nuts, bolts, washers, fasteners, fittings, and bracing, or any other incidentals necessary to erect the signs shall be furnished by the Contractor and will be incidental to the work.

New concrete bases, posts, support anchors, signs, etc. are to be installed prior to dismantling any existing sign(s). The removal of existing signs, posts, and support anchors is to be performed concurrently with the installation of new signs, posts, and support anchors, under the same lane closure during the same work shift. Completely remove existing sign support anchors or remove them to a minimum depth of six (6) inches below existing ground line and backfill the disturbed area to the existing ground line.

Signing Page 3 of 6

When listed in the summaries, Reflective Sign Post Panels shall be 2" wide x 60" tall (or 84" tall for urban installations) and shall have three 3/8" holes (one hole in the top 3", one hole near the center, and one hole in the bottom 3") that align with the holes on the Type I steel post. Sheeting for the Reflective Sign Post Panels shall be the same Type and color as the sign installed on the post. Examples include:

- Red, fluorescent yellow, and fluorescent yellow-green (Type IX Sheeting)
- White and yellow (Type III and/or IV Sheeting).

All manufactured sheeting signs shall be free of visual defects including, but not limited to: cracks, tears, ridges, humps, discoloration, etc., and defective signs shall be replaced at no additional cost to the Department.

All sign blanks shall be hole punched by the manufacturer for either horizontal or vertical installation. Attach all aluminum sheeting signs to square post with 3/8" all steel rivets and nylon washers.

Post will be attached to the anchor with 5/16" corner bolts and 5/16" flanged nuts, and all post and anchor cuts shall be treated with a Cold Galvanizing Compound spray.

Sign posts shall be erected vertically by using a bubble level. The tolerance shall be a two (2) degree angle in any direction. For locations where there are more than one sign is mounted beside each other, the posts shall be spaced to provide approximately six inches (6") of spacing between signs.

E. Property Damage. The Contractor shall be responsible for all damage to public and/or private property resulting from the Contractor's activities. Repair or replace damaged roadway features in like kind materials and design as directed by the Engineer at no additional cost to the Department. Repair or replace damaged private property in like kind materials and design to the satisfaction of the owner and the Engineer at no additional cost to the Department.

F. Coordination with Utility Companies. Locate all underground, above ground, and overhead utilities prior to beginning construction. Be responsible for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. It is not anticipated that any utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities. Be responsible for repairing all utility damage that occurs due to the Contractor's operations at no additional cost to the Department. NOTIFY THE ENGINEER AND THE UTILITY OWNER(S) IMMEDIATELY WHEN IT IS DISCOVERED OR ANTICIPATED THAT ANY UTILITY CONFLICT COULD DELAY THE CONTRACTOR'S OPERATIONS. If the total delay exceeds ten working days, an extension of the specified completion date will be negotiated with the Contractor

Signing
Page 4 of 6

for delay to the Contractor's work; however, no extension will be granted for any delay caused by the Contractor's failure to notify the Engineer and/or the utility company as specified above when a conflict is discovered or anticipated as specified.

G. Caution. The information in this proposal and the type of work listed herein are approximate only and are not to be taken as an exact evaluation of the materials and conditions to be encountered during construction; the bidder must draw his/her own conclusions when developing the Unit Bid Prices for each bid item. As such, if the conditions encountered are not in accordance with the information shown, the Department does not guarantee any changes to the Unit Bid Prices nor extension of the contract will be considered. The Department will pay for bid item quantity overruns, but only if pre-approved by the Engineer.

H. Control. Perform all work under the absolute control of the Department. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to have other work performed by other contractors and its own forces, and to permit public utility companies and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with such other work will be reduced to a minimum. The Department will not honor any claims for money or time extension created by the operations of such other parties.

Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and the Engineer's decision shall be final and binding upon the Contractor.

I. Clean Up, Disposal of Waste. Clean up the project area as work progresses. Dispose of all removed concrete, debris, and other waste as per Section 204.03.08. The Department will incur no cost to obtain the disposal sites. The Department will NOT make direct payment for disposal of waste and debris from the project. Existing anchors, signs, posts, and any other hardware or material removed from the site are to become the property of the Contractor. See Special Provision for Waste and Borrow Sites.

J. Final Dressing, Seeding and Protection. Grade all disturbed areas to blend with the adjacent roadways features and to provide a suitable seed bed. Apply Class A Final Dressing to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.

K. Erosion Control. See Special Note for Erosion Control.

Signing
Page 5 of 6

IV. METHOD OF MEASUREMENT

- A. **Maintain and Control Traffic.** See Traffic Control Plan.
- B. **Site Preparation.** Other than the bid items listed, the Department will NOT measure Site Preparation for payment, but shall be incidental to the project bid items.
- C. **Signs.** The Department will measure the finished in-place area of signs in Square Feet.
- D. **Sign Posts.** The Department will measure the finished in-place length of sign posts in Linear Feet, from the top of the anchor, or top of the sign support, to the top of the sign post. Laps, cutoffs, excess, and waste will NOT be measured for payment.
- E. **Type D Breakaway Sign Supports.** The Department will measure Type D sign supports as Each support installed.
- F. **Type D Surface Mounts.** The Department will measure Type D Surface Mounts as Each surface mount installed.
- G. **Class A Concrete for Signs.** The Department will measure the Class A Concrete used in conjunction with Type D breakaway sign support installations in Cubic Yards. Any concrete that is required as backfill due to hitting rock during a standard installation shall be incidental to the bid item STEEL POST TYPE I, and soil stabilizers will not be required.
- H. **Clean Up, Disposal of Waste, Final Dressing, Seeding and Protection.** The Department will NOT measure for payment the following activities: Clean Up, Disposal of Waste, and Final Dressing. These activities shall be incidental. Seeding and Protection shall be measured according to Section 212.
- I. **Erosion Control.** See Special Note for Erosion Control.
- J. **Remove Sign.** The Department will consider all signs attached to one or more connected posts as a single sign. The Department will measure as Each sign assembly removed and NOT each individual sign removed.
- K. **Items Provided by KYTC.** The Department will NOT measure for payment the installation of signs and/or surface mounts provided by KYTC. These activities shall be incidental to the bid item STEEL POST TYPE I.

V. BASIS OF PAYMENT

- A. **Maintain and Control Traffic.** See Traffic Control Plan.

Signing
Page 6 of 6

- B. Signs.** The Department will make payment for the completed and accepted quantities under the bid item SBM ALUM SHEET SIGNS .125 IN or .080 IN. The Department will consider payment full compensation for all work and incidentals necessary to install the signs, as required by these notes and the details found elsewhere in the proposal, at the locations indicated on the summary sheets, plans, and/or as directed by the Engineer.
- C. Sign Posts.** The Department will make payment for the completed and accepted quantities under the bid item STEEL POST TYPE I. The Department will consider payment full compensation for all work and incidentals necessary to install the sign posts as required by these notes and the details found elsewhere in the proposal.
- D. Type D Breakaway Sign Supports.** The Department will make payment for the completed and accepted quantities under the bid item GMSS TYPE D. The Department will consider payment full compensation for all work and incidentals necessary to install the Type D breakaway sign supports as required by Standard Drawing RGX-065, current edition.
- E. Type D Surface Mounts.** The Department will make payment for the completed and accepted quantities under the bid item GMSS TYPE D Surface Mount. The Department will consider payment full compensation for all work and incidentals necessary to install the Type D surface mounts according to all applicable manufacturer requirements.
NOTE: There are two permissible Type D Surface Mount alternatives: Kleen Break Model 425 for Surface Mount Concrete Installations by Xcessories Squared of Auburn, IL or Snap n Safe Model S200s for 2” Sign Post by Designovations Inc. of Stilman, Valley, IL.
- F. Class A Concrete for Signs.** The Department will make payment for the completed and accepted quantities, used in conjunction with Type D breakaway sign support installations, under the bid item CLASS A CONCRETE FOR SIGNS. The Department will consider payment full compensation for all work and incidentals necessary to install the concrete as required by Standard Drawing RGX-065, current edition.
- G. Remove Sign.** The Department will make payment for the completed and accepted quantities under the bid item REMOVE SIGN. The Department will consider payment full compensation for all work and incidentals necessary to remove the existing signs, posts, anchors, and any other sign material or hardware, from the locations indicated on the summary sheets, plans, and/or as directed by the Engineer.
- H. Erosion Control.** See Special Note for Erosion Control.

SPECIAL NOTE FOR STAKING

Perform Contractor Staking according to Section 201; except, in addition to the requirements of Section 201, perform the following:

1. Contrary to Section 201, perform items 1-3 usually performed by the Engineer.
2. Using the proposed pavement superelevation rates, runout, and runoff lengths, determine the necessary changes in pavement edge elevation along the curves and the transitions leading into and out of the curve to achieve the proposed superelevation improvements. The intent is to provide a consistent superelevation throughout the curves and smooth transitions into and out of the curves. Once the proposed change in pavement edge elevations are determined and prior to starting paving operations, verify the proposed roadside re-grading along the curve can be constructed so that the new roadside is flush with the new pavement edge elevation and the new toe of slope, or top of cut, will remain within the existing Right-of-Way and/or not impact a sensitive obstruction. If necessary, and with the approval of the Engineer, reduce the proposed superelevation rate of a curve if the new edge of pavement elevation will cause the new roadside grading to extend beyond the Right-of-Way and/or impact a sensitive obstruction. Alternatively, with the approval of the Engineer and to the extent allowable by the "Ditching & Shouldering and Embankment Benching Details" and/or the Special Note for Ditching & Shouldering, the contractor may be allowed to make adjustments to the roadside grading so the proposed roadside re-grading will remain within the existing Right-of-Way and/or not impact a sensitive obstruction. After the final proposed changes in pavement edge elevations are determined and before paving operations begin, submit to the Engineer and obtain approval for the number of asphalt lifts, each asphalt lift's thickness, and the asphalt material type of each lift the contractor plans to use to achieve the superelevation improvement. Ensure positive drainage upon completion of the work.
3. Verify the dimensions, type, and quantities of the culvert pipes, entrance pipes, and/or box culverts as listed and detailed in the proposal, and determine flow line elevations and slopes necessary to provide positive drainage. Revise as necessary to accommodate the existing site conditions; to provide proper alignment of the drainage structures with existing and/or proposed ditches, stream channels, swales, and the roadway lines and grades; and to ensure positive drainage upon completion of the work.
4. Prior to incorporating into the work, obtain the Engineers approval of all revision determined by the Contractor.
5. Using stakes, paint marks on the pavement, mag nails, and/or any other means approved by the Engineer, the Contractor shall mark and/or stake the proposed sign locations in the field. NOTE: The proposed signs are listed in the proposal by approximate location and are NOT to be taken as the exact location for the signs. During staking operations the Contractor shall review the signing layout and existing field conditions and look for potential conflicts, including but not limited to utilities, driveways, visual obstructions, etc. When conflicts are found, adjust the staked location of signs to mitigate conflicts. Because the sign locations in the proposal are approximate and the location of some signs

Staking
Page 2 of 2

may need to be adjusted due to conflicts, during staking operations the Contractor shall refer to and utilize the information in Sections 2C.05 through 2C.15 and Section 2C.46; Tables 2C-4, 2C-5, and 2C-6; and Figure 2C-2 of the Manual on Uniform on Traffic Control Devices (MUTCD), current edition. These Sections, Tables, and Figures within the MUTCD cover items such as: appropriate sign location, advance placement distances, and spacing requirements for signing. The intent is for the proposed signs to be consistent with, and meet the requirements of, the MUTCD. Once the proposed sign locations have been staked, notify and coordinate with the District Traffic Engineer, and perform a review of the staked locations. Adjust the staked locations, as directed by the District Traffic Engineer and obtain approval of the final staked locations. This review will also be used to determine if there are any existing signs that require removal and/or relocation. Provide the District Traffic Engineer with 2 weeks' notice when a route will be ready for a review of the staked locations. NOTE: The District Traffic Engineer may determine that the proposed signing, including sign types and messages, needs to be adjusted and/or modified from what is shown in the proposal. Therefore, the Contractor shall not order any sign material for a route until the route has been staked and final sign location approval has been given by the District Traffic Engineer.

6. Produce and furnish to the Engineer "As Built" information for the superelevation improvements and the drainage improvements. For superelevation improvements, as built information will consist of a record of the final pavement cross slopes every 50 feet, for each lane of travel along the curves and the transitions into and out of the curves. Elevation data of the curve improvements is not necessary; simply the cross slope percentage every 50 feet. For the drainage improvements, as built information will consist of a final record of the actual types, sizes, and locations of the drainage structures (i.e. box inlets, headwalls, junction boxes, etc.), culvert pipes, and/or box culverts constructed. Final elevation data of the drainage improvements is not necessary.
7. Perform any and all other staking operations required to control and construct the work.

SPECIAL NOTE FOR POLYMER CONCRETE OVERLAY SYSTEMS

I. DESCRIPTION

This work shall be performed in accordance with the current edition of the Department’s Standard Specifications, and applicable Standard or Sepia Drawings, except as hereafter specified. Article references are to the Standard Specifications.

The Contractor shall furnish all materials, labor, and equipment for the following work:

- (1) Maintaining and Controlling Traffic; (2) Cleaning and preparing the existing surface; (3) Installing a high friction surface treatment in accordance with the contract documents; and (4) All other work as specified as part of this contract.

II. MATERIALS

Provide for sampling and testing of all materials in accordance with the Department's Materials Field Sampling and Testing Manual. Make materials available, within the State of Kentucky, for sampling a sufficient time in advance of the use of the materials. Allow a minimum of 15 working days for testing. The Contractor shall use materials listed on the Department’s List of Approved Materials for Polymer Concrete Overlay Systems (High Friction Surface and Bridge Deck Overlays).

A. Maintain and Control Traffic. See Traffic Control Plan.

B. High Friction Surface Treatment. The high friction surface treatment shall consist of a polymer resin binder and aggregate system chosen from the Department’s List of Approved Materials. The Department will obtain samples of each binder component and aggregate at a frequency of one sample per lot per contract. The Department will obtain one, one-quart (32 ounce) sample of each binder component for testing. The Department will obtain one 60 to 70 pound composite sample of aggregate for testing. Reclaimed aggregate shall not be allowed for use.

- a) **Binder.** The polymer resin binder shall hold the aggregate firmly in position and meet the following requirements:

TWO-PART MODIFIED BINDER REQUIREMENTS		
Property	Specification Limits	Test Method
Ultimate Tensile Strength	17.0 – 25.0 MPa (19.65 MPa)	ASTM D638
Compressive Strength	5mm min.; > 13 MPa	ASTM D695
Gel Time	50 ml; 10 minutes min. (16 minutes)	ASTM D2471
Elongation at break	30% minimum (54.0%)	ASTM D638
Peak Exothermic Temperature	150°F min.	ASTM D2471
Water Absorption	Less than 0.25%	ASTM D570
Shore Hardness	70 min.	ASTM D2240, Shore D
Cure Rate	3 hours max	ASTM D1640 @ 75°F
Mixing Ratio	Per Manufacturer’s Recommendation	n/a

- b) **Aggregate.** Ensure that the aggregate is clean, dry and free from foreign matter and meets the following requirements:

AGGREGATE REQUIREMENTS		
Property	Specification Limits	Test Method
SFC – Side Force Coefficient	0.70 min.	ASTM E670
SN – Skid Number	75 min SN40R	ASTM E274
PSV – Polished Stone Value	75.0 mm max. (70 mm)	ASTM E660
Texture Depth – Sand Patch Method	1 mm min. (1.2 mm)	ASTM E965
AAV – Aggregate Abrasion Value	20 max	AASHTO T96
Aggregate Gradation	95.0 – 100.0% Passing No. 6 0.0 – 5.0% Passing No. 16	AASHTO T27
Aluminum Oxide (Al ₂ O ₃)	87 min	ASTM C114

III. CONSTRUCTION METHODS

Prior to beginning work, provide the Engineer with a certification from the manufacturer of the binder stating that all material used in the work will meet the requirements of Section II B. a. in this Special Note. Also provide the Engineer with a certification stating that all aggregates used in the work will meet the requirements of Section II B. b. of this Special Note.

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Site Preparation.** Be responsible for all site preparation, including but not limited to the following:
- a) **Preparation and Restoration.** Ensure that a manufacturer’s representative is on site to provide technical assistance during the start up operations and as necessary during the surface preparation, material placement, and during any necessary remedial work.
 - b) **Protective Coverings.** Utilities, drainage structures, curbs, bridge joints, and any other structure within or adjacent to the high friction surface treatment location shall be protected from surface preparation activities and application of the surface treatment materials. Cover and protect all existing pavement markings that are adjacent to the surface treatment location. Pavement markings that conflict with the surface application shall be removed prior to performing the required surface preparation.
 - c) **Surface Preparation.** Prepare all surfaces in accordance with the following requirements. Ensure surfaces are dry and meet the requirements of the section immediately prior to installation of the high friction surface treatment. Surfaces contaminated with oils, greases, or other deleterious materials not removed by the required surface preparation shall be washed with a mild detergent solution, rinsed with clean potable water, and dried using a hot compressed air lance.
 - d) **Asphalt Pavement.** Clean asphalt pavement surfaces using mechanical sweepers and high pressure air wash. Mechanically sweep all surfaces to remove dirt, loose aggregate, debris, and deleterious material. Air wash all surfaces using a minimum of 180 CFM clean and dry compressed air. Maintain

Polymer Concrete Overlay Systems
Page 3 of 5

the air lance perpendicular to the surface and the tip of air lance within 12 inches of the surface. For applications on new asphalt pavement, ensure the surface has cured a minimum of 30 days prior to performing surface preparation and installation of the high friction surface treatment.

- e) **Concrete Pavement.** Clean concrete pavement surfaces by shot blasting and vacuum sweeping. Shot blast all surfaces to remove all curing compound, loosely bonded mortar, surface carbonation, and deleterious material. The prepared surface shall comply with the International Concrete Repair Institute (ICRI) standard for surface roughness CSP 5. After shot blasting, vacuum sweep all surfaces to remove all dust, debris, and deleterious material.
- f) **Concrete Bridge Deck.** Clean the entire area of the deck surface and vertical faces of curbs, barrier walls and plinths up to a height of one inch above the top elevation of the overlay, and areas to receive epoxy-sand slurry, by shot blasting and vacuum sweeping. Shot blast all surfaces to remove all curing compound, loosely bonded mortar, surface carbonation, and deleterious material. Areas to receive epoxy-sand slurry shall be cleaned to a bright, clean appearance. The prepared bridge deck surface to receive high friction surface treatment shall comply with the International Concrete Repair Institute (ICRI) standard for surface roughness CSP 5. After shot blasting, vacuum sweep all surfaces to remove all dust, debris, and deleterious material.
- g) **Pre-Treating.** Pre-treat joints and cracks greater than 1/4 inch in width and depth with properly proportioned and mixed polymer resin binder. Once the binder in the pre-treated areas has gelled, the installation of the high friction surface treatment may proceed.

- C. **Mechanized Application.** Do not apply surface treatment on a wet surface, when the ambient air or surface temperature is below 50°F or above 110°F, or when the anticipated weather conditions or surface temperature would prevent the proper application of the surface treatment as determined by the manufacturer.

Apply the polymer resin binder by a truck or trailer mounted application machine that must be capable of continually mixing and delivering the binder components on demand within the temperature range specified in varying widths of up to 12 feet wide at a uniform application thickness. Ensure that the mechanically applied distributing equipment includes accurate measuring devices and/or calibrated containers and thermometers for measuring the binder temperature prior to placement should heating be required. Operations will proceed in such a manner that will not allow the binder material to separate in the mixing lines, cure, dry, or otherwise impair retention bonding of the high friction surfacing aggregate. The application machine shall be equipped with flushing systems such that blockages of lines will not occur, and installation operations are not delayed, stopped, or otherwise compromised. Ensure that mechanical applications are capable of applying binder uniformly at a minimum rate of 10 gallons per minute. The mixed components are mechanically applied onto a prepared surface with a minimum coverage rate of 3.5 square yards per gallon at a minimum uniform thickness of 50 mils onto the surface. In addition, ensure that the application machine complies with the requirements of the binder manufacturer.

The aggregate shall be applied within 120 seconds of the binder application onto the surface. Uniformly spread aggregate immediately without causing excessive overlap of aggregate outside of coverage area. Ensure that the mechanical aggregate spreader is capable of applying a continuous application of varying widths up to 12 feet wide, in a manner to not violently disturb the wet binder film, at a rate of approximately 13-15 lbs per square yard. Complete coverage of the "wet" binder with aggregate is necessary to achieve a uniform surface. No exposed wet spots of the binder shall be visible once the aggregate is installed. The operations should proceed in such a manner that will not allow the mixed binder material to separate, cure, dry, be exposed, or otherwise harden in such a way as to impair retention and bonding of the high friction surfacing aggregate. Do not use reclaimed aggregate. Do not use vibratory or impact type compaction on the aggregate after placement.

- D. **Hand Application.** At the Engineers discretion, corrective work and application to areas such as intersections or areas less than 300 square yards, or where truck mounted application machines are not

Polymer Concrete Overlay Systems
Page 4 of 5

applicable to the specified locations because of logistical restrictions, may be performed by hand application of the high friction surface treatment.

Do not apply surface treatment on a wet surface, when the ambient air or surface temperature is below 50°F or above 110°F, or when the anticipated weather conditions or surface temperature would prevent the proper application of the surface treatment as determined by the manufacturer.

The polymer resin binder components Part (A) and Part (B) shall be proportioned to the correct ratio (+/- 2% by volume), mixed using a low speed high torque drill fitted with a helical stirrer.

The mixed components shall be hand applied onto a prepared surface at a minimum coverage rate of 3.5 square yards per gallon at a minimum uniform thickness of 50 mils onto the surface. Hand applied binder will be uniformly spread onto the prepared surface by the use of a continuous V notch serrated edged squeegee.

Immediately after placing the binder, apply the aggregate, in a manner to not violently disturb the wet binder film, at a rate of approximately 13-15 lbs per square yard. Do not use reclaimed aggregate. Do not use vibratory or impact type compaction on the aggregate after placement.

- E. Curing of Installed High Friction Surface Treatment.** Allow the installed high friction surface treatment to cure in accordance with manufacturer recommendations (approximately 3 hours at an ambient air temperature of at least 50 degrees Fahrenheit). Protect treated surfaces from traffic and environmental effects until the area has cured.
- F. Removal of Excess Aggregate.** Remove the excess aggregate from the treatment area and all adjacent surfaces by mechanical sweeping or vacuum sweeping the surfaces a minimum of 3 times before applying additional application and/or opening to traffic. In addition, re-sweep the treatment area and adjacent surfaces using mechanical sweeping or vacuum sweeping 48 hours after opening to traffic to remove all additional loose aggregate and aggregate shed by the action of traffic.
- G. Disposal of Waste.** All debris, excess aggregate, materials containers, and other waste shall be disposed of off the Right-of-Way at approved sites obtained by the Contractor at no cost to the Department. No separate payment will be made for the disposal of waste and debris from the project, but shall be incidental to the other items of the work.
- H. Restoration.** Any roadway features disturbed by the work or the Contractor's operations shall be restored in like kind materials and design as directed by the Engineer at no additional cost to the Department.
- I. Property Damage.** Be responsible for all damage to public and/or private property resulting from the work. Repair or replace damaged roadway features in like kind materials and design as directed by the Engineer at no additional cost to the Department. Repair or replace damaged private property in like kind materials and design to the satisfaction of the owner and the Engineer at no additional cost to the Department.
- J. On-Site Inspection.** Before submitting a bid for the work, make a thorough inspection of the site and determine existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid to be evidence of this inspection having been made. The Department will not honor any claims for money or time extension resulting from site conditions.
- K. Right-of-Way Limits.** All work is located within the existing right of way. Limit work activities to the Right-of-Way, and work and staging areas secured by the Contractor, at no additional cost to the Department. Be responsible for all encroachments onto private lands.
- L. Caution.** The information in this proposal and the type of work listed herein are approximate only and are not to be taken as an exact evaluation of the materials and conditions to be encountered during construction; the bidder must draw his/her own conclusions when developing the Unit Bid Prices for each bid item. As such, if the conditions encountered are not in accordance with the information shown, the Department does not

Polymer Concrete Overlay Systems
Page 5 of 5

guarantee any changes to the Unit Bid Prices nor extension of the contract will be considered. The Department will pay for bid item quantity overruns, but only if pre-approved by the Engineer.

- M. Control.** Perform all work under the absolute control of the Department of Highways. Obtain the Engineer's approval of all designs required to be furnished by the Contractor prior to incorporation into the work. The Department reserves the right to have other work performed by other contractors and its own forces, and to permit public utility companies and others to do work during the construction within the limits of, or adjacent to, the project. Conduct operations and cooperate with such other parties so that interference with such other work will be reduced to a minimum. The Department will not honor any claims for money or time extension created by the operations of such other parties.

Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to, the project, the Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and his/her decision shall be final and binding upon the Contractor.

IV. FIELD EVALUATION

High friction surface treatment locations that can be safely tested at 40 mph shall be evaluated by locked wheel skid test as per ASTM E274 between 60 and 90 days after installation. A minimum skid number of 75 SN40R is required. Installations that are not conducive to skid testing due to roadway geometrics or speed limitations shall be accepted based upon visual determination of acceptable bond and aggregate exposure.

Surface treatment applications not meeting average minimum skid test results of 75 SN **shall be removed and replaced** at no cost to the Department.

V. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Site Preparation.** Other than the bid items listed, site preparation will not be measured for payment, but shall be incidental to high friction surface treatment.
- C. High Friction Surface Treatment.** The Department will measure the surface area coverage of High Friction Surface Treatment in Square Yards.

VI. BASIS OF PAYMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. High Friction Surface Treatment.** Payment for the accepted quantity at the Contract unit price per Square Yard shall be full compensation for furnishing all labor, materials, equipment, and incidentals for furnishing and installing High Friction Surface Treatment. Payment shall not be made prior to the final and accepted sweeping, 48 hours after installation.

SPECIAL NOTE FOR STRIPING ON HIGH FRICTION SURFACE TREATMENTS

I. DESCRIPTION

Installation of pavement striping, temporary, durable waterborne markings, and/or thermoplastic markings on High Friction Surface (HFS) Treatments.

II. CONSTRUCTION

Conduct striping under lane closures meeting the conditions of the MUTCD and Kentucky Standard Drawings and Specifications, current editions. Upon initial completion of the HFS installation, install temporary striping as the Engineer directs. Upon completion of the 48 hour vacuum sweeping, install either durable waterborne markings or thermoplastic markings, whichever the Contract specifies or as directed by the Engineer. Temporary Pavement Striping will comply with all applicable requirements within Section 112. Thermoplastic markings shall comply with all applicable requirements within Section 714. Durable waterborne markings shall comply with all applicable requirements within Section 713. Application rates of durable waterborne striping shall be as follows:

Material	Paint Application Rate	Glass Bead Application Rate
4 inch durable waterborne paint	Min. of 24 gallons/mile	Min. of 6 pounds/gallon
6 inch durable waterborne paint	See Section 713.03.03	See Section 713.03.04

III. MEASUREMENT

The Department will measure striping quantities in linear feet. NOTE: On HFS installations, the Contractor is advised that it may be necessary to install multiple passes of striping in order to achieve the required specifications. Final payment will be based on the actual length of the final striping regardless of the number passes required to meet specifications.

IV. PAYMENT

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

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
----	Pavement Striping - Temporary	Linear Foot
----	Durable Waterborne Marking, width, color	Linear Foot
----	Pavement Striping - Thermoplastic, width, color	Linear Foot

The Department will consider payment as full compensation for all work required under this note, Section 112, Section 713, and Section 714.

SPECIAL NOTES FOR COMPLETION DATES & LIQUIDATED DAMAGES

The ultimate fixed completion date for this project will be October 31, 2020. Liquidated Damages for failure to complete the project on time will be assessed following Section 108.09.

Trees and/or bushes that are 5 inches or greater (diameter at breast height) shall not be cut or trimmed between April 1ST and October 14th. Any trees and/or bushes that are cut or trimmed between April 1ST and October 14th will NOT receive payment at the contract unit price. Activities that are a part of this contract that do not involve the initial trimming and/or cutting of trees and/or bushes will be permitted under the ultimate fixed completion date.

All liquidated damages will be applied accumulatively.

All other applicable portions of Section 108 apply.

SPECIAL PROVISION FOR WASTE AND BORROW SITES

Obtain U.S. Army Corps of Engineer's approval before utilizing a waste or borrow site that involves "Waters of the United States". The Corps of Engineers defines "Waters of the United States" as perennial or intermittent streams, ponds or wetlands. The Corps of Engineers also considers ephemeral streams, typically dry except during rainfall but having a defined drainage channel, to be jurisdictional waters. Direct questions concerning any potential impacts to "Waters of the United States" to the attention of the appropriate District Office for the Corps of Engineers for a determination prior to disturbance. Be responsible for any fees associated with obtaining approval for waste and borrow sites from the U.S. Army Corps of Engineer or other appropriate regulatory agencies.

1-296 Waste & Borrow Sites
01/02/2012

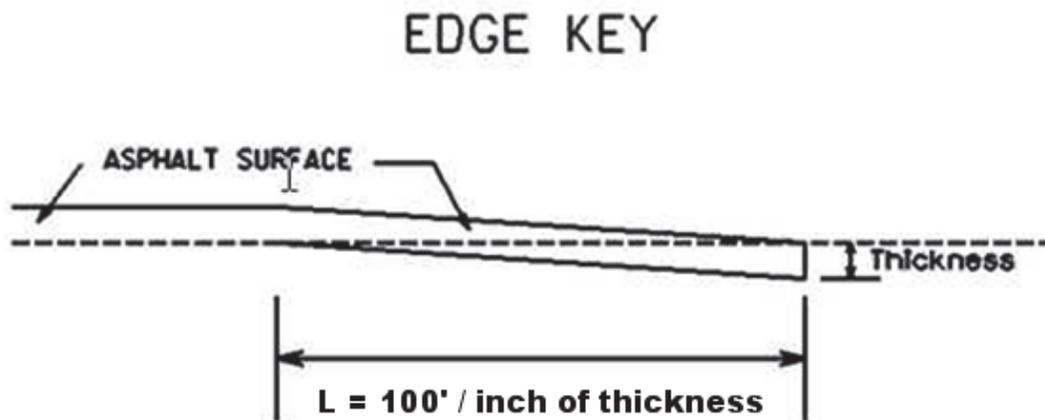
COORDINATION OF WORK WITH OTHER CONTRACTS

Be advised, there may be an active project(s) adjacent to or within this project. The Engineer will coordinate the work of the Contractors. See Section 105.06.

1-3193 Coordination Contracts
01/02/2012

SPECIAL NOTE FOR EDGE KEY

Construct Edge Keys at the beginning of project, end of project, at railroad crossings, and at intersections with ramps, as applicable. Unless specified in the Contract or directed by the Engineer, do not construct edge keys at intersecting streets, roads, alleys, or entrances. Cut out the existing asphalt surface to the required depth and width shown on the drawing and heel the new surface into the existing surface. The Department will measure the Edge Key at the joint as the width of the pavement perpendicular to the centerline in linear feet. The Department will pay for this work at the Contract unit price per linear foot, which shall be full compensation for all labor, materials, equipment, and incidentals for removal and disposal of the existing asphalt surface required to construct the edge key.



Thickness = 1.25 Inches

L = 125 LF

L = Length of Edge Key

SPECIAL NOTES FOR GUARDRAIL

I. DESCRIPTION

Except as specified herein, perform all work in accordance with the Department's Standard and Supplemental Specifications, Special Notes and Special Provisions, and the Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications.

Furnish all equipment, labor, materials, and incidentals for the following work items:

(1) Site preparation; (2) Remove existing guardrail systems; (3) Construct Guardrail, End Treatments, Bridge End Connectors, and Terminal Sections, as applicable; (4) Delineators for guardrail; (5) Maintain and Control Traffic; and (6) all other work specified as part of this contract.

II. MATERIALS

Except as specified herein, provide for all materials to be sampled and tested in accordance with the Department's Sampling Manual and make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing.

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Guardrail.** Furnish guardrail system components according to Section 814 and the Standard and Sepia Drawings; except use steel posts only, no alternates.
- C. Delineators for Guardrail.** Furnish white and/or yellow Delineators for Guardrail according to Standard Drawing RBR-055 – Delineators for Guardrail, current edition.
- D. DGA.** Furnish Dense Graded Aggregate as per Section 805.
- E. Erosion Control.** See the Special Note for Erosion Control.

III. CONSTRUCTION METHODS

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Site Preparation.** Remove existing guardrail system, including the guardrail end treatments, Bridge End connectors and all other elements of the existing guardrail system as per Section 719, except that the Contractor will take possession of all concrete posts and all concrete associated with the existing bridge and/or guardrail end treatments. Locate all disposal areas off the Right of Way. Be responsible for all site preparation, including but not limited to, clearing and grubbing, excavation, embankment, and removal of all obstructions or any other items; regrading, reshaping, and adding and compacting suitable

Guardrail
Page 2 of 4

materials on the existing shoulders to provide proper template or foundation for the guardrail; filling voids left as the result of removing existing guardrail and guard posts with dry sand; temporary pollution and erosion control; disposal of excess, waste materials, and debris; and final dressing, cleanup, and seeding and protection. Perform all site preparation as approved or directed by the engineer.

- C. Guardrail.** Except as specified herein, construct guardrail system according to Section 719 and the Standard and Sepia Drawings, current editions. Locations listed on the summary and/or shown on the drawings are approximate only. The Engineer will determine the exact termini for individual guardrail installations at the time of construction. Unless directed otherwise by the Engineer, provide a minimum two (2) foot shoulder width. Construct radii at entrances and road intersections as directed by the Engineer.

Erect guardrail to the lines and grades shown on the current Standard and Sepia Drawings, or as directed by the Engineer by any method approved by the Engineer which allows construction of the guardrail to the true grade without apparent sags.

When removing existing guardrail and installing new guardrail, do not leave the blunt end exposed where it would be hazardous to the public. When it is not practical to complete the construction of the guardrail and the permanent end treatments and terminal sections first, provide a temporary end by connecting at least 25 feet of rail to the last post, and by slightly flaring, and burying the end of the rail completely into the existing shoulder. If left overnight, place a drum with bridge panel in advance of the guardrail end and maintain during use.

- D. DGA.** Place and compact DGA along and under the guardrail as shown on the Typical Section(s). Place a Double Asphalt Seal Coat over the entire width of the DGA along and under the guardrail. See the Special Note for Double Asphalt Seal Coat.
- E. Delineators for Guardrail.** Construct Delineators for Guardrail according to Standard Drawing RBR-055 – Delineators for Guardrail, current edition.
- F. Property Damage.** Be responsible for all damage to public and/or private property resulting from the work. Restore damaged roadway features and private property at no additional cost to the Department.
- G. Coordination with Utility Companies.** Locate all underground, above ground, and overhead utilities prior to beginning construction. Be responsible for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. In the event that it is discovered that the work requires utilities to be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities. Be responsible for repairing all utility damage that occurs as a result of guardrail operations at no additional cost to the Department.

Guardrail
Page 3 of 4

- H. Right of Way Limits.** The Department has not established the exact limits of the Right-of-Way. Limit work activities to obvious Right-of-Way, permanent or temporary easements, and work areas secured by the Department through consent and release of the adjacent property owners. Be responsible for all encroachments onto private lands.
- I. Clean Up, Disposal of Waste.** Dispose of all removed concrete, debris, and other waste and debris off the Right-of-Way at sites obtained by the Contractor at no additional cost to the Department. See the Special Provision for Waste and Borrow Sites.
- J. Final Dressing, Seeding and Protection.** Apply Class A Final Dressing to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.
- K. Erosion Control.** See the Special Note for Erosion Control.

IV. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Site preparation.** Other than the bid items listed, the Department will not measure Site Preparation for separate payment but shall be incidental to the Guardrail, End Treatments, Bridge End Connectors, and Terminal Sections, as applicable.
- C. Guardrail, End Treatments, Bridge End Connectors, Terminal Sections, and Remove Guardrail.** The Department will measure according to Section 719.04.
- D. DGA.** The Department will measure according to Section 302.04.
- E. Delineators for Guardrail.** See Standard Drawing RBR-055 – Delineators for Guardrail.
- F. Clean Up, Disposal of Waste, Final Dressing, and Seeding and Protection.** The Department will NOT measure for payment the operations of: Clean Up, Disposal of Waste, and Final Dressing. These activities shall be incidental. Seeding and Protection will be measured according to Section 212.
- G. Erosion Control.** See the Special Note for Erosion Control.

V. BASIS OF PAYMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Guardrail, End Treatments, Bridge End Connectors, Terminal Sections, and Remove**

Guardrail
Page 4 of 4

Guardrail. The Department will make payment according to Section 719.05.

C. DGA. The Department will make payment according to Section 302.05.

D. Delineators for Guardrail. See Standard Drawing RBR-055 – Delineators for Guardrail.

E. Erosion Control. See the Special Note for Erosion Control.

**SPECIAL NOTE FOR
ASPHALT MILLING AND TEXTURING**

Begin paving operations within **48 hours** of commencement of the milling operation. Continue paving operations continuously until completed. If paving operations are not begun within this time period, the Department will assess liquidated damages at the rate prescribed by Section 108.09 until such time as paving operations are begun.

Take possession of the millings and recycle the millings or dispose of the millings off the Right-of-Way at sites obtained by the Contractor at no additional cost to the Department.

1-3520 48 hours Contractor keeps millings
01/2/2012

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS

Consider the dimensions shown on the typical sections for pavement and shoulder widths and thickness' to be nominal or typical dimensions. The Engineer may direct or approve varying the actual dimensions to be constructed to fit existing conditions. Do not widen existing pavement or shoulders unless specified elsewhere in this proposal or directed by the engineer.

1-3725 Typical Section Dimensions
01/02/2012

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL GENERAL

Except as provided herein, traffic shall be maintained in accordance with the current editions of the Manual on Uniform Traffic Control Devices (MUTCD), Standard Specifications, and the Standard and Sepia Drawings. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to “Maintain and Control Traffic”.

Contrary to Section 106.01, traffic control devices used on this project may be new, or used in like new condition, at the beginning of the work and maintained in like new condition until completion of the work. Any temporary traffic control items, devices, materials, and incidentals shall remain the property of the contractor unless otherwise addressed, when no longer needed.

PROJECT PHASING & CONSTRUCTION PROCEDURES

Maintain alternating one way traffic during construction. Provide a minimum clear lane width of 10 feet; however, provide for passage of vehicles of up to 16 feet in width. If traffic should be stopped due to construction operations, and a school bus or emergency vehicle on an official run arrives on the scene, make provisions for the passage of the school bus or emergency vehicle as quickly as possible.

Unless otherwise approved by the Engineer, no lane closures will be allowed on the following dates:

Thanksgiving Weekend	Thursday, November 28, 2019 – Sunday, December 1, 2019
Easter Weekend	Friday, April 10, 2020 – Sunday, April 12, 2020
Memorial Day Weekend	Friday, May 22, 2020 – Monday, May 25, 2020
Independence Day Weekend	Monday, June 29, 2020 – Sunday, July 5, 2020
Labor Day Weekend	Friday, September 4, 2020 – Monday, September 7, 2020
Thanksgiving Weekend	Thursday, November 26, 2020 – Sunday, November 29, 2020

At the discretion of the Engineer, additional days and hours may be specified when lane closures will not be allowed.

TEMPORARY MULTI PHASE SIGNAL

A Temporary Multi Phase Signal has been included in the project for possible use during the Sight Distance Improvement near MP 4.0. This device may be useful for other areas. The Contractor and the Engineer should work together to determine the best use of this device. If used, the Department will measure the Temporary Multi Phase Signal only once for payment, regardless of how many times it is set, reset, removed, and relocated during the duration of the project. The Department will not measure for payment any replacements of the Temporary Multi Phase Signal if it becomes damaged or non-functioning, nor if the Engineer directs that it be replaced due to poor condition or visibility. Retain possession of the Temporary Multi Phase Signal upon completion of construction.

Traffic Control Plan
Page 2 of 3

LANE CLOSURES

Do not leave lane closures in place during prohibited periods. Except for the curve improvements near MP 3.0, do not leave lane closures in place during non-working hours, unless otherwise approved by the Engineer.

TEMPORARY SIGNS

Sign posts and splices shall be compliant with NCHRP 350 or MASH. Manufacturer's documentation validating this compliance shall be provided to the Engineer prior to installation. Signs, including any splices, shall be installed according to manufacturer's specifications and installation recommendations. Contrary to section 112.04.02, only long-term signs (signs intended to be continuously in place for more than 3 days) will be measured for payment. Short-term signs (signs intended to be left in place for 3 days or less) will not be measured for payment but will be incidental to Maintain and Control Traffic.

CHANGEABLE MESSAGE SIGNS

The Contractor shall assist in the placement and setup of the portable changeable message signs. The Engineer will determine placement locations and the messages to be displayed.

BARRICADES

The Department will not measure barricades used in lieu of barrels and cones for channelization or delineation, but shall be incidental to Maintain and Control Traffic according to Section 112.04.01.

The Department will measure barricades used for road closures and to protect pavement removal areas in individual units Each. The Department will measure for payment the maximum number of barricades in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual barricades only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure for payment any replacements for damaged barricades, or any barricades the Engineer directs to be replaced due to poor condition or reflectivity. Retain possession of the Barricades upon completion of construction.

TEMPORARY ENTRANCES

The Engineer will not require the Contractor to provide continuous access to farms, single family, duplex, or triplex residential properties during working hours; however, provide reasonable egress and ingress to each such property when actual operations are not in progress at that location. Limit the time during which a farm or residential entrance is blocked to the minimum length of time required for actual operations, not extended for the Contractor's convenience, and in no case exceeding six (6) hours. Notify

Traffic Control Plan
Page 3 of 3

all residents twenty-four hours in advance of any driveway or entrance closings and make any accommodations necessary to meet the access needs of disabled residents.

Except as allowed by the Phasing as specified above, maintain direct access to all side streets and roads, schools, churches, commercial properties, and apartments or apartment complexes of four or more units at all times. Access to fire hydrants must also be maintained at all times

The Department will measure asphalt materials required to construct and maintain any temporary entrances which may be necessary to provide temporary access; however, the Department will not measure aggregates, excavation, and/or embankment, but shall be incidental to Maintain and Control Traffic. The Engineer will determine the type of surfacing material, asphalt or aggregate, to be used at each entrance.

PAVEMENT MARKINGS

If there is to be a deviation from the existing striping plan, the Engineer will furnish the Contractor a striping plan prior to placement of the final surface course. Install Temporary Striping according to Section 112 with the following exception:

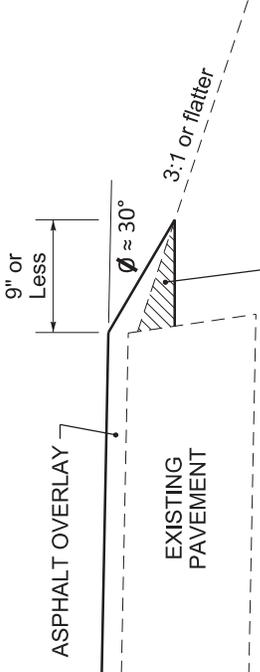
If the Contractor's operations or phasing requires temporary markings that must subsequently be removed from the final surface course, use an approved removable lane tape; however, the Department will not measure removable lane tape for separate payment, but will measure and pay for removable lane tape as temporary striping.

PAVEMENT EDGE DROP-OFFS

Do not allow a pavement edge between opposing directions of traffic or lanes that traffic is expected to cross in a lane change situation with an elevation difference greater than 1½". Place Warning signs (MUTCD W8-11 or W8-9A) in advance of and at 1500' intervals throughout the drop-off area. Dual post the signs on both sides of the traveled way. Wedge all transverse transitions between resurfaced and un-resurfaced areas which traffic may cross with asphalt mixture for leveling and wedging. Remove the wedges prior to placement of the final surface course.

DURABLE PAVEMENT EDGE DETAIL

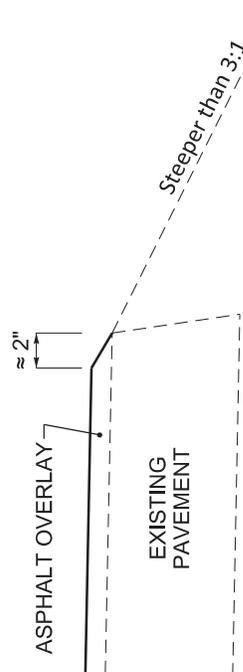
(Resurfacing adjacent to fill slope or ditch foreslope that is 3:1 or less)



PREPARE SHOULDER ACCORDING TO STANDARD SPECIFICATIONS

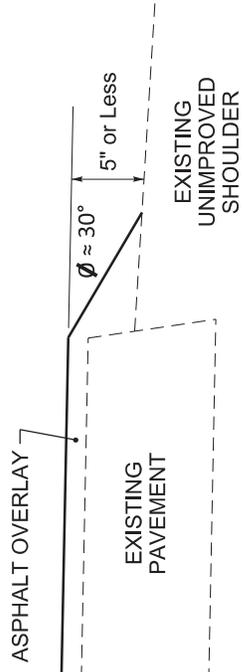
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to fill slope or ditch foreslope that is steeper than 3:1)



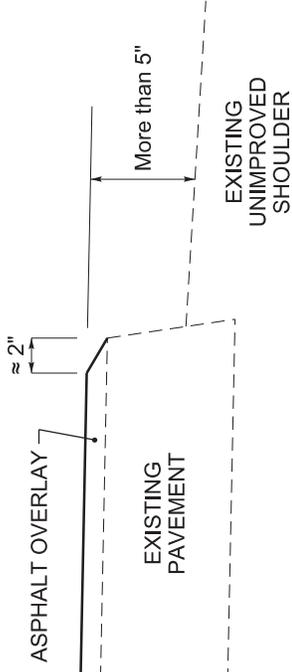
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of 5 inches or less)



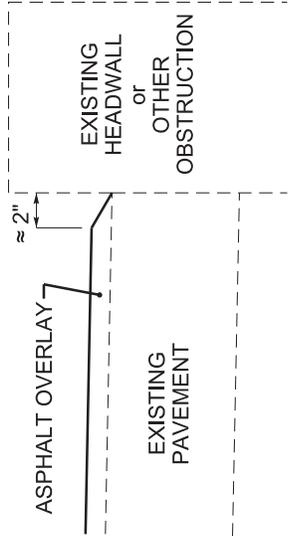
DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to low shoulder with dropoff of more than 5 inches)



DURABLE PAVEMENT EDGE DETAIL

(Resurfacing adjacent to an obstruction, such as an existing headwall)



NOTES

1. DETAILS DO NOT APPLY TO OVERLAYS LESS THAN 1 INCH THICK.
2. THE DURABLE PAVEMENT EDGE DEVICE MAY BE DISENGAGED AT DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT, AS APPROVED BY THE ENGINEER.

DRAWING NOT TO SCALE

DURABLE PAVEMENT EDGE DETAILS

	KENTUCKY TRANSPORTATION CABINET Department of Highways DIVISION OF RIGHT OF WAY & UTILITIES RIGHT OF WAY CERTIFICATION	TC 62-226 Rev. 01/2016 Page 1 of 1
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<input type="checkbox"/> Original	<input checked="" type="checkbox"/> Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
12-9002.00	Pike	FD52 067 9169401R	HSIP 5361(008)

PROJECT DESCRIPTION
 PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 632 FROM KY 194 (MP 0.00) TO 0.037 MI EAST OF BLACKBERRY FRK (CR-1576) AT (MP 7.00) IN PIKE COUNTY.

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

Condition # 1 (Additional Right of Way Required and Cleared)
 All necessary right of way, including control of access rights when applicable, have been acquired including legal and physical possession. Trial or appeal of cases may be pending in court but legal possession has been obtained. There may be some improvements remaining on the right-of-way, but all occupants have vacated the lands and improvements, and KYTC has physical possession and the rights to remove, salvage, or demolish all improvements and enter on all land. Just Compensation has been paid or deposited with the court. All relocations have been relocated to decent, safe, and sanitary housing or that KYTC has made available to displaced persons adequate replacement housing in accordance with the provisions of the current FHWA directive.

Condition # 2 (Additional Right of Way Required with Exception)
 The right of way has not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish all improvements. Just Compensation has been paid or deposited with the court for most parcels. Just Compensation for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract

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

Total Number of Parcels on Project	1	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired		01	
Signed Deed	1		
Condemnation	0		
Signed ROE	0		

Notes/ Comments (Use Additional Sheet if necessary)

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	Joe Tackett
Signature		Signature	Joe Tackett <small>Digitally signed by Joe Tackett Date: 2019.10.23 07:26:18 -04'00'</small>
Date		Date	10-23-2019
Right of Way Director		FHWA	
Printed Name		Printed Name	No Signature Required as per FHWA-KYTC
Signature	DM Loy <small>Digitally signed by DM Loy Date: 2019.10.23 13:53:49 -04'00'</small>	Signature	Current Stewardship Agreement
Date		Date	

UTILITIES AND RAIL CERTIFICATION NOTE

Pike County
HSIP 5361 (008)
FD52 098 0632 000-007
Mile point: 0.000 TO 7.000
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 632 FROM KY 194 (MP 0.00) TO 0.037 MI EAST
OF BLACKBERRY FRK (CR-1576) AT (MP 7.00) IN PIKE COUNTY. (2016BOP)
ITEM NUMBER: 12-9002.00

PROJECT NOTES ON UTILITIES

For all projects under 2000 Linear feet which require a normal excavation locate request pursuant to KRS 367.4901-4917, the awarded contractor shall field mark the proposed excavation or construction boundaries of the project (also called white lining) using the procedure set forth in KRS 367.4909(9)(k). For all projects over 2000 linear feet, which are defined as a "Large Project" in KRS 367.4903(18), the awarded contractor shall initially mark the first 2000 linear feet minimally of proposed excavation or construction boundaries of the project to be worked using the procedure set forth in KRS 367.4909(9)(k). This temporary field locating of the project excavation boundary shall take place prior to submitting an excavation location request to the underground utility protection Kentucky Contact Center. For large projects, the awarded contractor shall work with the impacted utilities to determine when additional white lining of the remainder of the project site will take place. This provision shall not alter or relieve the awarded contractor from complying with requirements of KRS 367.4905 to 367.4917 in their entirety.

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

The contractor will be responsible for contacting all utility facility owners on the subject project to coordinate his activities. The contractor will coordinate his activities to minimize and, where possible, avoid conflicts with utility facilities. Due to the nature of the work proposed, it is unlikely to conflict with the existing utilities beyond minor facility adjustments. Where conflicts with utility facilities are unavoidable, the contractor will coordinate any necessary relocation work with the facility owner and Resident Engineer. The Kentucky Transportation Cabinet maintains the right to remove or alter portions of this contract if a utility conflict occurs. The utility facilities as noted in the previous section(s) have been determined using data garnered by varied means and with varying degrees of accuracy: from the facility owners, a result of S.U.E., field inspections, and/or reviews of record drawings. The facilities defined may not be inclusive of all utilities in the project scope and are not Level A quality, unless specified as such. It is the contractor's responsibility to verify all utilities and their respective locations before excavating.

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. The contractor is instructed to contact KY 811 for the location of existing underground utilities. Contact shall be made a minimum of two (2) and no more

UTILITIES AND RAIL CERTIFICATION NOTE

Pike County
 HSIP 5361 (008)
 FD52 098 0632 000-007
 Mile point: 0.000 TO 7.000
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 632 FROM KY 194 (MP 0.00) TO 0.037 MI EAST OF BLACKBERRY FRK (CR-1576) AT (MP 7.00) IN PIKE COUNTY. (2016BOP)
 ITEM NUMBER: 12-9002.00

than ten (10) business days prior to excavation. The contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY 811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom are to be contacted through their individual Protection Notification Center. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area. Non-compliance with these directives can result in the enforcement of penalties.

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

Diversified Gas & Oil Corporation, PLC - Natural Gas have lines on various sections of the entire corridor. These lines have been relocated with as-built plans being made part of the contractors' proposal.

Regarding the gas service main located at the site neat M.P. 4.7: no owner has been found for the service line which is located near the outlet end of the proposed cross drain. There is some additional "slack" in the line which should allow the contractor to move the line several feet each way. Any damage to this line should be repaired by the contractor.

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

THE FOLLOWING FACILITY OWNERS ARE RELOCATING/ADJUSTING THEIR FACILITIES WITHIN THE PROJECT LIMITS AND WILL BE COMPLETE PRIOR TO CONSTRUCTION

Not Applicable

THE FOLLOWING FACILITY OWNERS HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE OWNER OR THEIR SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

Not Applicable

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

Not Applicable

RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

No Rail Involvement Rail Involved Rail Adjacent

UTILITIES AND RAIL CERTIFICATION NOTE

Pike County
HSIP 5361 (008)
FD52 098 0632 000-007
Mile point: 0.000 TO 7.000
PERFORM LOW COST SAFETY IMPROVEMENTS ON KY 632 FROM KY 194 (MP 0.00) TO 0.037 MI EAST
OF BLACKBERRY FRK (CR-1576) AT (MP 7.00) IN PIKE COUNTY. (2016BOP)
ITEM NUMBER: 12-9002.00

AREA UTILITIES CONTACT LIST AS PROVIDED BY KY 811

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
1. Diversified Oil & Gas Company	Maverick Bentley	(606) 433-2927
2. Diversified Oil & Gas Company	Rick Duty	(606) 433-2913
3. CORE Appalachia	Craig Blackburn	(606) 298-3400
4. Eastern American Energy Corp.	Tommy Blanton	(304) 475-0117
5. Mountain Water District	Roy Sawyers	(606) 631-6165
6. Kentucky Power Co.	Bill Johnson	(606) 437-3823
7. AT&T	Jack Salyers	(606) 874-2715
8. Intermountain Cable	Roy Harlow	(606) 479-6222

NOTE: The Utilities Contact List is provided as informational only, and may not be a complete list of all Utility Companies with facilities in the project area.

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:

(See attached letter for list of pre-qualified contractors for waterlinerelocation).

The bidding contractor needs to review the above list and look for a list of preapproved or prequalified contractors at the end of these general notes as identified above before bidding. Only contractors shown to be prequalified or preapproved by the utility owner on the following list(s) will be allowed to work on that utility as a part of this contract.

Any utility contractor that is not listed as prequalified or preapproved when the project is advertised for bid and wishes to be added must make request through the KYTC Contract Procurement website. The request should be made at least one week prior to the bidding deadline to allow for review and posting on the KYTC Contract Procurement website. A contractor is only considered prequalified or preapproved

when published on the KYTC Contract Procurement website. Contractors that contact the utility owner directly for preapproval or prequalification without contacting KYTC will not be considered for preapproval or prequalification for this contract. Contractors that are not prequalified or preapproved through KYTC before the bidding deadline will not be considered for prequalification or preapproval after bidding.

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.

STATIONS AND DISTANCES

All stations and distances, when indicated for utility placement in utility relocation plans or specifications, are approximate; therefore, some minor adjustment may have to be made during construction to fit actual field conditions. Any changes in excess of 6 inches of plan location shall be reviewed and approved jointly by the KYTC Section Engineer or designated representative and utility owner engineer or

designated representative. Changes in location without prior approval shall be remedied by the contractor at his own expense if the unauthorized change creates an unacceptable conflict or condition.

RESTORATION

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

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

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

MATERIAL

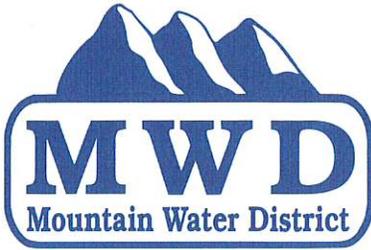
Contrary to Utility Bid Item Descriptions, those bid items that have the text “**Inst**” at the end of the bid item will have the major components of the bid item provided by the utility owner. No direct payment will be made for the major material component(s) supplied by the utility company. All remaining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

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

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

SECURITY OF SUPPLIED MATERIALS

If any utility materials are to be supplied by the utility owner, it will be the responsibility of the utility contractor to secure all utility owner supplied materials after delivery to the project site. The utility contractor shall coordinate directly with the utility owner and their suppliers for delivery and security of the supplied materials. Any materials supplied by the utility owner and delivered to the construction site that are subsequently stolen, damaged or vandalized and deemed unusable shall be replaced with like materials at the contractor’s expense.



**P. O. BOX 3157
PIKEVILLE, KY 41502
PHONE: (606) 631-9162
FAX: (606) 631-3087
TDD: (606) 631-3711**

November 13, 2019

Dave Skeens
District 12 Utilities
Kentucky Transportation Cabinet
Department of Highways
109 Loraine Street
Pikeville, KY 41501

**RE: PIKE COUNTY / HSIP AAAA (BBB)
FD52 098 0632 / 333-007
Safety Improvements Along KY 632 / Item #12-9002.00
Revised Contractor's List**

Dear Mr. Skeens,

I mistakenly omitted a contractor from the list that has performed quality work for the Mountain Water District (District) over the years and I have revised the pre-approved contractor's list to reflect my mistake. So please accept this letter as the pre-approved contractor's list. As stated before, the District is in agreement to allow the above referenced utility relocation project to bid in the road construction contract as requested by the Transportation Cabinet. The District requests the road construction contractor accept bids and select a local contractor that is pre-approved, qualified, and who will provide the highest quality of service to the District. That contractor selected shall adhere to the District's Waterline Adoption Policy and the contract documentation, specifications, and construction plans set forth by the engineering firm selected.

The District recommends utilizing one of the following contractors to relocate the District's facilities:

- 1.) Wright Construction, 48 Village Street, Pikeville, KY. 41501, Tom Wright, 606-794-5471
- 2.) H2O Construction, Inc., 470 Ziegler Drive, Pikeville, KY. 41501, Steve Lockhart, 606-477-4392
- 3.) BOCA Enterprises, Inc., 7435 KY Route 321, Hager Hill, KY. 41222, Kirby Bowling, 606-454-1694
- 4.) Bear Traxx, Inc., 1225 Isaac Park Road, Louisa, KY, 41230, Dwight Keaton, 606-673-1179

If you have any questions, or if I can be of further assistance, please feel free to contact me at your convenience at 606-631-6165.

Sincerely,


Roy B. Sawyers
District Administrator

Cc: Mike Blackburn, MWD Chairman

Standard Water Bid Item Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TECHNICAL SPECIFICATIONS

SECTION	DESCRIPTION	PAGE
I	Special Provisions	TS-I-1 through TS-I-2
II	General Provisions	TS-II-1 through TS-II-5
III	Submittals	TS-III-1 through TS-III-4
IV	Quality Control	TS-IV-1 through TS-IV-2
V	Temporary Facilities	TS-V-1 through TS-V-3
VI	Mobilization/Demobilization	TS-VI-1 through TS-VI-2
VII	Silt Control Structures	TS-VII-1 through TS-VII-5
VIII	Connections to Existing Water Lines	TS-VIII-1 through TS-VIII-2
IX	Water Lines and Fittings	TS-IX-1 through TS-IX-14
X	Gate Valves	TS-X-1 through TS-X-2
XI	Air Relief	TS-XI-1 through TS-XI-2
XII	Bore and or Encase	TS-XII-1 through TS-XII-3
XIII	Water Service Reconnections	TS-XIII-1 through TS-XIII-2
XIV	Fire Hydrants and Blow-Off Valves	TS-XIV-1 through TS-XIV-3
XV	Pavement Replacement	TS-XV-1 through TS-XV-4
XVI	Seeding	TS-XVI-1 through TS-XVI-2
XVII	Water Booster Pumping Stations	TS XVII 1 through TS XVII 31
XVIII	Chain Link Fencing and Gates	TS XVIII 1 through TS XVIII 4
RS	AWWA Standard for Installation	
RS-MW	Mountain Water District Water Distribution Lines Technical Specifications	

SECTION I

TECHNICAL SPECIFICATIONS

SPECIAL PROVISIONS

1.1 SCOPE

This specification sets forth OWNER'S special project requirements which are UNIQUE to this project. All requirements of this section shall be considered as integral parts of the successful completion of the Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

1.2 CONFLICTING ELEMENTS

The Mountain Water District has prepared a set of specifications entitled "Mountain Water District - Water Distribution Lines and Technical Specifications". These specifications are reproduced herein as Supplemental Technical Specifications. In the event of a conflict between the elements of the Contract Documents, the MORE STRINGENT REQUIREMENT ON THE CONTRACTOR SHALL GOVERN.

1.3 COMMUNICATIONS

1.3.1 The CONTRACTOR shall coordinate all work through the ENGINEER.

1.3.2 The CONTRACTOR shall notify the OWNER and ENGINEER at least 10 calendar days prior to any construction activity at the site.

1.4 WORKING HOURS

Working hours are as follows:

1.4.1 Regular working hours are defined as up to 8 hours per day, Monday through Friday, beginning no earlier than 7:00 AM and ending no later than 7:00 PM, excluding holidays. Whenever the CONTRACTOR is performing any part of the Work, with the exception of equipment maintenance and clean-up, OWNER'S representation and/or inspection will be required.

1.4.2 Requests to work other than regular working hours must be submitted to the OWNER'S designated representative, at least 48 hours prior to any proposed weekend work or

scheduled extended work weeks, to give the OWNER ample time to arrange for representation and/or inspection during those periods. Periodic unscheduled overtime on weekdays will be permitted provided that two hours notice is provided to OWNER'S designated representative. Maintenance and clean-up may be performed during hours other than regular working hours.

1.4.3 The OWNER incurs additional expense when the CONTRACTOR exceeds regular working hours. Consequently, CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated herein. These costs shall be a line item deduction from the CONTRACTOR'S monthly payment request. Overtime costs for OWNER'S personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the ENGINEER shall be calculated in accordance with the terms of the ENGINEER'S contract with the OWNER.

1.5 SERVICE CONNECTIONS

The OWNER will not allow dry tapping of water mains for residential service connections. New water mains must be pressurized to working pressure BEFORE service connections are made.

- THE END -

SECTION II

TECHNICAL SPECIFICATIONS

GENERAL PROVISIONS

2.1 SCOPE

This section of the technical specifications is prepared to establish general requirements applicable to the entire Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

2.2 IDENTIFICATION OF PARTIES

OWNER - Mountain Water District. The OWNER owns and is responsible for the completed water facilities.

ENGINEER - Registered professional engineer designated by OWNER to provide design, construction inspection, and certification services.

CONTRACTOR- The entity(s) responsible under contract to OWNER to furnish labor, equipment, etc. to complete the work specified herein.

2.3 RECORD DRAWINGS

The CONTRACTOR shall furnish record drawings in accordance with the requirements of the 'Submittals' section of these specifications.

2.4 EXISTING UTILITIES AND UNDERGROUND FACILITIES

Attention is called to the presence of existing utilities and underground facilities. The CONTRACTOR is solely responsible to accurately locate, and avoid damage to, all existing utilities and underground facilities.

2.5 SCHEDULES

2.5.1 Progress and Payment Schedules. Within ten calendar days of Notice of Award prepare and submit to the ENGINEER a proposed construction progress schedule. The schedule shall be in the form of a bar chart addressing the major project activities. The bar chart shall provide for a comparison of the proposed schedule to actual completion.

2.5.2 Submittal Schedules. Within ten calendar days of Notice of Award no less than 10 calendar days after the effective date of the Agreement, prepare and submit to the ENGINEER a proposed submittal schedule.

2.5.3 Schedule Updates. All project schedules shall be updated for each CONTRACTOR pay request.

2.5.4 WARNING: NO CONTRACTOR PAYMENTS SHALL BE APPROVED BY THE ENGINEER UNTIL ACCEPTABLE PROJECT SCHEDULES HAVE BEEN PROVIDED BY THE CONTRACTOR. CONTRACTOR PAY REQUEST APPLICATIONS WILL BE IMMEDIATELY RETURNED IF THEY ARE NOT ACCOMPANIED BY THE REQUIRED SCHEDULE UPDATES.

2.6 CONSTRUCTION PHOTOGRAPHS

2.6.1 The term "photograph" as used herein refers to a photographic view, including similar exposures taken to assure the usefulness of the photographic record. All photographs shall be taken in color, not black and white.

2.6.2 The CONTRACTOR shall photograph the project limits prior to construction. The same views shall be re-photographed upon completion of all construction activities. In lieu of photography, CONTRACTOR may opt to video the project limits. The CONTRACTOR shall furnish the ENGINEER two digital copies for completeness review. NO WORK CAN BE PERFORMED UNTIL THE ENGINEER HAS BEEN FURNISHED THE PRE-CONSTRUCTION PHOTOGRAPHS AND/OR VIDEOS. SPECIAL ATTENTION SHOULD BE ADDRESSED TO DRIVEWAYS, FENCES, WALLS, ETC.

2.7 TESTING

The cost of all testing shall be borne by the CONTRACTOR unless directed otherwise.

2.8 INSTALLATION REQUIREMENTS

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as suggested by the respective manufacturers, unless otherwise specified herein.

2.9 PROOF OF COMPLIANCE

See Quality Control - Section IV

2.10 MAINTAINING DRAINAGE

At no time shall the flow of any existing streams or gullies be blocked. Ditches or culverts which become inoperable during the work effort shall be promptly cleaned out.

2.11 DUST AND LITTER CONTROL

All access roads, excavations, embankments, waste areas, etc. within the project boundaries shall be maintained free of dust and litter which could cause a nuisance to others. Dust control shall be performed as the work proceeds and whenever a dust nuisance occurs. From time to time, as the need arises, the construction area shall be policed to collect all scattered litter and debris.

2.12 CLEAN UP

After all construction work is complete, and prior to final inspection, all disturbed areas shall be cleaned and left in a sightly condition. All unused material shall be removed and disposed of properly.

2.13 REPAIR OF DAMAGE

Any damage done to structures, fills, roadways, or other areas shall be repaired at the CONTRACTOR'S expense before final payment is made.

2.14 PROJECT LIMITS

The CONTRACTOR shall be responsible for satisfying himself as to the construction limits for the project. The CONTRACTOR shall not establish work, storage, or staging areas outside the project limits, unless otherwise directed or approved by the ENGINEER.

2.15 BURNING

The CONTRACTOR shall strictly observe all applicable local, state, and federal laws and ordinances regarding burning. There shall be no burning on Kentucky Department of Transportation right of way. No burning shall be conducted

in close proximity to natural gas conveyance facilities or overhead utilities. All ash and partially burned debris shall be disposed of in a lawful manner approved by the ENGINEER.

2.16 MATERIALS SUITABLY STORED

Requests for payment for stored materials MUST be prepared in compliance with the following:

At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

2.17 EXPLANATION OF MEASUREMENT AND PAYMENT TERMINOLOGY

The various items of work will be measured and paid for as "Lump Sum," "Each," or by "Unit Prices" as established in these specifications. These methods of payment are defined as follows:

- a) Lump Sum: When this term is used as an item of payment, it shall be inferred that the complete structure, structural unit or element of work is specified as the unit measurement. As such, it will be construed to include all necessary materials and accessories required for installation. No final measurements will be made.
- b) Each: The definition for Lump Sum applies to the term "each" except more than one may be included in the Project and the actual number installed will be the final measurement.

- c) **Unit Price Quantities:** When unit price quantities for a specific portion of the project are designated in the Contract Documents as the pay quantity, actual quantities for such specified portion serve as the basis for payment. Actual quantities shall be determined by the differences in measurements taken before and after construction.

- **THE END** -

SECTION III

TECHNICAL SPECIFICATIONS

SUBMITTALS

3.1 SCOPE

This specification sets forth the procedure to be employed in submitting and processing all CONTRACTOR submittals.

3.2 SHOP DRAWINGS

3.2.1 The CONTRACTOR shall submit for the review of the ENGINEER Shop Drawings for all fabricated work and for all manufactured items required to be furnished in the Contract in accordance with the General Conditions and as specified herein. Shop Drawings shall be submitted in sufficient time to allow at least twenty-one (21) calendar days after receipt of the Shop Drawings from the CONTRACTOR for checking and processing by the ENGINEER.

3.2.2 ENGINEER's review of the CONTRACTOR's drawings shall be considered as a gratuitous service, given as assistance to the CONTRACTOR in interpreting the requirements of the Contract, and in no way shall it relieve the CONTRACTOR of any of his responsibilities under the Contract. Any fabrication, erection, setting or other Work done in advance of the receipt of Shop Drawings returned by the ENGINEER and noted as "No Exception Taken" or "Make Corrections as Noted" shall be entirely at the CONTRACTOR's risk. The ENGINEER's review will be confined to general arrangement and compliance with the design concept and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interferences, coordination of trades, etc.

3.2.3 Unless otherwise stated elsewhere in the Contract Drawings, a total of six (6) copies of all reviewed Shop Drawings shall be furnished to the ENGINEER for his use in accordance with the following sequence of operations:

- A) Initially six copies and one (1) reproducible copy shall be submitted to the Engineer for review. The ENGINEER will return one (1) copy and the reproducible copy to the CONTRACTOR after review.

- B) When Shop Drawings are returned for correction, they shall be immediately corrected and resubmitted for review as described above, and such procedures will not be considered as grounds for delay in completing the Work.
- C) Shop Drawings submitted by subcontractors shall be sent directly to the CONTRACTOR for preliminary checking. The CONTRACTOR shall be responsible for their submission to the ENGINEER at the proper time so as to prevent delays in delivery of materials.
- D) The CONTRACTOR shall thoroughly check all subcontractor's Shop Drawings as regards to measurements, sizes of members, materials and details to satisfy himself that they conform to the intent of the Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors by the CONTRACTOR for correction before submitting them to the ENGINEER. Before submission, the CONTRACTOR shall mark (stamp) the drawings as being checked and approved by him, dated and signed. The CONTRACTOR's approval (stamp) shall constitute a representation that all quantities, dimensions, field construction criteria, materials, catalog numbers, performance criteria and similar data have been verified and that, in his opinion, the submittal fully meets the requirements of the Contract Documents and the scope of work involved. Shop Drawings that are not stamped will not be reviewed.
- E) All details on Shop Drawings submitted for review shall clearly show the relation of the various parts and where the Work depends upon field measurements, such measurements shall be obtained by the CONTRACTOR and noted on the Shop Drawings before being submitted to the ENGINEER for review.
- F) All submissions shall be properly referenced to indicate clearly the specification section, location, service and function of each particular item. All submissions for one item or group of related items shall be complete. The ENGINEER reserves the right to reject manufacturer's publications in the form of catalogues, pamphlets, or other data sheets when they are submitted in lieu of prepared Shop Drawings. Such submissions shall specifically indicate the item for which

approval is requested. Identification of items shall be made in ink, and submissions showing only general information are not acceptable.

- G) If the Shop Drawings contain any departures from the Contract requirements, specific mention thereof shall be made in the CONTRACTOR's letter of transmittal. Where such departures require revisions to layouts or structural changes to the Work, the CONTRACTOR shall, at his own expense, prepare and submit for approval revised layout and structural drawings. Such drawings shall be of the size approved by the ENGINEER.

- H) All shop drawings shall be in English.

3.2.4 The ENGINEER will review the first and second shop drawing submittals at no cost to the CONTRACTOR. Review of the third submittal and any subsequent submittal will be at the CONTRACTOR's expense. Payment will be deducted from the Contract amount at a rate of 3 times direct labor cost plus expense.

3.3 RECORD DRAWINGS

3.3.1 The Record Drawings shall consist of the Contract Drawings (3 mil mylar, updated to 'As Built' conditions) and the approved Shop Drawings in reproducible form (3 mil mylar) and shall be submitted to the ENGINEER at any time upon request during construction, but no later than the Final Inspection.

3.3.2 Contract Drawings shall be legibly marked to record actual construction including:

- A) All deviations in location or elevation of any underground installation from that shown on the Contract Drawings.

- B) Any significant changes in above ground installation from approved Shop Drawings or Contract Drawings.

- C) No such deviations from the Contract Drawings or approved Shop Drawings shall be made without approval by the ENGINEER.

3.3.3 Specifications and addenda shall be legibly marked up to record:

- A) Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.
- B) Changes made by Change Order or Field Order.
- C) Other matters not originally specified.

3.3.4 Shop Drawings shall be legibly annotated to record changes made after review.

3.3.5 Reproducible Record Drawings shall be submitted in accordance with the General Conditions, Supplementary Conditions, and General Requirements.

3.4 MEASUREMENT AND PAYMENT

Submittals shall be considered a part of CONTRACTOR'S Lump Sum Bid for "Mobilization/DeMobilization" and shall not be measured for separate payment.

- THE END -

SECTION IV

TECHNICAL SPECIFICATIONS

QUALITY CONTROL

4.1 CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

- A) Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of Advertisement for Bidders.
- B) Discrepancies between referenced codes, standards, specifications and Contract Documents shall be governed by the latter unless written interpretation is obtained from ENGINEER.
- C) Material or work specified by reference to conform to a standard, code, law, or regulation shall be governed by Contract Document when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.
- D) Proof of Compliance:

Whenever Contract Documents require that a product be in accordance with Federal Specification, ASTM designation, ANSI specification, or other association standard, at ENGINEER'S request, CONTRACTOR shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate.

4.2 MANUFACTURER'S DIRECTIONS

Utilize manufactured articles, materials and equipment as directed by manufacturers unless herein specified to contrary. Discrepancy between an installation required by Contract Documents and manufacturer's instructions and recommendations shall be resolved by ENGINEER before work may proceed. In all cases, the more stringent requirements shall govern.

4.3 TESTING

- A) All testing (when required) will be in accordance with the pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.

- B) The OWNER will select the testing laboratories.
- C) The CONTRACTOR will bear the cost of all testing unless directed otherwise.

- THE END -

SECTION VI

TECHNICAL SPECIFICATIONS

MOBILIZATION/DEMobilIZATION

6.1 SCOPE

This element of work shall consist of the mobilization of the CONTRACTOR'S forces and equipment necessary for performing the work required under the Contract.

It shall include the purchase of contract bonds (including KTC encroachment permit bond); transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other temporary facilities at the site; development of submittals and record drawings in accordance with Section III of these specifications; and other preparatory and incidental work.

This specification covers mobilization for work required by the Contract at the time of award. If additional mobilization costs are incurred during performance of the Contract as a result of changes or added items of adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

6.2 PAYMENT

THE CONTRACTOR'S LUMP SUM BID FOR MOBILIZATION/DEMobilIZATION MAY NOT EXCEED THREE PERCENT (3%) OF THE TOTAL BASE BID FOR THIS CONTRACT. Payment of the total lump sum price for "Mobilization/DeMobilization" will constitute full compensation for all labor, materials, equipment, and all other items necessary for and incidental to completion of the work. If the CONTRACTOR elects to demobilize and remobilize before completion of the work, no additional payment will be made.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

Fifty percent (50%) of the "Mobilization/Demobilization" price may be invoiced when the following conditions have been met:

- 1) the field office and sanitary facilities are in-place;
- 2) the CONTRACTOR has furnished the bond for the Kentucky Department of Highways Encroachment Permit in the name of the OWNER;

- 3) the CONTRACTOR's project schedules (construction, payment, and submittals) have been approved by the ENGINEER;
- 4) the CONTRACTOR has furnished a plan for disposal of waste materials;
- 5) the Project Sign has been erected; and
- 6) all project silt controls have been installed.

The remaining fifty percent of "Mobilization/DeMobilization may **not** be invoiced until the CONTRACTOR has submitted acceptable 'Record Drawings' (As-Built Plans and Shop Drawings) in accordance with the requirements of Section III of these specifications.

-- THE END --

SECTION VII

TECHNICAL SPECIFICATIONS

SILT CONTROL STRUCTURES

7.1 SCOPE

This work shall consist of furnishing all materials, equipment, labor, and incidentals necessary for the installation, maintenance, and removal of silt control facilities as directed by the ENGINEER.

7.2 GENERAL

The exact locations, configuration, and dimensions of the various types of silt control shall be directed by the ENGINEER at the time of construction. These structures shall be installed prior to any surface disturbance on the area for which they are necessary to control silt.

The CONTRACTOR shall schedule construction activities so that the amount of exposed soil is minimized. This is to be accomplished by disturbing only those areas which are to be worked immediately and by revegetating each area as soon as practical.

7.3 MATERIALS

Silt Control Hay Bales

7.3.1 Silt Control Bales shall consist of either straw or hay bales. All bales are to be firmly bound by twine, and are to be installed using wooden stakes or steel bars.

Silt Fence

7.3.2 Silt Fence filter fabric shall be specifically designed for this purpose by the manufacturer and shall meet or exceed the following specifications:

Bursting Strength	(ASTM D751)	150 psi
Grab Strength	(ASTM D1682)	100 psi
Permeability		0.02 to 0.03 cm/sec

Silt fence posts shall be either timber stakes (2" x 2" min) or pressed steel stakes set plumb and to sufficient depth to provide a sound anchor for the supporting wire fence and/or filter fabric.

Gabions

7.3.3 Wire: The wire incorporated in the lid and body of gabion units shall be constructed of galvanized steel. The mesh shall be constructed by double twisting the adjoining wire, i.e., both wires must be twisted in an interlocking, nonraveling fashion. All wire for corners, edges, selvages, and binding in both types of units shall be heavily galvanized with a minimum zinc coating of 0.80 ounces per square foot of uncoated wire surface, as determined by tests conducted in accordance with ASTM A90. The tensile strength of the wire shall be at least 60,000 pounds per square inch, and the mesh must have sufficient elasticity to permit 10 percent elongation diameter of the individual wires. The following minimum wire diameters are required for non-PVC coated units only.

<u>Type /Use of Wire</u>	--Minimum Diameters--
	<u>Gabion</u>
Mesh wire	0.118
Selvedge/corner wire	0.150
Lacing/connecting wire	0.0866

7.3.4 Rock Fill: The baskets shall be filled with clean, hard, durable limestone from a source approved by the ENGINEER. The stone shall be well-graded, with sizes ranging from a minimum of 5 inches to a maximum of 8 inches for gabion baskets, as measured in the greatest dimension; and shall otherwise comply with the requirements of these Technical Specifications.

7.3.5 Anchors: Steel anchors shall be standard deformed type bars conforming to ASTM A-615. The bars shall be manufactured from new billet steel of American manufacture, and shall have a minimum yield strength of 60,000 psi (Grade 60).

7.4 FABRICATION OF GABIONS

7.4.1 General: The gabion units shall be fabricated in such a manner that the base, sides, ends, and lids can be assembled at the construction site into a rectangular unit of the specified sizes. The body of the units shall be of single unit construction, the base, ends, sides, and lids formed of a single woven mesh unit.

All perimeter edges of the mesh forming the unit shall be securely selvaged so that the joints formed by tying the selvages have at least the same strength as the body of the mesh.

Lacing wire shall be supplied in sufficient quantity to permit all sides, ends, and diaphragms of the body to be securely fastened, as well as to fasten the top to all sides, ends, and diaphragms of the body.

Dimensions for height, length, and width are subject to a tolerance limit of +3% of the manufacturer's stated sizes.

7.4.2 Gabions: The gabions shall be constructed with a hexagonal weave having an opening of approximately 3 1/4 inches by 4 1/2 inches. When the gabion length exceeds its width, it shall be supplied with diaphragms to form individual cells of equal length and width. The gabion unit shall be furnished with the necessary diaphragms secured in proper position on the base in such a manner that no additional tying at this juncture will be necessary. The diaphragms shall be of the same material composition as the gabion.

7.4.3 Certification: Each shipment of gabions to a job site shall be accompanied by a certification from the manufacturer, which states that the material conforms to the requirements of this Specification. The certification shall be on the manufacturer's letterhead and shall be signed by an officer of that company.

7.5 INSTALLATION

7.5.1 Silt Control Bales: The general locations and typical configurations of the type of silt control is subject to adjustments based on individual site conditions. Installation is labor intensive in order to assure stable and durable usage; additional hand labor may be required to provide adequate footing for the bales.

7.5.2 Silt Fences: Silt fences shall be supported with vertical wood posts which are protected by means of a metal cap or other device to prevent damage when hammers are used to drive the posts into the ground.

7.5.3 Gabions: The foundation shall be accurately prepared to accept the gabions. The foundation shall be inspected and approved by the ENGINEER prior to placement of the units.

Empty units shall be assembled individually on a hard, flat surface -- generally at the installation site. Care must be exercised to assure that each basket is stretched or manipulated as necessary to achieve the proper rectangular shape. Sides, ends, and diaphragms must be erected (and laced) to ensure the correct orientation of all seams and creases. Once assembled,

empty units shall be set to the lines and grades directed by the ENGINEER.

All units shall be connected to the adjoining units, while empty, by lacing wire along the perimeters of their contact surfaces. Securing diaphragms, ends and sides, closure of units, and connecting adjoining units shall be accomplished by continuous stitching with alternating single and double loops at 4-inch intervals. All ends of lacing wire are to be securely fastened and not protruding.

Empty units are to be stretched, after being properly laced and connected to the adjoining unit(s), to obtain uniform alignment and to remove kinks. A standard fence stretcher, "come-along" or other means of tensioning the unit may be used. Adjacent rows of gabion units are to be placed such that the seams are offset.

The units shall be carefully filled with stone by hand and/or machine to maintain alignment; to avoid bulges, damage to coating, and/or separation of units; and to minimize voids. The maximum height from which stone may be dropped into gabion units shall not exceed 36 inches. In gabions over 2-foot high, the stone is to be placed in 12-inch lifts; adjusted by hand, if necessary, to form a reasonable smooth surface, and cross-ties (or bracing wires) installed. Cross-ties are to be looped through the mesh on opposing sides of the basket, and the wire tightened by twisting. The ENGINEER may require the CONTRACTOR to use hand labor to selectively place the layers of stone along exposed surfaces (i.e., top, front, and ends) to provide a uniform surface and an overall appearance suitable to the site-specific situation at each installation. After each unit has been filled, the lid shall be leveled as necessary and secured to the sides, ends, and diaphragms using the previously described lacing (or stitching) technique.

7.6 MAINTENANCE

During the course of the project, silt control structures shall be maintained in sound condition and accumulations of silt which may threaten their effectiveness shall be removed. Silt removed from silt control structures shall be spread in the general vicinity of the individual structures, except when such practices may be a detriment to the environment and/or the project.

Upon completion of the project, the ENGINEER may direct the CONTRACTOR to remove, clean, or replace silt control structures and revegetate such disturbances in accordance with the seeding section of these Technical Specifications.

7.7 MEASUREMENT AND PAYMENT

Silt control structures shall be considered incidental to water line and shall not be measured for separate payment.

-- THE END --

SECTION VIII

TECHNICAL SPECIFICATIONS

CONNECTIONS TO EXISTING WATER LINES

8.1 SCOPE

This work shall consist of furnishing and installing all necessary materials to connect new water mains to existing water lines.

8.2 SUBMITTALS

8.2.1 Submit five copies of documentation substantiating manufacturer's compliance with these specifications.

8.3 MATERIALS

8.3.1 Tapping Sleeves: The tapping sleeve shall be of full circle clamp type construction of the appropriate diameter and approved by the manufacturer for use with the existing pipe encountered. The tapping branch of the sleeve shall be mechanical joint. The CONTRACTOR shall verify that the rated pressure class of the tapping sleeve exceeds the working pressure of the water line. Valves used in tapping operations shall be as specified in the valve section of these specifications except that the seat rings shall be of large diameter to permit entry of the tapping machine cutters.

8.3.2 Bends and Fittings: Bends and fittings shall be ductile iron, mechanical joint conforming to the requirements of Section IX of these specifications.

8.4 INSTALLATION

Installation shall be made as directed in the Design Drawings or as indicated in the manufacturer's literature. The CONTRACTOR shall make every possible effort to minimize any interruption in water service for existing customers. The CONTRACTOR must satisfy the following conditions prior to proceeding with the connection:

- a. The ENGINEER shall have accepted the new pipe line as in-place, suitably pressure tested, suitably disinfected, and ready for service.

- b. All water outages must be approved by the OWNER. The CONTRACTOR shall have provided both the OWNER and the ENGINEER at least 72 hours advance written notice of the scheduled date for the water outage and connection. This notice should advise the OWNER to schedule personnel to terminate service in the affected pipe reach and to notify customers of the pending outage.
- c. The CONTRACTOR shall have all necessary bends, fittings, glands, adapters, etc. on-site on the date notice of the impending connections is forwarded to the ENGINEER.
- d. Connections to existing water lines may only be made on Monday, Tuesday, and Wednesday. No connections to existing water lines may be made on Thursday, Friday, Saturday, or Sunday.

All pipe bendings and fittings shall be restrained using a steel tiebolt joint restraint system (Star SuperStar system, or equal). The number of restraints employed per mechanical joint shall be based on the manufacturer's load tables for the ambient system pressure. Installation shall be made as directed in the Design Drawings or as indicated in manufacturer's literature.

8.5 MEASUREMENT AND PAYMENT

8.5.1 Measurement: Connections to existing water lines shall be measured each.

8.5.2 Payment: "Connect to Existing Water Line" shall be paid for at the contract price "each" as set forth in the Bid Schedule. This payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Payment for the tapping valve will be made under the valve section of these specifications. There will be no separate payment for "hunt and search excavation", for restraint system, public notices, bends, fittings or other incidentals.

- THE END -

SECTION IX

TECHNICAL SPECIFICATIONS

WATER LINES AND FITTINGS

9.1 SCOPE

This work shall consist of furnishing, installing, testing, and disinfecting potable water line pipes of various diameters.

9.1.1. Quality Assurance/Submittals

9.1.1.1 Submit five copies of documentation to substantiate pipe material's compliance with these specifications.

9.1.1.2 Submit five copies of CONTRACTOR'S Bedding and Backfilling Plan. At a minimum the plan shall:

- a. Identify/acknowledge the segments of pipe line to be backfilled using "open", "gravel", and "paved" criteria,
- b. Include a representative Proctor Curve for the backfill material for all significant sections of pipe line to be backfilled using "paved" criteria (curve to be prepared and sealed by a geotechnical engineer registered in the State of Kentucky - curve not required if CONTRACTOR backfills entire trench with fine crushed stone),
- c. Include quarry's material certification for all aggregates utilized for bedding, haunching, and initial protective backfill, and
- d. Include name and qualifications of CONTRACTOR'S nuclear density technician (technician must be a full time employee of CONTRACTOR, spot checks by a sub-contracting testing firm are not acceptable).

9.1.1.3 Submit five copies of each pressure test performed within 48 hours of test completion. Documentation to include quantity of water used and pressure charts from recording pressure gage.

9.1.1.4 Submit five copies of documentation for each disinfection of each pipe reach within 7 days of collection of samples. Documentation to include form of chlorine applied, method of application, quantity of make-up water used, quantity of residual chlorine concentration one hour after dosing, residual chlorine concentration 24 hours after dosing, point of disposal of waters of chlorination, method of de-chlorination, quantity of flushing water supplied, and results of bacteriological examination of water samples.

9.2 MATERIALS

9.2.1 General: All pipe used for potable water service shall be as indicated in the plans.

9.2.2 Ductile Iron Pipe, Fittings and Joints: Ductile iron pipe shall conform to the latest AWWA Specifications C151 (ANSI A21-51) with standard thickness as designated in AWWA C150. Thickness class shall be 350 unless noted otherwise on the plans by the ENGINEER.

The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with AWWA C104 (ANSI A21.4). Thickness of the lining shall be as set forth in Sec. 4-10-1 of the aforementioned specifications unless otherwise directed by the OWNER. The exterior of all pipe, unless otherwise specified, shall receive either a coal tar or asphalt base coating a minimum of one mil thick.

Where ductile iron pipe is to be installed in corrosive soil conditions, the pipe shall be protected by an eight mil thick polyethylene encasement meeting the requirements of ANSI A21.5. Such corrosive soils include but are not limited to salt marshes, saturated alkaline soils, cinder fills, areas of decaying vegetation, and waste dumps.

Bends and fittings shall be Mechanical Joint Compact Ductile Iron fittings, conforming to AWWA Specifications C153 for short body iron fittings. Fittings shall be tar-coated outside and shall receive the standard cement lining with bituminous seal coat on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on (AWWA C111), mechanical joint (AWWA C111), restrained mechanical joint, or ball and socket type as called for in the Plans. Bells for push-on type

joints shall have an annular recess in the pipe socket to accommodate a single rubber gasket. Plain ends shall be suitably beveled to permit easy entry into the bell. The gasket is locked in place against displacement as the joint is assembled.

Mechanical joints shall be bolted and of the stuffing box type and shall consist of a bell with exterior flange and interior recess for the sealing gasket, a pipe or fitting plain end, a sealing gasket, a follower gland, tee-head bolts and hexagon nuts. A restrained mechanical joint is a mechanical joint with a ductile iron retainer gland equal to a Clow F-1058 retainer gland or the Megalug Series 1100 joint restraint.

Joints for all bends and fittings for buried service shall be restrained mechanical joint type only (AWWA C111). Flanged joint pipe shall be used in vaults, pits and above ground service installation. Flanged joint pipe may not be used for buried service.

9.2.3 Polyvinyl Chloride Pipe, Fittings and Joints: PVC water pipe shall conform, at a minimum, to ASTM Specifications D-2241, and shall be pressure class 250. The pipe furnished under ASTM A-2241 shall have a standard dimension ratio not to exceed SDR 17, and shall be rated to a working pressure of at least 250 psi at 73.4°F.

Fittings shall be cast iron Mechanical Joint Class 250 conforming to AWWA Specifications C110 for short body cast iron fittings. Fittings shall be tar-coated outside, and shall receive the standard cement lining with bituminous seal coal on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on type conforming to ASTM D3139 and F477 requirements for elastometric-gasket joints. All jointing material and lubricants shall be non-toxic.

9.2.4 Pipe Bedding: Pipe bedding stone shall be durable crushed limestone meeting the requirements of Section 805 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.2.5 Geotextile Type III: Geotextiles shall be woven or non-woven geotextile fabrics meeting the material and strength requirements for Type III fabrics as set forth in

Section 215 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.3 INSTALLATION

9.3.1 Trench Excavation: Unless specifically directed otherwise by the ENGINEER, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any crew and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew.

All backfilled ditches shall be maintained in such a manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and property owners abutting shall be taken into consideration. All public or private drives shall be taken into consideration and shall be promptly backfilled or bridged. Excavated materials shall be disposed of so as to cause the least interference.

Trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the approved plans. The minimum allowable trench width shall not be less than the outside diameter of the pipe plus eight inches. Where rock is encountered, it shall be removed to a minimum depth of six inches below the pipe bells.

Unless specifically authorized by the ENGINEER, trenches shall in no case be excavated or permitted to become wider than two feet six inches plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than two feet six inches at the level of or below the top of the pipe, special precautions may be necessary, such as providing compacted granular fill up to the top of the pipe or providing pipe with additional crushing strength as determined by the ENGINEER. This determination shall take into account the actual trench loads that may result and the strength of the pipe being used.

All excavated materials shall be placed a minimum of two feet back from the edge of the trench.

Where conditions exist that may be conducive to slides or cave-ins, proper and adequate sheeting, shoring and bracing shall be installed (See Section 9.3.1.2) to provide safe working conditions and to prevent damage of work.

Trenches shall be kept free of water during the laying of pipe and until the pipeline has been backfilled.

9.3.1.1 Obstructions: In cases where storm sewers, gas lines, water lines, telephone lines, and other utilities, or other underground structures are encountered, they shall not be displaced or molested unless necessary, in which case they shall be replaced in as good condition as found as quickly as possible.

The CONTRACTOR shall notify the utility companies 48 hours prior to excavation adjacent to their facilities.

9.3.1.2 Shoring, Sheeting and Bracing: Where unstable material is encountered or where the depth of excavation in earth exceeds six feet, the sides of the trench or excavation shall be supported by substantial sheeting, bracing and shoring, or the sides sloped to the angle of repose. Sloping the sides of the ditch to the angle of repose will not be permitted in streets, roads, narrow rights-of-way or other constructed areas unless otherwise specified. The design and installation of all sheetings, sheet piling, bracing and shoring shall be based on computations of pressure exerted by the materials to be retained under construction 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 the supporting computations) for review prior to the CONTRACTOR undertaking any portion of the work.

Foundations adjacent to where the excavation is to be made below the depth of existing foundation, shall be supported by shoring, bracing or underpinning as long as the excavation shall remain open, or thereafter if required to insure the stability of the structure supported by the foundation, and the CONTRACTOR shall be held strictly responsible for any damage to said foundation.

Solid sheeting will be required for wet or unstable material. It shall consist of continuous vertical sheet piling of timber or steel with suitable walls and braces.

Care shall be taken to avoid excessive backfill loads on the completed pipelines, and the requirements that the width of the ditch at the level of the crown of the pipe be not more than two feet six inches plus the nominal diameters of the pipe shall, as set out in Section 9.3 hereinbefore, be strictly observed.

Trench sheeting shall not be removed until sufficient backfill has been placed to protect the pipe.

All sheeting, planking, timbering, bracing and bridging shall be placed, renewed and maintained as long as necessary.

9.3.1.3 Blasting: Blasting operations on this project are prohibited.

9.3.2 Pipe Bedding: In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe and insofar as possible where bell and spigot pipe are involved so that none of the load will be carried on the bells.

Where undercutting and granular bedding are involved, the depth at the bottom of the bells of the pipe will be at least four inches above the bottom of the trench as excavated.

Supporting of pipe shall be as set out hereinbefore, and in no case shall the supporting of pipe on blocks be permitted. The Design Drawings present typical approved bedding methods.

9.3.2.1 Earth Foundation: All pipe shall be laid on a six inch bed of granular material to provide continuous support for the lower section of the pipe. Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.2 Rock Foundation: If the trench bottom is in rock the excavation shall be undercut to a minimum depth of six inches below the bottom of the pipe. The pipe shall be laid on a bed of granular material to provide continuous support for the lower section of the pipe.

Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.3 Special Bedding: In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the ENGINEER may order "Special Pipe Bedding." When the ENGINEER orders "Special Pipe Bedding" (in writing), the CONTRACTOR shall:

- a. overexcavate the mucky subgrade to the depth directed,
- b. install a Type III geotextile as illustrated in the detail drawings,
- c. backfill the geotextile with bedding stone, and
- d. overlap the geotextile envelope in accordance with the detail drawings.

It is to be expressly understood that "Special Pipe Bedding" may only be employed upon written order of the ENGINEER.

9.3.3 Laying Pipe: All pipe shall be laid with ends abutting and true to line and grade as shown on the plans. Supporting of pipe shall be as specified under "Pipe Bedding" hereinbefore and in no case will the supporting of pipes on blocks be permitted.

Fittings for the water mains shall be provided and placed as and where directed by the ENGINEER or shown on the plans. All open ends of pipes and of branches shall be sealed or plugged.

Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure its being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting. In case a length of pipe is cut to fit in a line, it shall be so cut as

to leave a smooth end at right angles to the longitudinal axis of the pipe.

Granular bedding material as specified hereinbefore, shall be used to correct irregularities in the earth trench subgrade.

The interior of the pipe, as the work progresses, shall be clean. When laying of any pipe is stopped for any reason, the exposed end of such pipe shall be closed with a watertight plug fitted into the pipe bell, so as to exclude earth or other material.

No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER, or his representative has made an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the CONTRACTOR of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

9.3.4 Jointing Pipe: The pipe joints described shall be installed in accordance with the manufacturer's recommendations.

9.3.5 Backfilling Pipeline Trenches: All backfilling shall be accomplished in accordance with the details of this section and the project plans. Any variances must be approved in writing by the ENGINEER.

Before final acceptance, the CONTRACTOR will be required to level off all trenches or to bring the trench up to the level of the surrounding terrain. The CONTRACTOR shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction.

When the pipe trench crosses a street or roadway, the CONTRACTOR shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times.

In all cases walking or working on the completed pipelines except as may be necessary in tamping or backfilling will not be permitted until the trench has been backfilled to a point one foot above the top of the pipe. The filling of the trench and the tamping of the backfill shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur.

In all cases the pipe bedding and haunching shall be #9 crushed stone. The pipe bedding shall be mechanically tamped prior to placement of the pipe. The pipe bedding shall be thoroughly compacted taking care not to damage the pipe.

9.3.5.1 Method "A" Backfilling in Open Terrain:
Backfilling of pipeline trenches in open terrain shall be accomplished in the following manner:

In all cases the lower portion of the trench, from the pipe bedding to the springline (centerline) of the pipe shall be backfilled with #9 crushed stone. This stone shall be carefully and thoroughly compacted.

The portion of the trench from the springline of the pipe to a point 6 inches above the pipe shall be backfilled in six inch lifts with #9 crushed stone. Each lift shall be hand tamped taking care not to damage the pipe.

The portion of the trench from a point 6 inches above the top of the pipe to the ground surface shall be backfilled in six (6) inch lifts with material which is free from $\frac{3}{4}$ " or larger rock. Incorporation of rock having a volume exceeding one-half cubic foot is prohibited. The backfill shall be mechanically tamped in six inch lifts to 95 percent of standard Proctor Density (ASTM D-698).

9.3.5.2 Method "B" Backfilling Under Graveled Areas:
Backfilling of pipeline trenches under existing and proposed graveled parking lots, driveways, etc. shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a

point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with available material in six (6) inch lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two percent of optimum. The final 6 inches of the trench backfill shall be thoroughly compacted dense graded aggregate.

9.3.5.3 Method "C" Backfilling Under Paved Areas: Backfilling of pipeline trenches under existing and proposed sidewalks, streets, proposed streets, and driveways shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with #9 crushed stone in six inch (6) lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two percent of optimum.

The upper portion of the trench from a point six inches below the bottom of the existing or proposed pavement or concrete sub-slab may be backfilled with a base course of dense graded aggregate which shall be maintained flush with the pavement surface for at least 30 days prior to placement of the final surface. The excess dense graded aggregate shall be removed concurrently with the placement of the final pavement surface.

9.3.5.4 Settlement of Trenches: Wherever pipe lines are in, or across, driveways and streets, the CONTRACTOR shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement

within this time, it shall be replaced by the CONTRACTOR. Repair of settlement damage shall meet the approval of the appropriate governing body.

9.3.5.5 Pavement Replacement: Pavement replacement shall be performed in accordance with the applicable section of these Technical Specifications.

9.4 TESTING OF LINES

On all projects involving the installation of water pipeline, the finished work shall comply with the provisions listed below, or similar requirements which will ensure equal or better results:

- a) All water mains shall be given a hydrostatic test. Test pressure shall be a minimum of 150 psi, 50 psi above the standard operating pressure (to be supplied by the ENGINEER), or 67% of the pipe rating, whichever is greater. Test pressure shall not vary by more than ± 10 psi for the duration of the test. Leakage shall not be greater than that determined by the following formula: 1 gallon per inch of pipe diameter per mile per 24 hours.
- b) All test waters shall be potable water obtained from the Mountain Water District distribution system. Withdrawals of water from the District system must be both authorized and metered. The District will bill the CONTRACTOR for all waters used in accordance with its current leak adjustment rate.
- c) Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more one mile. The OWNER may allow testing in longer sections on a case by case basis.
- d) Duration of test shall be no less than twenty-four hours.

- e) Where leaks are evident on the surface where joints are covered, the joints shall be recaulked, repoured, bolts retightened or relaid, and leakage minimized regardless of total leakage as shown by test.
- f) All pipe fittings and other materials found to be defective under test shall be removed, repaired or replaced at the discretion of the OWNER.
- g) Lines which fail to meet test requirements shall be repaired and retested as necessary until test requirements are complied with.
- h) The CONTRACTOR shall furnish a recording pressure gauge for the pressure and leakage test. The device shall be a Dickson PR300 Pressure Logger with all appropriate cables and software. The device and software shall become the property of the OWNER at conclusion of test.

9.5 DISINFECTION OF WATER LINES

The new potable water lines shall not be placed in service, either temporarily or permanently, until they have been thoroughly disinfected by the Continuous Feed Method as set forth in the latest edition of AWWA Specification C-651. Specification C-651 is reproduced in the Reference Section of this Contract Document in its entirety.

The following requirements apply to the disinfection activity:

- a) All flushing and test waters shall be potable water obtained from the Mountain Water District system. Withdrawals of water from the District system must be both authorized and metered. Mountain Water District will bill the CONTRACTOR for all waters used in accordance with its current leak adjustment rate.
- b) The Tablet and Slug Method of disinfection may not be used.

- c) The water lines shall be flushed prior to disinfection. Flush waters may be discharged to the nearest storm drain or surface water way in a controlled manner which will not result in environmental damage.
- d) The CONTRACTOR shall have a chlorine test kit in his possession for purposes of monitoring the disinfection dose.
- e) The free chlorine residual immediately after chlorine dosing shall be 50 mg/l. The free chlorine residual 24 hours after chlorine dosing shall not be less than 25 mg/l.
- f) The heavily chlorinated waters of disinfection shall be neutralized with an approved neutralizing agent prior to discharge.
- g) After disinfection and flushing, and before the water main is placed in service, bacteriological samples shall be collected and analyzed in accordance with the requirements of the Kentucky Department for Natural Resources and Environmental Protection. The new line may not be connected to the system until the samples have been approved.

9.6 MEASUREMENT AND PAYMENT

9.6.1 Measurement: Water pipe in place, complete, successfully tested and disinfected shall be measured in linear feet along the pipe centerline. Pipe fittings (tees, reducers, etc.) will be measured "each". The length of fittings measured for payment shall be deducted from the lineal feet of pipe laid to avoid "double" payment. Pipe bends will not be measured for separate payment. Bends shall be measured in linear feet. No allowance shall be made for laps or drops at connections.

"Special Pipe Bedding" - ordered in writing by the ENGINEER - in place and accepted shall be measured by the ton of bedding stone actually placed (to the top of the geotextile envelope). There will be no separate measurement of Geotextile Type III or other incidentals.

9.6.2 Payment: Payment for pipe will be made at the contract unit price per linear foot for each pipe class as set forth in the Bid Schedule. Payment for fittings will be made at the contract price "each" as set forth in the Bid Schedule. Such payment for pipe and fittings shall constitute full compensation for all materials, labor, equipment, and incidentals necessary for the completion of the work. Retainer glands for restrained mechanical joint pipe shall be considered incidental to the unit price for mechanical joint pipe.

Payment for "Special Pipe Bedding" - ordered in writing by the ENGINEER - shall be made at the contract unit price per ton for the actual quantity measured. There shall be no separate payment for Geotextile Type III or other incidentals.

-- THE END --

SECTION X

TECHNICAL SPECIFICATIONS

GATE VALVES

10.1 SCOPE

This work shall consist of furnishing and installing gate valves of various diameters for potable water lines.

10.1.A QUALITY ASSURANCE/SUBMITTALS

10.1.A.1 Submit five copies of manufacturer's certification of compliance with applicable AWWA specifications. Certificate to be signed by corporate officer having authority to legally bind the company.

10.2 MATERIALS

10.2.1 Gate Valves: All gate valves shall be iron body, nonrising stem, fully bronze mounted (Mueller or approved equal). VALVES INSTALLED IN PVC WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 250 PSI. VALVES INSTALLED IN DUCTILE IRON WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 250 PSI. Valves shall be of standard manufacture and of the highest quality both as to materials and workmanship.

Gate valves larger than 12" shall be of resilient, parallel seat construction conforming to AWWA C500-80. Gate valves 12" and smaller shall be of resilient seat construction conforming to AWWA C509-80.

All gate valves for "below ground" service shall be furnished with mechanical joint end connections. Gate valves for "above ground" (or pit) installations shall be furnished with flanged end connections.

All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.

Each gate valve for "below ground" service shall be installed in a vertical position with a valve box, as shown in the Design Drawings. Gate valves set with boxes shall be provided with a two inch square operating nut and shall be

opened by turning to the left (counterclockwise). Each gate valve for "above ground" (or pit) installations shall be furnished with a hand wheel operator.

10.2.2 Valve Box and Cover: The valve box and cover shall be of cast iron construction (Clow F-2450, or equal) and shall be engraved with the word "water".

10.2.3 Valve Marker: Each valve assembly shall be delineated by a valve marker as detailed in the Drawings. The marker shall consist of a 3" yellow PE pipe embedded vertically adjacent to the valve. The marker shall include a weatherproof label identifying the valve owner and provide an emergency phone number for the owner.

10.2.4 Plug: If the gate valve is to be installed at the end of a line the CONTRACTOR shall provide one full joint of ductile iron pipe with cap beyond the valve.

10.3 INSTALLATION

Trenching, bedding, and backfilling requirements for gate valves shall conform to the installation requirements for water lines and fittings. The base of the valve shall be anchored in concrete as shown in the Design Drawings. The valve box shall be installed vertically, centered over the stem of the operating nut. The valve box base shall be placed at least two inches above the flanged joint of the valve cover. The top of the operating nut should be no higher than the hub or upper part of the valve box base where it connects to the center section.

10.4 MEASUREMENT AND PAYMENT

10.4.1 Measurement: Gate valves for buried service in-place, tested, and accepted shall be measured each. Valves installed in vaults, pits, and pumping stations shall be considered incidental to the complete price for the vault, pit or pumping station and shall not be measured for separate payment.

10.4.2 Payment: Gate valves measured for payment shall be paid for at the contract price "each" as set forth in the Bid Schedule. Payment as specified shall be considered as full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. The valve box and cover shall be considered incidental to the installation and shall not be measured for separate payment.

-- THE END --

SECTION XI

TECHNICAL SPECIFICATIONS

AIR RELIEF

11.1 SCOPE

The CONTRACTOR shall provide all labor, tools, materials and equipment necessary to furnish and install air release valves and boxes as shown on the Plans and as directed.

11.2 QUALITY ASSURANCE/SUBMITTALS

11.2.1 Submit five copies of itemized summary of source of manufacture of each item in air relief assembly. Provide manufacturer's certification of compliance with specifications for each item.

11.3 MATERIALS

11.3.1 Tapping Saddle, Corporation Stop: The tapping saddle and corporation stop shall meet the material requirements of the water service connection section of these specifications.

11.3.2 Pipe: All pipe shall be rated for a working water pressure of 300 psi. Pipe diameter shall conform to the detail drawings.

11.3.3 Air Release Valve: The air release valve shall be a simple lever type with cast iron body and stainless steel trim rated for a working pressure of 300 psi. A Valvmatic Model #22 or approved equal shall be employed. Valve inlet shall conform to the detail drawings.

11.3.4 Valve Box and Lid: The valve box and lid shall consist of a polyethylene box and cast iron lid meeting the material requirements of the water service connection section herein.

11.4 INSTALLATION

Installation shall include the complete assembly with box and top, shut-off valve, blow-off, air valve, and piping, fittings and union, all complete and ready for operation in general conformance with the Drawings. Work in and around the box will be done in a workmanlike manner leaving the top of the box one inch above the original ground surface.

11.5 MEASUREMENT AND PAYMENT

11.5.1 Measurement: "Air Relief" assemblies in-place, tested and accepted shall be measured "each."

11.5.2 Payment: Payment for "Air Relief" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of assemblies measured. Payment as specified shall be considered full compensation for all labor, materials, equipment and incidentals necessary to perform the work as required.

- THE END -

SECTION XII

TECHNICAL SPECIFICATIONS

BORE AND/OR ENCASE

12.1 SCOPE

This work shall consist of furnishing and installing steel encasement pipes for potable water and sanitary sewer lines by boring, jacking, or open cut methods.

12.1.A Quality Assurance/Submittals

12.1.A.1 Submit five copies of certified mill test report on steel encasement pipe.

12.2 GENERAL

The CONTRACTOR shall comply with the previously obtained permits and approvals for completion of this work. Copies of the permits and/or approvals are reproduced in the Permits section of this document.

12.3 MATERIALS

12.3.1 Encasement Pipe: Encasement pipe shall be steel, plain end, uncoated, unwrapped, have continuously welded joints and have a yield point strength of 35,000 psi and conform to AWWA Specifications C200. The minimum wall thickness of the pipe shall be as indicated in the Detail Drawings.

In general, the inside diameter of the encasement pipe shall be 4 inches greater than the largest outside diameter of the carrier pipe. The Detail Drawings provide a table from which required encasement pipe diameters may be derived.

Field welding of encasement pipe shall be performed by a certified welder in accordance with the requirements of AWWA Specification C206-82.

12.3.2 Grout: Grout used to seal the annulus between the excavation and the encasement pipe shall be a 1 to 2 Portland Cement Grout meeting the requirements of Section 601 of the publication Standard Specifications for Road and Bridge Construction (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

12.3.3 Casing Skids: Casing skids shall be equal to stainless steel casing spacers manufactured by Cascade

Waterworks Mfg. Co. of Yorkville, Illinois. Spacer shall consist of a bolt on T-304 stainless steel shell with runners of ultra high molecular weight polymer.

12.4 INSTALLATION - BORE AND JACK

No distinction shall be made between boring through earth or boring through rock. The CONTRACTOR shall conduct his own investigation of subsurface conditions and shall base his bid on his own findings.

The jacking will be allowed in one direction only. The installation procedure must provide for the placement of the encasement pipe concurrently with the removal of the soil.

Grouting between the excavation and the encasement pipe will be required if ordered by the ENGINEER or if, for any reason, the excavation exceeds one (1) inch larger than the outside diameter of the liner. Grout holes shall be provided in the tunnel lining with a spacing not to exceed four and one-half (4.5) feet measured longitudinally. The location of the holes shall be varied around the periphery of the encasement pipe to suit field conditions which will permit the proper grouting sequence to insure complete filling of void spaces outside the encasement pipe. The CONTRACTOR shall fill all the void space outside the encasement pipe with Portland Cement grout. The machine used for grouting shall permit the application of a pressure up to seventy-five (75) pounds per square inch in excess of any external water pressure. A gage shall be provided which will accurately indicate working pressure and this gage shall be carefully watched during grouting operations. The pressure shall at no time be allowed to exceed that considered safe or which would distort the encasement pipe. Grout pipes shall be one and one-half (1½) inches inside diameter.

The carrier pipe shall be installed after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specifications using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the encasement pipe shall be closed with a removable, water-tight "boot" in a manner acceptable to the OWNER.

12.5 INSTALLATION - OPEN CUT

Where the encasement pipe is placed in open cut, the encasement pipe trenching, bedding, laying, and backfilling shall conform to the requirements of the applicable sections of these Specifications. The carrier pipe shall be installed

after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specification using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the cover pipe shall be closed with a removable, watertight "boot" in a manner acceptable to the OWNER.

12.6 MEASUREMENT AND PAYMENT

12.6.1 Measurement: "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted. "Open Cut Encase for 'X' inch Water Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted.

12.6.2 Payment: Payment for "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Payment for "Open Cut Encase for 'X' inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Such payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Carrier pipe installed in the encasement pipe will be measured and paid for as indicated in the applicable sections of these Specifications.

- THE END -

SECTION XIII

TECHNICAL SPECIFICATIONS

WATER SERVICE RECONNECTIONS

13.1 SCOPE

This specification governs the provision of water service reconnection on mains removed from service. It is not the intent of this project to install new water connections to home users.

13.2 GENERAL

The CONTRACTOR shall provide .75" through 1" water service connections in accordance with this specification. Water service connections for meters in excess of 1" shall be provided by OWNER.

13.3 QUALITY ASSURANCE/SUBMITTALS

13.3.1 Submit five copies of itemized summary of source of manufacture of each item in water service connection. Provide manufacturer's certification of compliance with specification for each item.

13.4 MATERIALS

13.4.1 Service Pipe: Water service pipe shall be 0.75" or 1" seamless copper water tubing Type "K" complying with ASTM-B88 AWWA C800.

13.4.2 Tapping Saddle: Tapping saddles shall be brass band type saddles equal to Ford S70 series for PVC pipe and the Ford 202 series for ductile iron pipe. The saddles shall be threaded to receive the appropriate diameter AWWA corporation stop.

13.4.3 Corporation Stop: Corporation stops shall conform to AWWA C800-84. Corporation stops shall have AWWA CC tapered thread inlets and pack joint or compression outlets for use with copper service line. The stop connections shall be appropriate for the service pipe diameter employed.

13.4.4 Meter Setter: If required, the meter coppersetter

shall be equal to the Ford 70 series V172-7 with 7 inch rise. If a pressure reducing valve is specified, a tandem coppersetter equal to a Ford TV172-7 shall be employed.

13.5 INSTALLATION

13.5.1. Taps: **AT THE REQUEST OF THE MOUNTAIN WATER DISTRICT, THERE SHALL BE NO DRY TAPS.** The taps shall be made in accordance with the manufacturer's directions. Service line shall be protected by 6" of fine sand or gravel as indicated in the detail drawings.

13.5.2 RECONNECTIONS: Contractor shall submit a plan for the reconnection procedure to minimize the duration of loss of service to customers for Owner and Engineer review prior to commencing relocation activity. Contractor shall locate all existing meters and isolation valves.

Work shall be planned to prevent customer outages before 8 a.m. and after 5 p.m.

In general, Contractor shall plug the existing service line and disconnect it from the existing meter base. Contractor shall then promptly connect new service line to existing meter base.

13.6 MEASUREMENT AND PAYMENT

Measurement and payment for this item shall be included within the contractor's bid for '8" DI Water Line, CL 350, PJ' as described in the Bid Schedule. This payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for completion of the work.

- THE END -

SECTION XIV

TECHNICAL SPECIFICATIONS

FIRE HYDRANTS AND BLOW-OFF VALVES

14.1 SCOPE

Provide all labor, tools, materials, and equipment to furnish and install the fire hydrants and blow-off valves as shown on the plans.

14.2 QUALITY ASSURANCE/SUBMITTALS

15.2.1 All hydrants shall be Mueller Company Model A-423. No other hydrant may be used without consent of the OWNER.

14.3 MATERIALS

14.3.1 Hydrant: Hydrants shall conform in all respects to the latest edition of AWWA C502. Hydrant barrel shall have a safety breakage feature above the ground line. All hydrants shall have 6 inch mechanical joint shoe connections, two 2-1/2 inch discharge nozzles and one 4-1/2 inch pumper nozzle with caps fitted with cap chains. Connection threads and operating nuts shall conform to National Standard specifications as adopted by National Board of Fire Underwriters.

Operating nut shall be 1-1/2 inches, and shall open left (counterclockwise). Main valve shall have 5-1/4 inch full opening and be of the compression type opening against water pressure so that the valve remains closed should the barrel be broken off.

Hydrant shall be fully bronze mounted. Main valve shall have a threaded bronze seat ring assembly of such design that it is easily removable by unscrewing from a threaded bronze drain ring. Bronze drain ring shall have multiple ports providing positive automatic drainage as the main valve is opened or closed.

Drainage waterways shall be completely bronze to prevent rust or corrosion.

Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stop shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir protected from weather and waterway with O-ring seals.

Hydrants shall be designed for 250 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drains shall function and there shall be no leakage into the bonnet.

14.3.2 Blow-off: The blow off hydrant shall be equal to an Mueller or Kennedy post hydrant. A 4" resilient wedge gate valve conforming to the requirements of the valving section of these Specifications shall be installed upstream of each post hydrant as illustrated in the detail drawings.

14.4 INSTALLATION

14.4.1 Hydrants shall have the interior cleaned of all foreign matter prior to installation.

14.4.2 Hydrants shall be set plumb with not less than three cubic feet of crushed stone and backed with at least one cubic foot of Class "C" concrete or equivalent. Additionally, $\frac{3}{4}$ " diameter stainless bridle rod collars or megalug restrained joint gland shall be employed for restraint. The hydrant drain holes shall be thoroughly inspected prior to placement of the crushed stone.

14.4.3 A gate valve must be installed in the service lateral of all hydrants and blowoffs.

14.4.4 The hydrants shall be installed with the pumper nozzle facing the main route of access. The vertical distance from the pumper nozzle to the ground shall be 18 inches.

14.4.5 All hydrant parts shall be inspected in open and closed position to verify working conditions prior to backfilling.

14.4.6 Hydrants and blow-offs shall not be set in the flow line of a ditch or drainage way.

14.4.7 Blow-offs shall be installed in accordance with the details presented in the Design Drawings.

14.5 MEASUREMENT AND PAYMENT

14.5.1 Measurement: "Fire Hydrants" in-place, tested and accepted shall be measured "each". "Blow-Offs" in place, tested and accepted shall be measured "each".

14.5.2 Payment: Payment for "Fire Hydrants" and "Blow-Offs" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of hydrants and blow-offs measured. The valve provided with a "Fire Hydrant" shall be measured and paid for under the valving section of these specifications. The valve provided with a "Blow-Off" shall be measured and paid for under the valving section of these specifications. Payment as specified shall be considered full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. Crushed stone backfill and concrete thrust backing are considered incidental to the hydrant installation.

- THE END -

SECTION XV

TECHNICAL SPECIFICATIONS

PAVEMENT REPLACEMENT

15.1 PURPOSE

The purpose of this section is to outline requirements for the proper replacement of roadway and parking lot surfaces damaged through installation of utilities and the construction of new surfaces to serve the completed facilities.

15.2 QUALITY ASSURANCE/SUBMITTALS

- A) All standards, material, methods of installation, equipment and construction shall be in accordance with the current edition of the Kentucky Department of Highways (KYDOH) publication "Standard Specifications for Road and Bridge Construction," except as modified herein.
- B) Submit five copies of the following:
 - 1) Documentation to substantiate compliance with the materials section of this specification.

15.2 GENERAL

Existing paving in roadways, entrances, parking lots, etc. shall be restored to a condition equal to that which existed before the work began and to the satisfaction of the OWNER. In restoring improved surfaces new pavement is required. No permanent surface shall be placed within thirty (30) days after backfilling shall have been completed, except by order of the ENGINEER!

It is a project requirement that the CONTRACTOR furnish a temporary pavement equal in character to the existing pavement damaged by the construction within thirty (30) days of the completion of the trench backfilling. The CONTRACTOR shall maintain this temporary pavement until such time as the CONTRACTOR effects the permanent pavement replacement as set forth herein. CONTRACTOR'S INSTALLATION AND MAINTENANCE OF TEMPORARY PAVEMENT REPLACEMENT SHALL BE AT CONTRACTOR'S SOLE EXPENSE. This project requirement is established to encourage CONTRACTOR to complete permanent pavement replacements at the earliest possible date following backfilling.

15.3 PAVEMENT REPLACEMENT CLASSES

Pavement replacement includes the following types or classes:

- 1) Full Width Bituminous Replacement/Construction.
- 2) Bituminous Pavement Replacement with Concrete Sub-Slab.
- 3) Concrete Pavement Replacement.
- 4) Gravel Surface Replacement.

15.4 MATERIALS

15.4.1 Bituminous Concrete Surface: Bituminous concrete conforming to Sections 401 and 402 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction shall be used for replacement of all existing bituminous surfaces. All bituminous material aggregates, mineral fillers, tack and seal coats shall meet the appropriate materials specifications of the aforementioned Department of Highways publication. Before placing any bituminous surface, the CONTRACTOR shall submit the design plant mix for the ENGINEER'S approval. This submittal shall address both the last date the mix was approved by the Department of Highways and the location where the mix was most recently used.

15.4.2 Concrete Surface: Concrete for pavement replacement shall be a mixture of Portland Cement, fine aggregate, coarse aggregate, with or without air entrainment, as required, combined in the proportions, mixed, and placed as specified for Class "A" concrete in Sections 501 and 601 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

15.4.3 Dense Graded Aggregate: Dense graded aggregate used for a base shall be a durable, crushed limestone meeting the requirements of Section 805 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

15.5 INSTALLATION OF BITUMINOUS SURFACES

15.5.1 General: The two classes of bituminous surface are Full Width Bituminous Pavement Replacement/Construction, and Bituminous Pavement Replacement with Concrete Sub-Slab. The main differences between these classes are as follows:

- a) "Full Width Bituminous Pavement Replacement/Construction" shall be the complete replacement of an existing pavement. The pavement thickness for "Full Width" replacement or construction shall be three (3) inches. The pavement width is subject to the width of the existing paved surface or as specified in the plans.
- b) "Bituminous Pavement Replacement with Concrete Sub-Slab" shall require a 6" concrete sub-slab. The pavement thickness shall be no less than 3 inches. The pavement width shall not exceed the maximum widths as specified in the Detail Drawings.

15.5.2 Base Preparation: The pipe trench shall be backfilled as indicated on the Detail Drawings. This backfill shall be cut back, shaped, graded, and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

For Full Width Pavement Replacement/Construction the base course shall be prepared as follows:

- a. ALL PAVEMENT WHICH HAS BEEN DAMAGED MUST BE REMOVED PRIOR TO PAVEMENT REPLACEMENT OR CONSTRUCTION.
- b. Compact 6" of DGA in pipe trench per the Detail Drawings.
- c. Clean the existing pavement of construction debris (mud, gravel, etc.) This requires brooming!
- d. Potholes, ruts, and other severely deteriorated portions of existing pavement shall be patched with bituminous base.
- e. The cleaned and patched surface shall be jointly inspected by the CONTRACTOR and the ENGINEER. The surface must be accepted in writing by the ENGINEER before tacking operations begin.
- f. The cleaned and patched surface shall be shot with 0.4 lb/sy of RS-2 tack.

15.5.3 Surface Course: If the pavement replacement is "With Concrete Sub-Slab" then the subgrade shall be cut back to accommodate a 6" thick Class "A" concrete sub-slab (concrete shall conform to the applicable specifications herein).

The prepared pipe trench shall be paved with bituminous concrete Class I per the Detail Drawings. For full width construction, the full surface width shall receive a 2" base course and 1" surface course of bituminous concrete Class I per the Detail Drawings.

15.6 INSTALLATION OF CONCRETE SURFACES

15.6.1 Base Course: The pipe trench shall be backfilled as indicated on the Design Drawings. This backfill shall be cut-back, shaped, graded and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

15.6.2 Surface Course: The existing concrete pavement shall be cut-back with a concrete saw the distance as specified on the Design Drawings so that the final surface can be placed in a strip of uniform width. The subgrade shall be shaped, graded and compacted as directed by the ENGINEER. Class "A" concrete as described herein shall be placed to the greater of the existing pavement thickness or 6". The concrete slab shall be reinforced with 6" x 6" No. 4 wire mesh.

15.7 INSTALLATION OF GRAVEL SURFACES

15.7.1 Gravel Pavement Replacement: The pipe trench shall be backfilled as indicated on the Design Drawings. The trench backfill shall be cut-back, shaped, graded and compacted. A 6" course of dense graded aggregate shall then be placed and compacted.

15.8 MEASUREMENT AND PAYMENT

15.8.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

15.8.2 Payment: Payment shall be made at the Lump Sum contract Price as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

SECTION XVI
TECHNICAL SPECIFICATIONS
SEEDING

16.1 SCOPE

The purpose of this section is to outline the requirements for proper seeding of all areas disturbed by construction.

16.2 SUBMITTALS

Submit six copies of documentation demonstrating compliance with the materials requirements of this specification.

16.3 SEEDING AND LANDSCAPING

16.3.1 General: All areas disturbed by construction shall be seeded in accordance with this specification.

16.3.2 Requirements: Seeding shall be accomplished as described hereinafter. Unless otherwise specified by the OWNER, all areas to be seeded shall be left smooth and thickly sown with a mixture of grasses at a rate of not less than 87 pounds per acre. Unless otherwise specified, the mixture shall consist of 60 percent Kentucky Fescue #31, 30 percent Creeping Red Fescue, and 10 percent White Clover. After completion of rough grading in seeding areas, the CONTRACTOR shall apply agricultural limestone at a rate of 4 tons/ac and then re-distribute previously stockpiled site topsoils to a loose depth of 6 inches. The topsoil shall then be fertilized with number 12-12-12 fertilizer at a rate of 1000 pounds per acre. After fertilizer has been distributed, the CONTRACTOR shall disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment at the rate specified. The CONTRACTOR shall protect the seeded area with straw mulch or hay mulch at a rate of two tons per acre. Plastic netting shall be used to anchor the mulch on all slopes steeper than 3:1. All seed shall be certified. Any necessary reseeding or repairing shall be accomplished by the CONTRACTOR prior to final acceptance. If the construction work is brought to completion when, in the opinion of the ENGINEER, the season is not favorable for the seeding of grounds, then the CONTRACTOR shall delay this item of work until the proper season for such seeding as directed by the ENGINEER.

16.3.3 Success and Maintenance: All areas seeded shall have a ninety (90) percent vegetative cover of lawn grasses, free of noxious weeds, at the end of the first growing season. Additionally, no individual area of bare ground, where seeding has been unsuccessful, shall exceed one square yard

in surface area. CONTRACTOR shall be responsible for full expense of corrective seeding necessary to meet this performance criterion. OWNER shall incur no expense for remedial seeding.

16.3.4 Equivalency: The CONTRACTOR may submit an alternate plan for establishment of vegetative cover. However, no alternative revegetation methodology shall be employed without the express written approval of the ENGINEER.

If the CONTRACTOR employs an alternative revegetation methodology, he is still bound by the Success and Maintenance requirements of this specification.

16.4 MEASUREMENT AND PAYMENT

Seeding shall be compensated as a Lump Sum payment item. No measurements will be made for this work. The CONTRACTOR may invoice for seventy five percent (75%) of the Lump Sum amount upon CONTRACTOR'S completion of seeding activities and ENGINEER'S acceptance of same. The CONTRACTOR may not invoice for the remaining twenty-five percent (25%) of the Lump Sum amount until the Success and Maintenance requirements of this specification have been met. Payment in full for "Seeding" shall be considered full compensation for all topsoil redistribution, seedbed preparation, seed, lime, fertilizer, corrective seeding, labor and incidentals furnished pursuant to this section.

- THE END -

SECTION REF

REFERENCE SPECIFICATIONS

CONTENTS

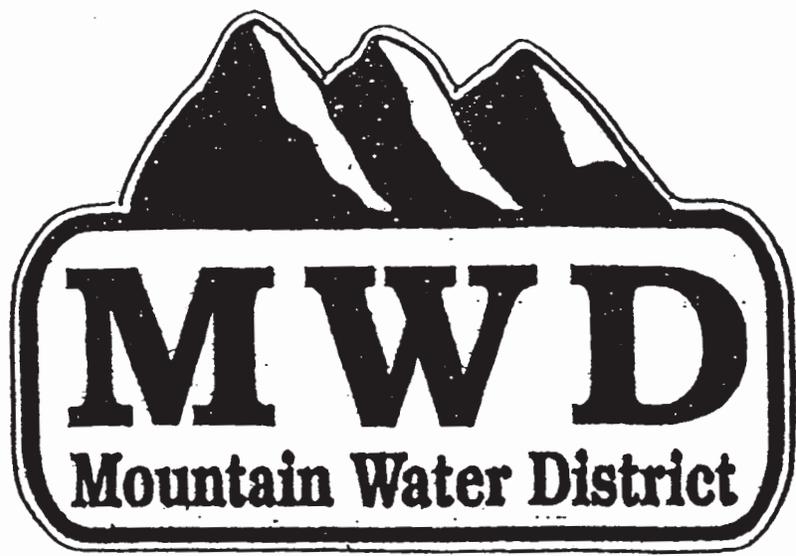
PAGE

AWWA Standard for Disinfecting Water Mains

1 to 15

Mountain Water District Water Distribution Lines
Technical Specifications

I-1 to III-3



**WATER DISTRIBUTION LINES
TECHNICAL SPECIFICATIONS**

TABLE OF CONTENTS

PART I WATER DISTRIBUTION LINES TECHNICAL SPECIFICATIONS

SECTION I GENERAL REQUIREMENTS

	Page
1.1 Statement of Work	I-1
1.2 Preconstruction Conference	I-1
1.3 Inspection	I-1
1.4 Plans, Construction Staking and Cut-Sheets	I-1
1.5 Safety	I-2
1.6 Caution in Excavation	I-2
1.7 Approved Plans	I-2
1.8 Separation of Water Lines and Sanitary Sewers	I-2
1.8.1 General	I-2
1.8.2 Parallel Installation	I-3
1.8.3 Crossing	I-3
1.8.4 Sanitary Sewers or Sewer Manholes	I-4
1.8.5 Surface Water Crossing	I-4
1.8.5.1 Above Water Crossing	I-4
1.8.5.2 Under Water Crossing	I-4
1.9 Bored & Cased Crossing	I-5
1.10 Plans Required on the Job Site	I-5
1.11 Exceptions	I-5
1.12 Future Location of Water Mains	I-5
1.13 Maintenance Period	I-6

**SECTION II
EXCAVATION, INSTALLATION AND BACKFILLING**

	Page
2.1 Classification	II-1
2.2 Clearing	II-1
2.3 Excavation and Preparation of Trench	II-1
2.3.1 Cover	II-1
2.3.2 Bedding	II-1
2.3.3 Width	II-1
2.3.4 Bell Holes	II-1
2.3.5 Rock Excavation	II-2
2.3.6 Excavation to Grade	II-2
2.3.7 Unsuitable Material	II-2
2.3.8 Topsoil Storage	II-2
2.3.9 Trench Protection	II-2
2.3.10 Pumping, Bailing & Draining	II-3
2.3.11 Blasting	II-3
2.3.12 Excavation	II-3
2.4 Installation of Pipe, Fittings and Accessories	II-4
2.4.1 Placement	II-4
2.4.2 Cleaning	II-4
2.4.3 Direction of Laying	II-4
2.4.4 Deflection at Joints	II-4
2.4.5 Setting of Valves, Hydrants and Fittings	II-5
2.4.6 Anchorage	II-5
2.4.7 Testing	II-5
2.4.8 Disinfecting Water Mains	II-7
2.4.8.1 Methods of Chlorine Application	II-7
2.4.8.2 Final Flushing	II-8
2.4.9 Bacteriological Testing	II-8
2.5 Backfilling	II-8
2.5.1 Material	II-8
2.5.2 Initial Backfill	II-9
2.5.3 Backfilling to Grade	II-9
2.5.4 Finished Surfaces	II-9
2.5.5 Seeding	II-9
2.5.6 Backfill Under Pavement	II-9
2.5.7 Replacement of Pavement and Structures	II-10
2.5.8 Clean Up	II-10
2.5.9 Erosion Control	II-10

**SECTION III
MATERIAL**

	Page
3.1 Pipe	III-1
3.1.1 Ductile Iron Pipe	III-1
3.1.2 PVC Pipe	III-1
3.2 Joints and Joining	III-1
3.2.1 Ductile Iron Pipe	III-1
3.2.2 PVC Joints	III-1
3.2.3 Restrained Joints	III-2
3.3 Fittings	III-2
3.3.1 Ductile Iron Fittings	III-2
3.3.2 PVC Fittings	III-2
3.4 Protective Coating	III-2
3.5 Service Connections	III-2
3.5.1 Service Lines	III-2
3.5.2 Corporation Stop	III-3
3.5.3 Curb Stop	III-3
3.6 Gate Valves	III-3
3.7 Valve Boxes	III-3
3.8 Hydrants	III-3
3.9 Concrete	III-4
3.10 Casing Pipe	III-4
3.11 Tapping Saddles	III-4
3.12 Carrier Pipe	III-5

WATER DISTRIBUTION LINES

TECHNICAL SPECIFICATIONS

SECTION I

GENERAL REQUIREMENTS

1.1 Statement of Work

The requirements herein are intended to apply to those items of labor, tools, materials and equipment necessary for the construction of the water distribution lines and appurtenances as shown on the plans and described in the specifications. These requirements will apply to both new and replacement projects.

1.2 Preconstruction Conference

Prior to the start of any construction, the Contractor (and Developer if the project is in a subdivision and the work is being done for the DEVELOPER to be turned over to the District at completion of construction) shall attend a conference at the project site with the District Inspector and the Design Engineer. At this meeting, a general construction schedule will be developed so that the District inspection and testing services can be planned. The CONTRACTOR'S Job Foreman will be designated at this meeting, and communication at the job site between the District representative and the CONTRACTOR shall be through this individual.

1.3 Inspection

All construction work for the Utility or work done for or by a DEVELOPER that will connect to the District water system shall be subject to inspection and approval by the District Inspector. No water line shall be installed and covered without approval of the District Inspector. Sufficient notice (Preferably 3 District working days) shall be given prior to the requirement for inspection by the District Inspector. The District Inspector shall also make periodic inspections throughout the project.

1.4 Plans, Construction Staking and Cut-Sheets

The CONTRACTOR shall have on the job site at all times at least one individual who is competent to read and understand the plans.

1.5 Safety

The CONTRACTOR will provide adequate protection to safeguard and protect the public and workmen when working on public right-of-ways and property.

The CONTRACTOR shall be subject to inspection by the designated Safety Inspector, and will be required to abide by the Safety Inspector's recommendations and will be subject to work stoppage if compliance is not made.

1.6 Caution in Excavation

The CONTRACTOR shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, both known and unknown, may be determined.

The location of existing underground structures should be determined by the CONTRACTOR enough in advance of the pipe-laying to provide for a change of design alignment by the Design Engineer, if required. Any loss or damage to the site or to the underground or surface utility within the site are due to construction activities shall be borne by the CONTRACTOR.

1.7 Approved Plans

No work shall commence on any water system until the CONTRACTOR has in this possession a complete set of approved plans prepared by a professional Engineer, registered in Kentucky, whose signed seal shall appear on each plan sheet. Each set of plans shall also be approved and signed by the Superintendent of the Mountain Water District. Any significant change from the original approved plans shall require an additional approval from the Superintendent. Verbal approval from the District Inspector shall decide whether a change is a minor change or a significant change.

1.8 Separation of Water Lines and Sanitary Sewers

1.8.1 General

The following factors shall be considered in providing adequate separation:

- a. Materials and types of joints for water and sewer pipes,
- b. Soil conditions,

- c. Service branch connections into the water line and sewer lines,
- d. Compensating variations in the horizontal and vertical separations.
- e. Space for repairs and alterations of water and sewer pipe,
- f. Offsetting of pipes around manholes.

1.8.2 Parallel Installation

- a. **Normal Conditions** - Water lines shall be laid at least ten feet horizontally from a sewer or sewer manhole whenever possible, the distance shall be measured edge-to-edge.
- b. **Unusual Conditions** - When local conditions prevent a horizontal separation of ten feet, the water line may be laid closer to a sewer or sewer manhole provided that:
 - 1. The bottom of the water line is at least 18 inches above the top of the sewer.
 - 2. Where this vertical separation cannot be obtained, the sewer shall be constructed of AWWA approved ductile iron water pipe, pressure-tested in place to 50 psi without leakage prior to backfilling.
 - 3. The sewer manhole shall be of watertight construction tested in place.

1.8.3 Crossing

- a. **Normal Conditions** - Water lines crossing sewers shall be laid to provide a separation of at least 18 inches between the bottom of water line and the top of the sewer whenever possible.
- b. **Unusual Conditions** - When local conditions prevent a vertical separation described in 1.8.3a, the following construction shall be used:
 - 1. Sewers passing over or under water lines shall be constructed of the materials described in 1.8.2.b2.
 - 2. Water lines passing under sewers shall, in addition, be protected by providing:

- a. A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water line.
- b. Adequate structural support for the sewers to prevent excessive deflection of the joints and settling on and breaking water line.
- c. That a joint of the water line be centered at the point of the crossing so that joints shall be equidistant and as far as possible from the sewer.

1.8.4 Sanitary Sewers or Sewer Manholes

No water pipes shall pass through or come in contact with any part of a sewer or sewer manhole.

1.8.5 Surface Water Crossing

Surface water crossings, both over and under water, shall be discussed with the Design Engineer before final plans are prepared.

1.8.5.1 Above Water Crossing

There shall be no above-water crossings allowed.

1.8.5.2 Under Water Crossing

- a. The pipe shall be of a special construction, having flexible watertight joints.
- b. Valves shall be provided at both ends of the water crossing so that the section can be isolated for tests or repair; the valves shall be easily accessible and not subject to flooding.
- c. All water pipe and flexible watertight joints lying below the water table shall be concrete encased.
- d. Permanent taps shall be made for testing and locating leaks. For stream crossings, a standard meter box, cover and copper setter shall be installed on the stream side nearest the source of supply.

1.9 Bored and Cased Crossings

When casing pipe is required for highways, railroad or other crossings, the project shall be completed in accordance with all applicable federal, state, and local regulations. In the case of railroad crossings, the project shall comply further with regulations established by the specific railroad company. In general, boring will be permitted for casing diameters through 36 inches with maximum length of about 175 feet, jacking for diameters 30 inches through 60 inches with lengths of about 200 feet; and tunneling for pipes 48 inches and larger for longer lengths. Spacers shall be used, as shown on drawing MW-11, and rubber boots to seal each end of casings.

1.10 Plans Required on the Job Site

The CONTRACTOR shall keep at the job site at all times two sets of approved plans and one set of project specifications shall be required.

1.11 Exceptions

Exceptions may be made to these specifications in cases where engineering data is presented to the District by a registered Engineer which show the suitability of some alternate method or material. Such a request for approval of an exception shall be made in writing, properly documented, to the District. The responsibility and authority for granting an exception to these specifications shall rest with the District.

1.12 Future Location of Water Mains

In order that PVC water mains may be located in the future and that all mains be protected from excavating equipment damaging the line, a metallic tape and locator wire shall be laid on top of the first lift being 12 inches over the crown of the pipe. The tape shall be continuous for the entire length of the pipe laid including all branches and junctions. This tape shall have a printed warning indicating the utility located beneath it. In addition to warning tape, there shall be installed a 14 gage locator wire continuous throughout the project. The wire shall be pulled in all valve boxes and hydrant areas.

1.13 Maintenance Period

After acceptance of the constructed water facilities and a complete set of as-built plans have been received by the District, the water facilities may be placed into service. The contractor shall be

responsible for the maintenance of the facilities for a period of not less than twelve (12) months. This period shall commence after formal acceptance of the water facilities by the District. The contractor shall repair any and all defects as determined by the District in the facilities that occur during the prescribed period prior to final acceptance of the new facilities into the District water system and maintenance responsibilities by the District. If such repairs are made the warranty shall extend to a period of one (1) year from the date of repair on said area.

The District may, at its option, make repairs during the warranty period if an emergency exists, i.e., loss of service to customers, or, if in the opinion of the Superintendent of Operations Manager, contractor could not begin repairs within 2 (two) hours. Contractor will reimburse the District for all costs associated with said repairs and overhead and administrative costs.

TECHNICAL SPECIFICATIONS

SECTION II

EXCAVATION, INSTALLATION AND BACKFILLING

2.1 Classification

Excavation shall be unclassified regardless of material encountered.

2.2 Clearing

Only that portion of the right-of-way easement actually needed for construction shall be cleared, unless directed otherwise by the INSPECTOR. In no case shall clearing of debris from clearing operations be taken past right-of-way easement lines into private property. Areas disturbed by construction operations shall be protected from erosion by suitable methods outlined by the Utility.

2.3 Excavation and Preparation of Trench

2.3.1 Cover

Pipe shall have a minimum cover of 36", unless otherwise shown on the plans and approved.

2.3.2 Bedding

Generally bedding will be Type 1 as depicted on Detail Sheet MW-5 for All Water Mains. Alternate types of bedding may be required due to special soil or load conditions and shall be specified by the Design Engineer or District.

2.3.3 Width

Width shall be sufficient to allow laying without walking or standing on the pipe and shall not be less than 6" on each side of the pipes largest diameter.

2.3.4 Bell Holes

Bell holes shall be excavated to accommodate each bell.

2.3.5 Rock Excavation

Ledge rock, boulders, and large stones shall be removed to provide a clearance of at least 6" below and on each side of all pipe valves and fittings. Before the pipe is laid, the subgrade shall be made by backfilling with approved material and shall be tamped and graded as specified in Section 2.3. No blasting shall be permitted.

2.3.6 Excavation to Grade

The trench shall be excavated so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes, except that it will be permissible to disturb and otherwise damage the finished surface over a maximum length of 18 inches near the middle of each length of pipe by the withdrawal of pipe slings or other lifting tackle. Any specified grade shall be corrected with approved material, thoroughly compacted as directed by the INSPECTOR. The finished subgrade shall be prepared accurately by means of hand tools.

The subgrade beneath the centerline of the pipe shall be finished to within 0.03 feet of a straight line between pipe joints or batter boards, and all tolerances shall be above the specified grade.

2.3.7 Unsuitable Material

Wet or otherwise unsuitable soil at the subgrade shall be removed and replaced with approved sound materials. Excess or unsuitable material shall be disposed of by the CONTRACTOR.

2.3.8 Topsoil Storage

Topsoil to be used in backfilling shall be stockpiled separately from other backfill materials.

2.3.9 Trench Protection

The CONTRACTOR shall furnish and erect such sheathing, bracing and shoring, and shall furnish necessary signs, barricades and temporary lighting as may be pertinent for the protection of his work, employees, the public, adjacent structures and to guard against contingencies which might give rise to delays in the work. Sheathing left in place shall be at the CONTRACTOR'S expense. Responsibility for preservation of trench banks and other excavated spaces and the prevention of injury to any persons or property shall rest entirely with the CONTRACTOR.

2.3.10 Pumping, Bailing & Drainage

The CONTRACTOR shall remove by pumping, bailing, or other appropriate means any damaging water which may accumulate or be found in the trenches or other excavations and shall form dams, flumes or effect other means to keep the excavations clear of water while work is in progress.

2.3.11 Blasting

No Blasting shall be permitted.

2.3.12 Excavation in Pavement

When pavement must be cut, the cut shall be made in a straight line, parallel to the pipe and 6 inches wider than the trench, on each side, so that an undisturbed shoulder will be provided under the new work. Sidewalks or curb and gutter disturbed by construction shall be removed and replaced at existing joints. Cutting shall be done neatly so that a uniform, straight joint will result to provide a bond with the original concrete or pavement.

Where trenches cross streets, not more than one-half of the street width shall be disturbed at one time, and the first trench opening shall be restored to satisfactory travelable condition before the second half is excavated. Placement of excavated material on existing pavement shall be avoided wherever possible, and when so placed, the pavement shall be satisfactorily cleaned by an approved method. No cleated equipment shall be used on pavements. Street drainage shall not be clogged and shoulders and ditches affected by trenching operations shall be maintained in satisfactory condition. Entrances shall not be blocked except for short periods, and ingress and egress to adjacent property shall be maintained at all times.

Traffic shall not be blocked or re-routed without permission from the Kentucky Department of Transportation, County, or other governing agencies.

Detail Sheet MW-10 exhibits acceptable method of pavement replacing methods.

2.4 Installation of Pipe, Fittings and Accessories

2.4.1 Placement

Pipe shall be placed in the trench in such a manner as to prevent damage to pipe end protective coatings and linings. Under no circumstances shall pipe be dropped or dumped into the trench.

2.4.2 Cleaning

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in line. Spigot and bell ends of pipe and gaskets shall be cleaned and lubricated according to the manufacturer's instructions. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug.

2.4.3 Direction of Laying

Pipe shall be laid with bell ends facing in the direction of laying, unless directed otherwise by the DESIGN ENGINEER. Where pipe is laid on grade of 10 percent or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe upgrade.

2.4.4 Deflection at Joints

Maximum deflection for mechanical joints and push-on joints shall be as follows:

Pipe Size	Mechanical Joint Allowable Deflection in Inches		Push-On Allowable Deflection in Inches	
	Lengths 18'	20'	Lengths 18'	20'
4"	31	35	19	21
6"	27	30	19	21
8"	20	22	19	21
10"	20	22	19	21
12"	20	22	19	21

2.4.5 Setting of Valves, Hydrants, and Fittings

A valve box and marker shall be provided for every valve. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed. Hydrants shall be set so that the center of the outlet is 16 to 18 inches above finished grade when connected to the main and shall be tied to main or anchored to control thrust. Provide at least 3 C.F. of crushed stone or gravel under base to allow drainage from the hydrant drain valve. Fire hydrants shall not be set where seasonal groundwater table or surface flooding, as determined by the District, will prevent drainage from the hydrant barrel. Valve boxes and fire hydrants shall be installed in accordance with Standard Detail Sheets MW-1 and MW-3.

2.4.6 Anchorage

Pressure pipe lines shall be protected against joint pulling or thrust damage by suitable anchors, braces, or tie rods installed at direction changes effected by fittings and all other critical points (i.e., in-line valves, etc.). Thrust blocks shall be of the size indicated on the drawings and shall bear on solid undisturbed earth.

2.4.7 Testing

CONTRACTOR shall make all preparation, furnish all equipment, and shall supply the labor for all tests. Pressure and leakage tests shall be in accordance with AWWA C.600, Section 4.1 and 4.2. Test pressure shall be a minimum of 150 psi or 50 psi above the standard operating pressure or 67% of the pipe rating whichever is greater. In addition, the hydrostatic test boundaries shall be each valved section of the waterline and each valve shall be as a minimum subjected to test pressure on one side. Allowable leakage shall not be greater than that determined by the following formula:

1 gallon per inch of pipe diameter per mile per 24 hours

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test in pounds per square inch gauge.

The pressure test shall be performed first, and shall be for a period of at least 24 hours with pressure and metering charts provided to the District. The valved section of pipe under consideration shall be slowly filled with water and brought to the specified pressure by means of a pump. Before applying the specified test pressure, all air shall be expelled from the pipe.

The leakage test shall be conducted after the pressure test has been satisfactorily completed. The duration of each leakage test shall be twenty-four hours. The allowable leakage shall be as shown in the following table:

Allowable Leakage per 1000 ft. of Pipeline*—gph

Avg. Test Pressure	Nominal Pipe Diameter—In.													
	3	3	4	6	8	10	12	14	16	18	20	24	30	36
450	0.32	0.43	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73
400	0.30	0.41	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41
350	0.28	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.31	5.06
300	0.26	0.39	0.51	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68
275	0.25	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48
250	0.24	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27
225	0.23	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05
200	0.21	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82
175	0.20	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58
150	0.19	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31
125	0.17	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.55	1.68	2.01	2.52	3.02
100	0.15	0.23	0.30	0.45	0.59	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70

**For pipe with 18 ft. nominal lengths. To obtain the recommended allowable leakage for pipe with 20 ft. nominal lengths, multiply the leakage calculated from the table by 0.9. If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.*

The District's Inspector shall observe all tests. If the pipe fails to meet test requirements, all leaks shall be repaired and defective pipe repaired or replaced by the CONTRACTOR. The test shall be repeated until satisfactory results are obtained.

The CONTRACTOR shall meter all flushing water and report quantity to the

INSPECTOR.

2.4.8 Disinfecting Water Mains

Water mains and accessories shall be disinfected in accordance with AWWA C.651. The CONTRACTOR shall have on site a set of the most recent AWWA Standards. Care shall be taken to minimize entrance of foreign material into pipe, fittings and valves. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug. The main shall be flushed prior to disinfection with sufficient flow to produce a velocity of 2.4 fps. No site for flushing shall be chosen unless it has been determined that drainage is adequate at the site.

2.4.8.1 Methods of Chlorine Application

- a. Continuous Feed Method - Potable water shall be introduced into the pipe line at a constant flow rate. Chlorine shall be added at a constant rate to this flow so that the chlorine concentration in the water in the pipe is at least 50 mg/l. The chlorinated water shall remain in the pipe line at least 24 hours, after which, the chlorine concentration in the water shall be at least 25 mg/l. All valves and appurtenances shall be operated while the chlorinated water remains in the pipe line. Other methods must be approved by the District.
- b. Slug Method if approved by the District - Potable water shall be introduced into the pipe line at a constant flow rate. This water shall receive a chlorine dosage which will result in a chlorine concentration of 100 mg/l in a "slug" of the water. The chlorine shall be added long enough to insure that all portions of the pipe are exposed to the 100 mg/l chlorine solution for at least 3 hours. The chlorine residual shall be checked at regular intervals not to exceed 2000 feet to insure that adequate residual is maintained. As the chlorinated water passes valves and appurtenances, they shall be operated to insure disinfection of these appurtenances.
- c. Tablet Method if approved by the District - This method shall not be used if nonpotable water or foreign materials have entered the lines or if the water temperature is below 5°C (41°F).

The tablets shall be placed in each section and in all appurtenances. Enough tablets shall be used to insure that a chlorine concentration of 25 mg/l is provided in the water. They shall be attached by an adhesive to the top of the pipe sections and crushed or rubbed in all appurtenances. The adhesive shall be Permatex No. 1 or an alternative approved by the District. The velocity of the potable water in the pipe line shall be less than 1 ft/sec. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the pipe

line. The CONTRACTOR may then proceed with adequate testing and flushing to make the line usable.

2.4.8.2 Final Flushing

Sites for flushing shall be chosen that are determined to have adequate drainage. In addition, special precautions shall be taken to prevent damage to aquatic life in receiving waters, from the heavily chlorinated waters. Flushing sites should be located as far from receiving waters as possible. Federal, state, and local regulations regarding toxic wastes must be followed. If necessary, dechlorination of the flushing water should be provided prior to discharge.

2.4.9 Bacteriological Testing

After final flushing and before the water main is placed in service, a minimum of two consecutive samples shall be collected at 24 hour intervals, for each section of pipe not exceeding 2000 feet throughout the length of pipe line. The samples shall be tested, by a laboratory chosen by the District, for bacteriologic quality and shall show the absence of coliform organisms.

2.5 - Backfilling

2.5.1 Material

All backfill material shall be free from mud, refuse, construction debris, organic material, boulders, rock over 4 inches, frozen or otherwise unsuitable material. From one foot above the top of the pipe to the original ground elevation, however, material containing stones up to 8 inches in their greatest dimension may be used, unless otherwise specified. The CONTRACTOR may backfill with the excavated material provided it meets the conditions as stated above.

2.5.2 Initial Backfill

All trenches shall be backfilled by hand with approved material in layers not exceeding 3 inches, from the bottom of the trench to the center line of the pipe. Material shall be deposited on both sides of the pipe simultaneously and compacted into place by tamping. From the center line of the pipe to a depth of 1 foot above the pipe the trench shall be backfilled by hand or by approved mechanical methods but in either case thoroughly tamped. In no case shall any particle size be larger than 3/4" in diameter in initial backfill.

2.5.3 Backfilling to Grade

The remainder of backfilling shall be carried up evenly on both sides of the trench in increments of twelve inches. Each layer of earth shall be compacted into place by tamping, before the next layer is applied. Damage to pipe lines or other structures resulting from compaction shall be corrected by the CONTRACTOR.

2.5.4 Finished Surfaces

Uniformly smooth grading of disturbed areas shall be required after backfill and compaction. Finished surfaces shall not be more than 0.10 feet above or below the original grade or cross section. Ditches and gutters shall be finished to drain readily. In grass or lawn areas, the last four inches of compacted fill will consist of topsoil or an approved soil which will support a turf growth after fertilizing and seeding. Settlement or other damage that occurs prior to acceptance of this work shall be repaired and grades satisfactorily re-established.

2.5.5 Seeding

All lawn and grass areas disturbed shall be fertilized with a 5-10-5 fertilizer at the rate of 35 pounds per 1000 square feet worked in by harrow or rake at least 48 hours prior to seeding. All seed shall comply with applicable State and Federal seed laws. The seed mixture shall be a combination of rapid germinating annual grasses and perennial grasses and shall be applied at the rate of 6 pounds per 1000 square feet. Adequate rolling shall follow to compact the seeded areas.

2.5.6 Backfill Under Pavement

Backfilling of trenches under existing or proposed pavement shall be in layers of not more than 12 inches in thickness, and each layer shall be compacted to a minimum of 95 percent density as compared to density of the same material when tested in accordance with AASHTO Specification T-99. Compaction shall be by pneumatic tampers or other approved methods. Compaction by water will not be permitted under pavement. All material under the pavement shall consist of aggregate base material meeting the requirements of Kentucky Department of Highways, Standard Specifications for Road and Bridge Construction, latest edition. This material shall be thoroughly and uniformly tamped with pneumatic tampers or other approved methods. Moisture content shall be within 20 percent of optimum. All moisture-density tests required by Mountain Water District shall be performed by Laboratories approved by the District and the CONTRACTOR shall bear the costs of all testing. The CONTRACTOR will be responsible for and shall repair any settlement in the backfill or pavement for a period of one year after completion of the work.

2.5.7 Replacement of Pavement and Structures

The CONTRACTOR shall restore all pavement, sidewalks, curbing, gutters, shrubbery, fences, poles, or other property and surface removed or disturbed as a part of the work to a condition equal to or better than before the work began.

2.5.8 Clean Up

All surplus materials, tools, temporary structures, dirt, rubbish, rock and excess earth from the excavation shall be removed at the completion of construction and the site left in a clean condition.

2.5.9 Sediment Control

The CONTRACTOR will be responsible for control of siltation and erosion from the Project within the Project limits. Control shall include all necessary measures to minimize the deposition of materials in downstream areas.

TECHNICAL SPECIFICATIONS

SECTION III

MATERIAL

3.1 Pipe

Water mains and lateral pipe shall be one of the following materials, at the CONTRACTOR'S option, except where otherwise indicated. The CONTRACTOR shall indicate at the time of bidding the type of pipe to be installed.

3.1.1 Ductile Iron Pipe

Of Grade 60-42-10, centrifugally cast in accordance with ANSI/AWWA C151/A21.51-91 shall be used. Pipe class shall be as indicated on the drawings, and minimum wall thickness shall be according to ANSI/AWWA C150/A21.50-91. Pipe shall be in nominal 16', 18' or 20' lengths.

3.1.2 PVC Pipe

Polyvinyl Chloride Pipe, Fittings and Joints: PVC water pipe shall conform, at a minimum, to ASTM Specifications D-2241, and shall be pressure class 250. The pipe furnished under ASTM A-2441 shall have a standard dimension ratio of SDR 17 or lower, and shall be rated to a working pressure of at least 250 psi at 73.4°F. In no case shall PVC pipe be utilized in a situation that will subject the pipe to greater than 50% of the rated working pressure of the pipe. In such cases, ductile iron shall be utilized.

3.2 Joints and Joining

3.2.1 Ductile Iron Pipe

Joints shall be mechanical or slip-on as "Bell-Tite", "Tyton", "Grip-Tite", or approved equal, unless otherwise indicated. Joint assembly shall be installed according to the manufacturer's directions and shall comply with ANSI/AWWA C111/A21.11-90.

3.2.2 PVC Joints

Joints shall be of the push-on type conforming to ASTM D3139 and F477

requirements for elastometric-gasket joints. All jointing material and lubricants shall be non-toxic.

3.2.3 Restrained Joints

Provided that a schedule is submitted to the ENGINEER for approval, showing the location and length of pipe run where proposed for use, the CONTRACTOR shall have the option of using US Pipe "Field-Loc", Meghug 1400 or approved equal joint. Assembly, including allowed deflection, shall be strictly as recommended by the manufacturer. Concrete anchorage shown on the drawings will not be required where such joints are approved for use.

3.3 Fittings

3.3.1 Ductile Iron Fittings

Fittings of Grade 70-50-05 per ASTM A536, shall be of the same type and pressure class as the pipe, except that cast iron fittings of the same general pressure class may be used. Ductile-Iron fittings shall comply with ANSI/AWWA C110/A21.10-93.

3.3.2 PVC Fittings

Fittings shall be ductile iron Mechanical Joint Class 250 conforming to AWWA Specifications C110 for short body ductile iron fittings. Fittings shall be tar-coated outside, and shall receive the standard cement lining with bituminous seal coat on the inside as specified for the ductile iron pipe.

3.4 Protective Coating

Ductile iron pipe and fittings shall be cement lined in accordance with ANSI/AWWA C104/A21.4-90 except that the lining shall be half thickness, commonly referred to as "enameling", allowed by an interior coat of coal tar enamel. Underground pipe, fittings and accessories, and piping in casings shall have an exterior coat of coal tar enamel.

3.5 Service Connections

used. Only one service will be permitted per line.

3.5.2 Corporation Stop

Corporation stops shall be Ford F-1000-3 or approved equal with inlet threads conforming to AWWA C800-66 commonly known as the Mueller thread, and CTS-Pack joint fitting or connection.

3.5.3 Curb Stop

All services exceeding $\frac{3}{4}$ " diameter or 50' in length and all stream crossings shall have curb stop. Curb stops shall have copper inlet and copper outlet, similar to the Ford model #B44-333, B44-444 or approved equal.

3.5.4 All service connections shall be "wet-tapped" with main line at normal operating pressures. No exceptions taken. Detail Sheet MW-8 depicts a Typical Service Connector.

3.6 Gate Valves

Gate valves shall be ductile cast iron, bronze mounted, resilient-seated, fusion bonded epoxy coating inside and out, with brass or bronze non-rizing stems complying with AWWA C509-87. Working pressure shall be at least equal to that of the pipe with which used. Valves shall open left or counter-clockwise. Valves shall be as manufactured by US Pipe model Metro seal 250, Mueller model A-2360 or approved equal.

3.7 Valve Boxes

Valve boxes shall be adjustable cast iron valve boxes of suitable diameter, length, and design shall be furnished and installed for all buried valves. Boxes shall be as the Buffalo Type No. H, 10380 by Mueller, F-2450 by Clow, B-3102 by M & H, or approved equal.

3.8 Hydrants

Fire hydrants shall be traffic type with safety flange protection conforming to AWWA C502-85 and shall have not less than 6 inch inside diameter barrel, 5 inch minimum hydrant valve and a capacity of not less than 1000 gpm with a loss of not more than 2.5 psi through the hydrant. Hydrants shall have a 6 inch mechanical joint connection to the water main; two 2.5 inch hose outlets; and one 4 inch pumper outlet, and be so designed that if broken off, the hydrant valve will remain closed. Direction of opening shall be left (counter-clockwise) and nozzle threadings shall be National Standard. Hydrants shall be a Mueller A24015 or an approved equal hydrant.

inch pumper outlet, and be so designed that if broken off, the hydrant valve will remain closed. Direction of opening shall be left (counter-clockwise) and nozzle threadings shall be National Standard. Hydrants shall be a Mueller A24015 or an approved equal hydrant.

3.9 Concrete

Concrete shall develop 2450 psi and 3500 psi compressive strength at 7 and 28 days, respectively, and be measured, mixed and placed according to the American Concrete Institute Standard Recommended Practice for these operations (ACI 614). Cement shall conform to ASTM C150 for Type I or III. Fine and coarse aggregates shall conform to ASTM C-33. Mixing water shall be clean and free from injurious quantities of oil, acid, alkali or other deleterious substances. Concrete shall be placed with the minimum suitable slope for the particular pour. An air entraining admixture, subject to the ENGINEER'S approval, shall be added to concrete at the mixer, unless air entraining cement is used or unless otherwise indicated in amount sufficient to entrain the percentages of air designated in the following table. Indicated air percentages shall be present at the time when concrete is placed in the forms.

<u>Maximum Aggregate Size</u>	<u>Percent of Air</u>
1-1/2", 2", or 2-1/2"	4% + or - 1%
3/4" or 1"	5% + or - 1%
3/8" or 1/2"	6% + or - 1%

Ready mixed concrete shall be mixed and delivered in compliance with ASTM C-94.

3.10 Casing Pipe

Casing pipe shall conform to the Materials Standards of ASTM Designation A-139 Grade B or approved equal. Only new prime pipe will be permitted. Casing pipe shall be 4" larger than the largest outside diameter of the carrier pipe.

When casing pipe is required for highways or railroad crossings, the project shall be completed in accordance with applicable federal, state, and local regulations. In the case of railroad crossings, the project should comply further with regulations established by the railroad company. In general, boring will be permitted for casing diameters through 36 in., with maximum length of about 175 ft.; jacking for diameters 30 in. through 60 in., with lengths of about 200 ft.; and tunneling for pipes 48 in. and larger for longer lengths.

3.11 Tapping Saddles

All connections to PVC pipe, including service connections, shall be made with approved Ford model S-70 tapping saddle or an approved equal for PVC or Ford model #F202 for ductile iron or approved equal.

3.12 Carrier Pipe

Carrier pipe shall be ductile iron pipe meeting the specifications as outlined in Section 2.3.1.1.

Carrier pipe may be pushed or pulled through the completed casing pipe. Casing spacers should be placed on the carrier pipe to ensure approximate centering within the casing pipe and to prevent damage during installation. Care must be exercised in order to avoid metal-to-metal contact. In order to avoid the transfer of earth and live loads to the carrier pipe, the space between the carrier and casing pipes should not be filled completely. Casing shall be sealed with a rubber boot type seal.

American Water Works Association
ANSI/AWWA C600-93
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AWWA STANDARD
FOR
**INSTALLATION OF DUCTILE-IRON WATER
MAINS AND THEIR APPURTENANCES**



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AMERICAN WATER WORKS ASSOCIATION

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SECTION 4: HYDROSTATIC TESTING

WARNING: The testing methods described in this section are specific for water-pressure testing. These procedures should not be applied for air-pressure testing because of the serious safety hazards involved.

Sec. 4.1 Pressure and Leakage Test

4.1.1 Test restrictions.

Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section.

Test pressure shall not exceed pipe or thrust-restraint design pressures.

The hydrostatic test shall be of at least a 2-h duration.

Test pressure shall not vary by more than ± 5 psi (34.5 kPa) for the duration of the test.

Valves shall not be operated in either direction at a differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the

DUCTILE-IRON MAINS AND APPURTENANCES

rated valve pressure can result in trapped test pressure between the gates of a double-disc gate valve. For tests at these pressures, the test setup should include a provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or fully opened if desired.

The test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

4.1.2 Pressurization. After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test pressure (based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge) shall be applied by means of a pump connected to the pipe. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

4.1.3 Air removal. Before applying the specified test pressure, air shall be expelled completely from the section of piping under test. If permanent air vents are not located at all high points, corporation cocks shall be installed at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place as required by the specifications.

4.1.4 Examination. All exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until satisfactory results are obtained.

4.1.5 Leakage defined. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi (34.5 kPa) of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

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

In inch-pound units,

$$L = \frac{SD\sqrt{P}}{133,200} \quad (\text{Eq 1})$$

Where:

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

In metric units,

$$L_m = \frac{SD\sqrt{P}}{715,317} \quad (\text{Eq 2})$$

Where:

- L_m = allowable leakage, in litres per hour
- S = length of pipe tested, in metres
- D = nominal diameter of the pipe, in millimetres
- P = average test pressure during the leakage test, in kPa

These formulas are based on an allowable leakage of 11.65 gpd/mi/in. (1.079 L/day/km/mm) of nominal diameter at a pressure of 150 psi (1034 kPa).

4.1.6.1 Allowable leakage at various pressures is shown in Tables 6A and 6B.

4.1.6.2 When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in. (1.2 mL/h/mm) of nominal valve size shall be allowed.

4.1.6.3 When hydrants are in the test section, the test shall be made against the main valve in the hydrant.

4.1.7 *Acceptance of installation.* Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discloses leakage greater than that specified in Sec. 4.1.6, repairs or replacements shall be accomplished in accordance with the specifications.

4.1.7.1 All visible leaks are to be repaired regardless of the amount of leakage.

DUCTILE IRON MAINS AND APPURTENANCES

Table 6A Allowable leakage per 1000 ft of pipeline* - gph/ft

Avg. Test Pressure Psi	Nominal Pipe Diameter—in.																	
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54	60	64
450	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.52	4.78	5.73	6.69	7.64	8.60	9.56	10.19
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11	9.01	9.61
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.31	5.06	5.90	6.74	7.58	8.43	8.99
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02	7.80	8.32
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.78	4.48	5.23	6.08	6.72	7.47	7.97
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41	7.12	7.60
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.08	6.76	7.21
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73	6.37	6.80
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.88	3.58	4.17	4.77	5.36	5.96	6.38
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.85	4.41	4.97	5.52	5.88
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53	5.04	5.37
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.80

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
† Calculated on the basis of Eq. 1.

Table 6B Allowable leakage per 300 m of pipeline* - L/h/ft

Avg. Test Pressure kPa	Nominal Pipe Diameter—mm																	
	76	102	152	203	254	305	355	406	457	508	610	762	914	1067	1219	1400	1500	1600
3000	1.84	2.30	3.45	4.59	5.74	6.89	8.04	9.19	10.34	11.49	13.78	17.23	20.67	22.97	27.67	32.16	34.46	36.76
2800	1.78	2.22	3.33	4.44	5.55	6.66	7.77	8.88	9.99	11.10	13.32	16.64	19.97	22.19	26.63	31.07	33.29	35.51
2600	1.71	2.14	3.21	4.28	5.35	6.42	7.48	8.55	9.62	10.69	12.88	16.04	19.25	21.39	25.66	29.94	32.08	34.22
2400	1.64	2.05	3.08	4.11	5.14	6.16	7.19	8.22	9.25	10.27	12.33	15.41	18.49	20.55	24.66	28.76	30.82	32.87
2200	1.57	1.97	2.95	3.93	4.92	5.90	6.88	7.87	8.85	9.84	11.80	14.77	17.70	19.67	23.61	27.54	29.51	31.47
2000	1.50	1.88	2.81	3.75	4.69	5.63	6.56	7.50	8.44	9.38	11.25	14.07	16.88	18.76	22.51	26.26	28.13	30.01
1800	1.42	1.78	2.67	3.56	4.45	5.34	6.23	7.12	8.01	8.90	10.68	13.35	16.01	17.79	21.35	24.91	26.69	28.47
1600	1.34	1.68	2.52	3.36	4.19	5.03	5.87	6.71	7.55	8.39	10.07	12.58	15.10	16.78	20.13	23.49	25.16	26.84
1400	1.26	1.57	2.35	3.14	3.92	4.71	5.49	6.28	7.06	7.85	9.42	11.77	14.12	15.69	18.83	21.87	23.54	25.11
1200	1.16	1.45	2.18	2.91	3.63	4.36	5.08	5.81	6.54	7.26	8.72	10.90	13.08	14.53	17.43	20.34	21.79	23.25
1000	1.06	1.33	1.99	2.65	3.32	3.98	4.64	5.30	5.97	6.63	7.96	9.95	11.94	13.26	15.91	18.57	19.89	21.22
800	0.95	1.19	1.78	2.37	2.97	3.56	4.15	4.74	5.34	5.93	7.12	8.90	10.68	11.86	14.23	16.61	17.79	18.98
600	0.82	1.03	1.54	2.05	2.57	3.08	3.60	4.11	4.62	5.14	6.16	7.70	9.25	10.27	12.33	14.38	15.41	16.44

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
† Calculated on the basis of Eq. 2.

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AWWA STANDARD
FOR
DISINFECTING WATER MAINS



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AMERICAN WATER WORKS ASSOCIATION

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American Water Works Association



ANSI/AWWA C651-92
(Revision of ANSI/AWWA C651-86)

AWWA STANDARD FOR DISINFECTING WATER MAINS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard presents essential procedures for disinfecting new and repaired water mains. All new water mains shall be disinfected before they are placed in service. All water mains taken out of service for inspection, repair, or other activities that might lead to contamination of water shall be disinfected before they are returned to service.

Sec. 1.2 References

This standard references the following documents. The latest current edition of each forms a part of this standard where and to the extent specified herein. In case of any conflict, the requirements of this standard shall prevail.

ANSI^{*}/AWWA B300—Standard for Hypochlorites.

ANSI/AWWA B301—Standard for Liquid Chlorine.

Simplified Procedures for Water Examination. AWWA Manual M12. AWWA, Denver (1978).

Standard Methods for the Examination of Water and Wastewater. APHA,[†] AWWA, and WEF.[‡] Washington, D.C. (18th ed., 1992).

Additional materials relating to activity under this standard include the following:

Chlorine Manual—Chlorine Institute Inc.[§]

Introduction to Water Treatment. WSO Series, Vol. 2. AWWA, Denver (1984).

^{*}American National Standards Institute Inc., 11 W. 42nd St., New York, NY 10036.

[†]American Public Health Association, 1015 15th St. N.W., Washington, DC 20005.

[‡]Water Environment Federation, 601 Wythe St., Alexandria, VA 22314.

[§]Chlorine Institute Inc., 2001 L St. N.W., Washington, DC 20036.

Material Safety Data Sheets for forms of chlorine used (provided by suppliers).
Safety Practice for Water Utilities. AWWA Manual M3. AWWA, Denver (1990).
Water Chlorination Principles and Practices. AWWA Manual M20. AWWA, Denver (1973).
Water Quality and Treatment. AWWA, Denver (4th ed., 1990).

Sec. 1.3 Record of Compliance

The record of compliance shall be the bacteriological test results certifying the water sampled from the new water main to be free of coliform bacteria contamination, and to be equal to or better than the bacteriologic water quality in the distribution system.

SECTION 2: FORMS OF CHLORINE FOR DISINFECTION

The forms of chlorine that may be used in the disinfection operations are liquid chlorine, sodium hypochlorite solution, and calcium hypochlorite granules or tablets.

Sec. 2.1 Liquid Chlorine

Liquid chlorine conforming to ANSI/AWWA B301 contains 100 percent available chlorine and is packaged in steel containers usually of 100-lb, 150-lb, or 1-ton (45.4-kg, 68.0-kg, or 907.2-kg) net chlorine weight. Liquid chlorine shall be used only (1) in combination with appropriate gas-flow chlorinators and ejectors to provide a controlled high-concentration solution feed to the water to be chlorinated; (2) under the direct supervision of a person who is familiar with the physiological, chemical, and physical properties of liquid chlorine, and who is trained and equipped to handle any emergency that may arise; and (3) when appropriate safety practices are observed to protect working personnel and the public.

Sec. 2.2 Sodium Hypochlorite

Sodium hypochlorite conforming to ANSI/AWWA B300 is available in liquid form in glass, rubber-lined, or plastic containers typically ranging in size from 1 qt (0.95 L) to 5 gal (18.92 L). Containers of 30 gal (113.6 L) or larger may be available in some areas. Sodium hypochlorite contains approximately 5 percent to 15 percent available chlorine, and care must be taken to control conditions and length of storage to minimize its deterioration. (Available chlorine is expressed as a percent of weight when the concentration is 5 percent or less, and usually as a percent of volume for higher concentrations. $\text{Percent} \times 10 = \text{grams of available chlorine per litre of hypochlorite.}$)

Sec. 2.3 Calcium Hypochlorite

Calcium hypochlorite conforming to ANSI/AWWA B300 is available in granular form or in 5-g tablets, and contains approximately 65 percent available chlorine by weight. The material should be stored in a cool, dry, and dark environment to minimize its deterioration.

SECTION 3: BASIC DISINFECTION PROCEDURE

The basic disinfection procedure consists of

1. Preventing contaminating materials from entering the water main during storage, construction, or repair.
2. Removing, by flushing or other means, those materials that may have entered the water main.
3. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.
4. Protecting the existing distribution system from backflow due to hydrostatic pressure test and disinfection procedures.
5. Determining the bacteriological quality by laboratory test after disinfection.
6. Final connection of the approved new water main to the active distribution system.

SECTION 4: PREVENTIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION

Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing such organisms. It is, therefore, essential that the procedures of this section be observed to assure that a water main and its appurtenances are thoroughly clean for the final disinfection by chlorination. Also, any connection of new water main to the active distribution system prior to receipt of satisfactory bacteriological samples may constitute a cross-connection. Therefore, the new main must be isolated until bacteriological tests described in Sec. 7 of this standard are satisfactorily completed.

Sec. 4.1 Keeping Pipe Clean and Dry

Precautions shall be taken to protect the interiors of pipes, fittings, and valves against contamination. Pipe delivered for construction shall be strung so as to minimize the entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used when it is determined that watertight plugs are not practicable and when thorough cleaning will be performed by flushing or other means.

Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the lower the risk of contamination.

Sec. 4.2 Joints

Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

4 AWWA C651-92

Sec. 4.3 Packing Materials

Yarning or packing material shall consist of molded or tubular rubber rings, rope of treated paper, or other approved materials. Materials such as jute or hemp shall not be used. Packing material shall be handled in a manner that avoids contamination. If asbestos rope is used, it shall be handled in a manner that prevents asbestos from being introduced into the water-carrying portion of the pipe.

Sec. 4.4 Sealing Materials

No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in closed containers and shall be kept clean.

Sec. 4.5 Cleaning and Swabbing

If dirt enters the pipe, it shall be removed and the interior pipe surface swabbed with a 1 percent hypochlorite disinfecting solution. If, in the opinion of the purchaser (or the purchaser's representative), the dirt remaining in the pipe will not be removed by the flushing operation, then the interior of the pipe shall be cleaned by mechanical means such as a hydraulically propelled foam pig (or other suitable device acceptable to the purchaser) in conjunction with the application of a 1 percent hypochlorite disinfecting solution to the interior pipe surface. The cleaning method used shall not force mud or debris into the interior pipe-joint spaces and shall be acceptable to the purchaser.

Sec. 4.6 Wet-Trench Construction

If it is not possible to keep the pipe and fittings dry during installation, every effort shall be made to ensure that any of the water that may enter the pipe-joint spaces contains an available-chlorine concentration of approximately 25 mg/L. This may be accomplished by adding calcium hypochlorite granules or tablets to each length of pipe before it is lowered into a wet trench, or by treating the trench water with hypochlorite tablets.

Sec. 4.7 Flooding by Storm or Accident During Construction

If the main is flooded during construction, it shall be cleared of the floodwater by draining and flushing with potable water until the main is clean. The section exposed to the floodwater shall then be filled with a chlorinated potable water that, at the end of a 24-h holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main. After construction is completed, the main shall be disinfected using the continuous-feed or slug method.

Sec. 4.8 Backflow Protection (Optional)*

As an optional procedure (if specified by the purchaser), the new water main shall be kept isolated from the active distribution system by physical separation (see Figure 1) until satisfactory bacteriological testing has been completed and the

*Optional Sec. 4.8 is not included as part of the standard unless specifically identified in the purchaser's specifications.

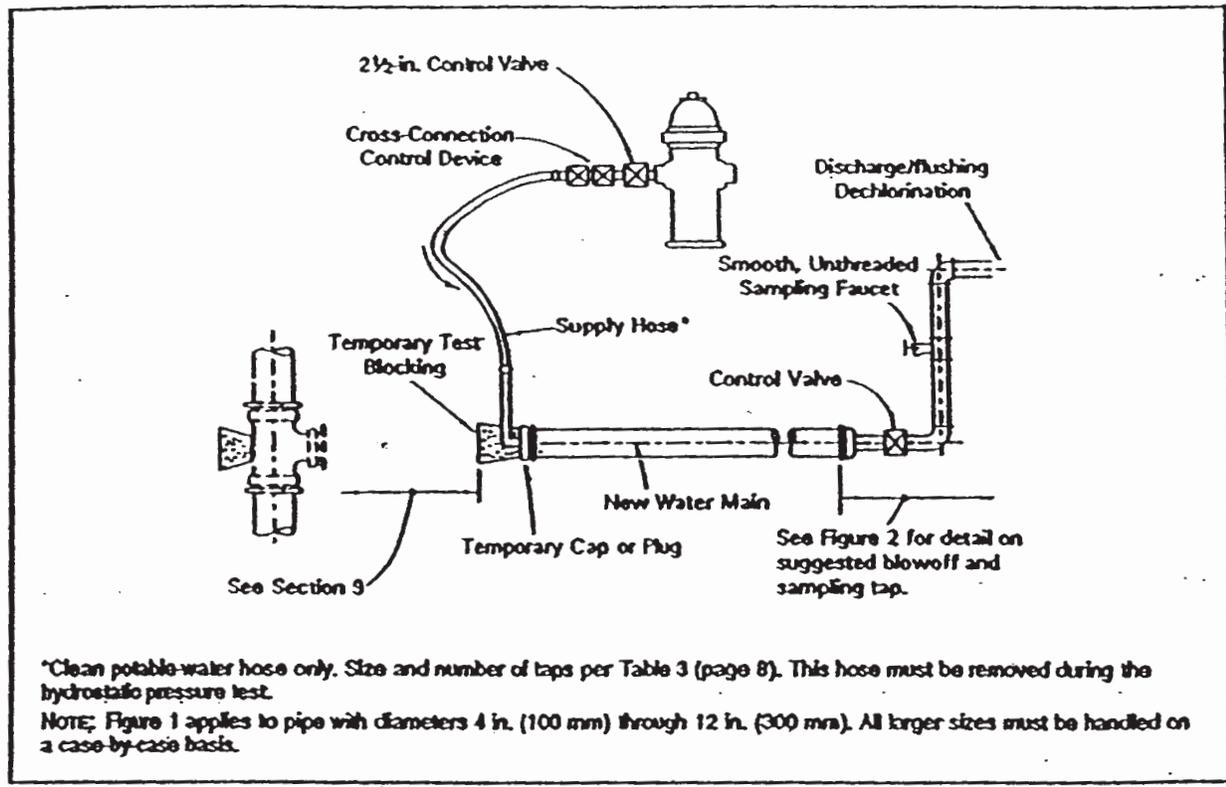


Figure 1 Suggested temporary flushing/testing connection

disinfectant water flushed out. Water required to fill the new main for hydrostatic pressure testing, disinfection, and flushing shall be supplied through a temporary connection between the distribution system and the new main. The temporary connection shall include an appropriate cross-connection control device consistent with the degree of hazard, and shall be disconnected (physically separated) from the new main during the hydrostatic pressure test. It will be necessary to reestablish the temporary connection after completion of the hydrostatic pressure test to flush out the disinfectant water prior to final connection of the new main to the distribution system.

SECTION 5: METHODS OF CHLORINATION

Three methods of chlorination are explained in this section: tablet, continuous feed, and slug. Information in the foreword will be helpful in determining the method to be used. The tablet method gives an average chlorine dose of approximately 25 mg/L; the continuous-feed method gives a 24-h chlorine residual of not less than 10 mg/L; and the slug method gives a 3-h exposure of not less than 50 mg/L free chlorine.

6 AWWA C651-92

Table 1 Ounces of calcium hypochlorite granules to be placed at beginning of main and at each 500-ft interval

Pipe Diameter		Calcium Hypochlorite Granules	
in.	(mm)	oz	(g)
4	(100)	0.5	(14)
6	(150)	1.0	(28)
8	(200)	2.0	(57)
12	(250)	4.0	(113)
16 and larger	(400 and larger)	8.0	(227)

Sec. 5.1 Tablet Method

The tablet method consists of placing calcium hypochlorite granules or tablets in the water main as it is being installed and then filling the main with potable water when installation is completed.

This method may be used only if the pipes and appurtenances are kept clean and dry during construction.

5.1.1 *Placing of calcium hypochlorite granules.* During construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-ft intervals. The quantity of granules shall be as shown in Table 1.

WARNING: This procedure must not be used on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

5.1.2 *Placing of calcium hypochlorite tablets.* During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe. Also, one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of 5-g tablets required for each pipe section shall be $0.0012 d^2L$ rounded to the next higher integer, where d is the inside pipe diameter, in inches, and L is the length of the pipe section, in feet. Table 2 shows the number of tablets required for commonly used sizes of pipe. The tablets shall be attached by a food-grade adhesive.* There shall be no adhesive on the tablet except on the broadside attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

5.1.3 *Filling and contact.* When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a

*Examples of food-grade adhesives are Permatex Form-A-Gasket No. 2 and Permatex Clear RTV Silicone Adhesive Sealant, which are manufactured by Loctite Corporation, Kansas City, KS 66115. These products have both been approved by the US Drug Administration (USDA) for uses that may involve contact with edible products. Neither product has been approved in accordance with NSF 61. Other company products, such as Permatex Form-A-Gasket No. 1, have not received FDA approval.

DISINFECTING WATER MAINS 7

Table 2 Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/L*

Pipe Diameter in. (mm)	Length of Pipe Section, ft (m)				
	13 (4.0) or less	18 (5.5)	20 (6.1)	30 (9.1)	40 (12.2)
Number of 5-g Calcium Hypochlorite Tablets					
4 (100)	1	1	1	1	1
6 (150)	1	1	1	2	2
8 (200)	1	2	2	3	4
10 (250)	2	3	3	4	5
12 (300)	3	4	4	6	7
16 (400)	4	6	7	10	13

*Based on 3.25-g available chlorine per tablet; any portion of tablet rounded to next higher integer.

velocity no greater than 1 ft/s (0.3 m/s). Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for at least 24 h. If the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least 48 h. As an optional procedure (if specified by the purchaser), water used to fill the new main shall be supplied through a temporary connection that shall include an appropriate cross-connection control device, consistent with the degree of hazard, for backflow protection of the active distribution system (see Figure 1).

Sec. 5.2 Continuous-Feed Method

The continuous-feed method consists of placing calcium hypochlorite granules in the main during construction (optional), completely filling the main to remove all air pockets, flushing the completed main to remove particulates, and filling the main with potable water. The potable water shall be chlorinated so that after a 24-h holding period in the main there will be a free chlorine residual of not less than 10 mg/L.

5.2.1 *Placing of calcium hypochlorite granules.* At the option of the purchaser, calcium hypochlorite granules shall be placed in pipe sections as specified in Sec. 5.1.1. The purpose of this procedure is to provide a strong chlorine concentration in the first flow of flushing water that flows down the main. In particular, this procedure is recommended when the type of pipe is such that this first flow of water will flow into annular spaces at pipe joints.

5.2.2 *Preliminary flushing.* Before being chlorinated, the main shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/s (0.76 m/s) unless the purchaser (or purchaser's representative) determines that conditions do not permit the required flow to be discharged to waste. Table 3 shows the rates of flow required to produce a velocity of 2.5 ft/s (0.76 m/s) in commonly used sizes of pipe. Note that flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist flushing at any feasible velocity.

For 24-in. (600-mm) or larger diameter mains, an acceptable alternative to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.

Table 3 Required flow and openings to flush pipelines (40 psi [276 kPa] residual pressure in water main)*

Pipe Diameter in. (mm)	Flow Required to Produce 2.5 ft/s (approx.) Velocity in Main		Size of Tap, in. (mm)			Number of 2½-in. (64-mm) Hydrant Outlets
	gpm	(L/s)	1 (25)	1½ (38)	2 (51 mm)	
4 (100)	100	(6.3)	1	—	—	1
6 (150)	200	(12.6)	—	1	—	1
8 (200)	400	(25.2)	—	2	1	1
10 (250)	600	(37.9)	—	3	2	1
12 (300)	900	(56.8)	—	—	2	2
16 (400)	1600	(100.9)	—	—	4	2

*With a 40-psi (276-kPa) pressure in the main and the hydrant flowing to atmosphere, a 2½-in. (64-mm) hydrant outlet will discharge approximately 1000 gpm (63.1 L/s); and a 4½-in. (114-mm) hydrant outlet will discharge approximately 2500 gpm (160 L/s).

†Number of taps on pipe based on discharge through 5 ft (1.5 m) of galvanized iron (GI) pipe with one 90° elbow.

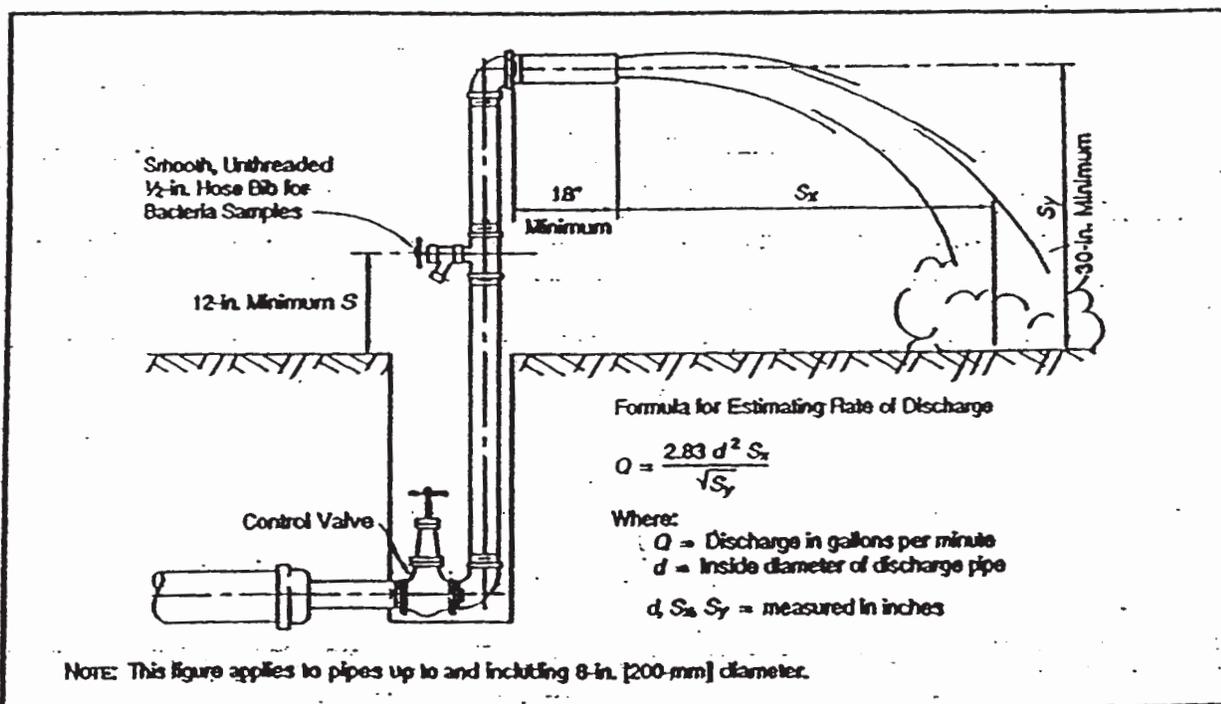


Figure 2 Suggested combination blowoff and sampling tap

5.2.3 Procedure for chlorinating the main.

1. Water supplied from a temporary, backflow-protected connection to the existing distribution system or other approved source of supply shall be made to flow at a constant, measured rate into the newly installed water main. In the absence of a meter, the rate may be approximated by methods such as placing a

pressures that may be created by the pumps. All connections shall be checked for tightness before the solution is applied to the main.

Sec. 5.3 Slug Method

The slug method consists of placing calcium hypochlorite granules in the main during construction, completely filling the main to eliminate all air pockets, flushing the main to remove particulates, and slowly flowing through the main a slug of water dosed with chlorine to a concentration of 100 mg/L. The slow rate of flow ensures that all parts of the main and its appurtenances will be exposed to the highly chlorinated water for a period of not less than 3 h.

5.3.1 *Placing calcium hypochlorite granules.* Same as Sec. 5.2.1.

5.3.2 *Preliminary flushing.* Same as Sec. 5.2.2.

5.3.3 *Chlorinating the main.*

1. Same as Sec. 5.2.3(1).

2. At a point not more than 10 ft (3 m) downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 100 mg/L free chlorine. To ensure that this concentration is achieved, the chlorine concentration should be measured at regular intervals. The chlorine shall be applied continuously and for a sufficient period to develop a solid column, or "slug," of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 mg/L for at least 3 h.

3. The free chlorine residual shall be measured in the slug as it moves through the main. If at any time it drops below 50 mg/L, the flow shall be stopped, chlorination equipment shall be relocated at the head of the slug, and, as flow is resumed, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 mg/L.

4. As the chlorinated water flows past fittings and valves, related valves and hydrants shall be operated so as to disinfect appurtenances and pipe branches.

SECTION 6: FINAL FLUSHING

Sec. 6.1 Clearing the Main of Heavily Chlorinated Water

After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or is acceptable for domestic use.

Sec. 6.2 Disposing of Heavily Chlorinated Water

The environment into which the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, then a neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water. (See appendix B for neutralizing chemicals.) Where necessary, federal, state, provincial, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

Table 4 Chlorine required to produce 25-mg/L concentration in 100 ft (30.5 m) of pipe—
by diameter

Pipe Diameter		100 percent Chlorine		1 percent Chlorine Solution	
in.	(mm)	lb	(g)	gal	(L)
4	(100)	.013	(5.9)	.16	(0.6)
6	(150)	.030	(13.6)	.36	(1.4)
8	(200)	.054	(24.5)	.65	(2.5)
10	(250)	.085	(38.6)	1.02	(3.9)
12	(300)	.120	(54.4)	1.44	(5.4)
16	(400)	.117	(98.4)	2.60	(9.8)

Pitot gauge in the discharge, measuring the time to fill a container of known volume, or measuring the trajectory of the discharge and using the formula shown in Figure 2.

2. At a point not more than 10 ft (3 m) downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 25 mg/L free chlorine. To ensure that this concentration is provided, measure the chlorine concentration at regular intervals in accordance with the procedures described in the current edition of *Standard Methods for the Examination of Water and Wastewater* or AWWA Manual M12, or using appropriate chlorine test kits (see appendix A).

Table 4 gives the amount of chlorine required for each 100 ft (30.5 m) of pipe of various diameters. Solutions of 1 percent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires 1 lb (454 g) of calcium hypochlorite in 8 gal (30.3 L) of water.

3. As an optional procedure (if specified by the purchaser), water used to fill the new main during the application of chlorine shall be supplied through a temporary connection. This temporary connection shall be installed with an appropriate cross-connection control device, consistent with the degree of hazard, for backflow protection of the active distribution system (see Figure 1). Chlorine application shall not cease until the entire main is filled with heavily chlorinated water. The chlorinated water shall be retained in the main for at least 24 h, during which time all valves and hydrants in the treated section shall be operated to ensure disinfection of the appurtenances. At the end of this 24-h period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine.

4. Direct-feed chlorinators, which operate solely from gas pressure in the chlorine cylinder, shall not be used for the application of liquid chlorine. (The danger of using direct-feed chlorinators is that water pressure in the main can exceed gas pressure in the chlorine cylinder. This allows a backflow of water into the cylinder, resulting in severe cylinder corrosion and escape of chlorine gas.) The preferred equipment for applying liquid chlorine is a solution-feed, vacuum-operated chlorinator and a booster pump. The vacuum-operated chlorinator mixes the chlorine gas in solution water; the booster pump injects the chlorine-gas solution into the main to be disinfected. Hypochlorite solutions may be applied to the water main with a gasoline or electrically powered chemical-feed pump designed for feeding chlorine solutions. Feed lines shall be of such material and strength as to safely withstand the corrosion caused by the concentrated chlorine solutions and the maximum

SECTION 7: BACTERIOLOGICAL TESTS

Sec. 7.1 Standard Conditions

After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 h apart, shall be collected from the new main. At least one set of samples shall be collected from every 1200 ft (366 m) of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall be tested for bacteriological quality in accordance with *Standard Methods for the Examination of Water and Wastewater*, and shall show the absence of coliform organisms. A standard heterotrophic plate count may be required at the option of the purchaser (or purchaser's representative).

Sec. 7.2 Special Conditions

If trench water has entered the new main during construction or, if in the opinion of the purchaser (or purchaser's representative), excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 ft (61 m) and shall be identified by location. Samples shall be taken of water that has stood in the new main for at least 16 h after final flushing has been completed.

Sec. 7.3 Sampling Procedure

Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate as required by *Standard Methods for the Examination of Water and Wastewater*. No hose or fire hydrant shall be used in the collection of samples. A suggested combination blowoff and sampling tap useful for mains up to and including 8-in. (200-mm) diameter is shown in Figure 2. A corporation cock may be installed in the main with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

SECTION 8: REDISINFECTION

If the initial disinfection fails to produce satisfactory bacteriological results, the new main may be refushed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sediment that has accumulated in the existing mains. When check samples are taken, it is advisable to sample water entering the new main.

SECTION 9: FINAL CONNECTIONS TO EXISTING MAINS (OPTIONAL)*

As an optional procedure (if specified by the purchaser), water mains and appurtenances must be completely installed, flushed, disinfected, and satisfactory

*Optional Sec. 9 is not included as part of the standard unless specifically identified in the purchaser's specifications.

12 AWWA C651-92

bacteriological sample results received prior to permanent connections being made to the active distribution system. Sanitary construction practices must be followed during installation of the final connection, so that there is no contamination of the new or existing water main with foreign material or groundwater.

Sec. 9.1 Connections Equal To or Less Than One Pipe Length (≤ 18 ft [5.5 m])

As an optional procedure (if specified by the purchaser), the new pipe, fittings, and valve(s) required for the connection may be spray-disinfected or swabbed with a minimum 1 percent solution of chlorine just prior to being installed, if the total length of connection from the end of a new main to the existing main is equal to or less than 18 ft (5.5 m).

Sec. 9.2 Connections Greater Than One Pipe Length (>18 ft [5.5 m])

As an optional procedure (if specified by the purchaser), the pipe required for the connection must be set up aboveground, disinfected, and bacteriological samples taken, as described in Sec. 5 through Sec. 8, if the total length of connection from the end of a new main to the existing main is greater than 18 ft (5.5 m). After satisfactory bacteriological sample results have been received for this "pre-disinfected" pipe, the pipe can be used in connecting the new main to the active distribution system. Between the time that satisfactory bacteriological sample results are received and the time that the connection piping is installed, the ends of this piping must be sealed with plastic wraps or watertight plugs or caps.

SECTION 10: DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

The following procedures apply primarily when existing mains are wholly or partially dewatered. After the appropriate procedures have been completed, the existing main may be returned to service prior to completion of bacteriological testing in order to minimize the time customers are out of water. Leaks or breaks that are repaired with clamping devices while the mains remain full of pressurized water present little danger of contamination and require no disinfection.

Sec. 10.1 Trench Treatment

When an existing main is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from such pollution. Tablets have the advantage in such a situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

Sec. 10.2 Swabbing With Hypochlorite Solution

The interior of all pipe and fittings (particularly couplings and sleeves) used in making the repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.

Sec. 10.3 Flushing

Thorough flushing is the most practical means of removing contamination introduced during repairs. If valve and hydrant locations permit, flushing toward

DISINFECTING WATER MAINS 13

the work location from both directions is recommended. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.

Sec. 10.4 Slug Chlorination

When practical, in addition to the procedures above, the section of main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in Sec. 5.3, except that the dose may be increased to as much as 300 mg/L and the contact time reduced to as little as 15 min. After chlorination, flushing shall be resumed and continued until discolored water is eliminated, and the water is free of noticeable chlorine odor.

Sec. 10.5 Sampling

Bacteriological samples shall be taken after repairs are completed to provide a record for determining the procedure's effectiveness. If the direction of flow is unknown, then samples shall be taken on each side of the main break: If positive bacteriological samples are recorded, then the situation shall be evaluated by the purchaser (or purchaser's representative) who can determine corrective action, and daily sampling shall be continued until two consecutive negative samples are recorded.

SECTION 11: SPECIAL PROCEDURE FOR CAULKED TAPPING SLEEVES

Before a tapping sleeve is installed, the exterior of the main to be tapped shall be thoroughly cleaned, and the interior surface of the sleeve shall be lightly dusted with calcium hypochlorite powder.

Tapping sleeves are used to avoid shutting down the main to be tapped. After the tap is made, it is impossible to disinfect the annulus without shutting down the main and removing the sleeve. The space between the tapping sleeve and the tapped pipe is normally 1/2 in. (13 mm), more or less, so that as little as 100 mg/ft² of calcium hypochlorite powder will provide a chlorine concentration of over 50 mg/L.

APPENDIX A

Chlorine Residual Testing

This appendix is for information only and is not a part of AWWA C651.

SECTION A.1: DPD DROP DILUTION METHOD (FOR FIELD TEST)

The DPD drop dilution method of approximating total residual chlorine is suitable for concentrations above 10 mg/L, such as are applied in the disinfection of water mains or tanks.

Sec. A.1.1 Apparatus

1. A graduated cylinder for measuring distilled water.
2. An automatic or safety pipette.
3. Two dropping pipettes that deliver a 1-mL sample in 20 drops. One pipette is for dispensing the water sample, and the other is for dispensing the DPD and buffer solutions. The pipettes should not be interchanged.
4. A comparator kit containing a suitable range of standards.

Sec. A.1.2 Reagents

1. DPD indicator solution. Prepare as prescribed in *Standard Methods for the Examination of Water and Wastewater* (18th ed.), Section 4500-Cl G, p. 4-62.

Sec. A.1.3 Procedure

1. Add 10 drops of DPD solution and 10 drops of buffer solution (or 20 drops of combined DPD-buffer solution) to a comparator cell.
2. Fill the comparator cell to the 10-mL mark with distilled water.
3. With a dropping pipette, add the water sample one drop at a time, allowing mixing, until a red color is formed that matches one of the color standards.
4. Record the total number of drops used and the final chlorine reading obtained (that is, the chlorine reading of the matched standard).
5. Calculate the milligrams per litre of free residual chlorine as follows:

$$\text{mg/L chlorine} = \frac{\text{reading} \times 200}{\text{drops of sample}}$$

SECTION A.2: HIGH-RANGE CHLORINE TEST KITS

Several manufacturers produce high-range chlorine test kits that are inexpensive, easy to use, and satisfactory for the precision required.

APPENDIX B

Disposal of Heavily Chlorinated Water

This appendix is for information only and is not a part of AWWA C651.

1. Check with the local sewer department for conditions of disposal to sanitary sewer.
2. Chlorine residual of water being disposed will be neutralized by treating with one of the chemicals listed in Table B.1.

Table B.1 Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gal (378.5 m³) of water

Residual Chlorine Concentration mg/L	Chemical Required							
	Sulfur Dioxide (SO ₂)		Sodium Bisulfite (NaHSO ₃)		Sodium Sulfite (Na ₂ SO ₃)		Sodium Thiosulfate (Na ₂ S ₂ O ₃ ·5H ₂ O)	
	lb	(kg)	lb	(kg)	lb	(kg)	lb	(kg)
1	0.8	(.36)	1.2	(.54)	1.4	(.64)	1.2	(.54)
2	1.7	(.77)	2.5	(1.13)	2.9	(1.32)	2.4	(1.09)
10	8.3	(3.76)	12.5	(5.67)	14.6	(6.62)	12.0	(5.44)
50	41.7	(18.91)	62.6	(28.39)	73.0	(33.11)	60.0	(27.22)

Kentucky Transportation
Cabinet Project: 12-9002.00

NOTICE

**DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
NATIONWIDE SECTION 404 PERMIT AUTHORIZATION**

**DEPARTMENT FOR ENVIRONMENTAL PROTECTION
KENTUCKY DIVISION OF WATER
SECTION 401 WATER QUALITY CERTIFICATION**

PROJECT DESCRIPTION: Safety Improvements on KY-632 from KY-194 to 0.037 Mile East of Blackberry Fork (CR-1576) at Mile Point 7.00, Pike County.

The Sections 404 and 401 activities for this project have previously been permitted under the authority of the Department of the Army, Nationwide Section 404 Permit Number 14, *Linear Transportation Projects* (with additional *Kentucky Regional General Conditions*), and the Division of Section 401 Water General Water Quality Certification. For these authorized permits to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Number 14 permit and General Water Quality Certification in a conspicuous location at the project site, with unencumbered public access, for the duration of construction and comply with the general conditions required.

Locations Impacting Water Quality

Station-Location	Description
121+27	Construct a double safety box inlet (24-in) and extend the current pipe by nine feet. The total impact will be 6' × 2' (pipe) and 2.5' × 2' (inlet), an area of 0.0003-acre (pipe) and 0.0001-acre (inlet); a total area of 0.0004-acre. Use of BMP will be implemented during construction to control

Kentucky Transportation
Cabinet Project: 12-9002.00

Station-Location	Description
	sediment runoff through the use of silt fences, hay bales, or other appropriate BMP. Once installation is complete, the bare ground will be seeded with grasses to affect a permanent control for any potential sediment movement. These impacts will occur on an ephemeral UT of Johns Creek that drains an area of approximately 6 acres.
152+00	Install a 72' × 2' pipe for roadside drainage. The impacts will be approximately 92' × 12', an area of 0.025-acre. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion. The associated stream is an intermittent UT of Johns Creek; this stream has a watershed area of 5.5-acres.
154+00	Install a pipe with two drop boxes. The pipe will be 110' × 2', an area of 0.005-acre. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion. The associated stream is an intermittent UT of Johns Creek; this stream has a watershed area of 5.5-acres.
190+44	Extension of existing 8-foot wide RCBC by 4' (so 4' × 8' extension, an area of 0.0007-acre). The culver headwalls will be rebuilt, each 8' × 4', a total impact of 16' × 8', an area of 0.003-acre. Channel lining will be constructed of 4' × 20', an area of 0.002, on the south or outlet side of the culvert. Cumulative area of stream impact is 0.012-acre. The stream is a perennial UT of Johns Creek, and has a watershed area of 260 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
213+00 (37.48557, - 82.29011	Cut into hillside with a 1/2:1 back slope, and reconstruct 4-ft flat bottom roadside drainage ditch. This will impact approximately 30 feet of an ephemeral UT of Johns Creek. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
219+50	Construct a drop box inlet and extend a 24-in corrugated metal pipe (CMP) by 2 feet. This will impact approximately 3 feet of the UT, an area (3' × 2') of 0.0001-acre. The watershed of this stream above the point of impact is approximately 20 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for

Kentucky Transportation
Cabinet Project: 12-9002.00

Station-Location	Description
	erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
228+35	Replace existing 42' × 2' CMP with a 58' × 1'3" storm sewer pipe, and extend it by approximately 16 feet; this is associated with a roadside ditch. The pipe will be connected to a drop box inlet. Replace an existing 24' RCP with a 24" storm sewer pipe. This will require a new impact of 7 feet. This will impact about an intermittent UT of Johns Creek. The area affected is approximately 0.0003-acre. The watershed of this UT above point of impact is approximately 38 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
225+00	Construct extension of existing 48" pipe culvert by 5 feet. This will impact 5 feet of a perennial UT of Johns Creek. The area of stream affected is 0.0003-acre. This stream has a watershed of approximately 74 acres above the point of impact. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
281+70	Extend the existing 18" pipe culvert by about 2.5 feet. This will impact an ephemeral UT of Johns Creek. The area of impact is 2.5' × 1.5', or 0.00009-acre. The area of the watershed above impact is approximately 3.5 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
284+00	Extend the existing 36" pipe culvert by 2.7'. This will impact a perennial UT of Johns Creek. The area of impact approximately 3' × 4', or 0.0003-acre. The watershed above the impact is approximately 14 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
313+44	Extend the existing 4.15' × 8' RCBC by 6 feet on the upstream side and 5 feet on the downstream side of a perennial UT of Johns Creek; construct channel lining at the outlet. The impact loss will be a cumulative 20' × 6' or 0.003-acre. Temporary loss of about 30 feet will occur on the downstream side with the construction of an approximately 20-foot Class III channel lining at the outlet, an area of 30' × 6' or 0.004-acre. The watershed of this UT above the point of impact is approximately 177 acres.

Kentucky Transportation
Cabinet Project: 12-9002.00

Station-Location	Description
	During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
320+67	Extend the 18-inch pipe culver by 7 feet on the inlet side. This will result in a loss of 7' × 1.5', or 0.0002-acre to an intermittent UT of Johns Creek. The area of this watershed above the point of impact is approximately 21 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.
365+50	Extend the 1.5' RCP by 16' (includes headwall) and install a drop box inlet for roadside drainage. This will occur at Blackberry Fork, a perennial tributary of Johns Creek. The impact to this stream will be 16' × 1.5', an area of 0.0006-acre. The Blackberry Fork watershed drains about 481 acres. During construction BMP will be used to control any sedimentation from the necessary construction. This will include such measures as silt fences, hay bales, or other practice for erosion control. Once the construction is complete, the bare ground will be seeded with grasses to affect natural control for any potential erosion.

This project involves work near and/or within Jurisdictional Waters of the United States as defined by the U. S. Army Corps of Engineers; therefore, requiring a Nationwide Number 14 General Section 404 permit. The Division of Water conditionally certified this General Permit. Importantly, one of those conditions regards the use of heavy equipment in any stream channel, or streambed. If there is need to cross the stream channel with heavy equipment, or conduct work within the stream channel, a work platform or temporary crossing, is authorized. This should be constructed with clean rock (preferably sandstone or granite east of a line stretching from the McCreary-Wayne County line to the southwest, northeasterly to Lewis-Greenup County line), and sufficient pipe to allow stream flow to continue, unimpeded (refer to the attached standard drawing for low-water crossings at end of the document). Other conditions may be found under the heading, *General Certification—Nationwide Permit # 14 Linear Transportation Projects*.

In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Number 14 Approval in a conspicuous location at the project site, for the duration of the construction, and comply with the general conditions as required.

To more readily expedite construction, the contractor may elect to alter the design, or perform the work in a manner different from what was originally proposed and specified. Prior to

Kentucky Transportation
Cabinet Project: 12-9002.00

commencing such alternative work, the contractor shall obtain written permission from the Division of Construction and the Kentucky Transportation Cabinet, Division of Environmental Analysis. If such changes necessitate further permitting, then the contractor will be responsible for applying to the U. S. Army Corps of Engineers and the Kentucky Division of Water. A copy of any request to the Corps of Engineers or Division of Water to alter this proposal and subsequent responses shall be forwarded to the Division of Environmental Analysis, DA Permit Coordinator, for office records and for informational purposes.

Public Notice



**US Army Corps
of Engineers**
Louisville District ®

Public Notice No.
LRL-2016-00006

Expiration Date:
18 MAR 2022

Please address all comments and inquiries to:
U.S. Army Corps of Engineers, Louisville District
ATTN: Ms. Meagan Knuckles, CELRL-RDS
P.O. Box 59
Louisville, Kentucky 40201-0059

Phone: (502) 315-6709

PUBLIC NOTICE ANNOUNCING REGIONAL CONDITIONS AND WATER QUALITY CERTIFICATIONS FOR NATIONWIDE PERMITS

On January 6, 2017, the U.S. Army Corps of Engineers (Corps) published a notice in the *Federal Register* (82 FR 1860) announcing the reissuance of all 50 existing Nationwide Permits (NWP), general conditions, and definitions with some modifications. The Corps also issued two new NWPs, one new general condition, and five new definitions. The NWPs became effective on March 19, 2017, and will expire on March 18, 2022.

On March 17, 2017, the Great Lakes and Ohio River Division (LRD) Engineer approved Regional Conditions for the NWPs in Kentucky. These conditions apply to all activities authorized by NWPs. Regional Conditions provide additional protection for the aquatic environment by ensuring that the NWPs authorize only those activities with minimal adverse effects on the aquatic environment. The Regional Conditions for Kentucky are attached to this public notice. Additionally, the Louisville District has posted the Regional Conditions for the NWPs on its Internet home page at: <http://www.lrl.usace.army.mil/Missions/Regulatory/Obtain-a-Permit/Nationwide/>

The Kentucky Division of Water (KDOW) denied the 401 Water Quality Certification (WQC) for NWPs 16, 17, 32, 38, 43, 44, 52, 53 and 54. An individual 401 WQC from KDOW will be required for any project authorized by one of the NWPs with a 401 WQC denial. The KDOW conditioned the 401 WQC for NWPs 3, 5, 7, 12, 13, 14, 15, 18, 19, 21, 23, 25, 27, 29, 30, 31, 33, 36, 37, 39, 42, 45, 46, 49, 50, and 51. An individual 401 WQC will be required by KDOW under certain conditions. The full text of the Water Quality Certifications issued by KDOW is available on the Louisville District website at the link listed above.

Questions concerning implementation of the new and modified NWPs and conditions or the Corps Regional Conditions should be sent to the Louisville District, Corps of Engineers, ATTN: Ms. Meagan Knuckles, CELRL-RDS, P.O. Box 59, Louisville, Kentucky 40201-0059.

2017 Nationwide Permits Regional and Permit-Specific Conditions COMMONWEALTH OF KENTUCKY

These regional conditions are in addition to, but do not supersede, the requirements in the Federal Register (Volume 82, No. 4 of January 6, 2017, pp 1860).

Regulatory Division
Public Notice No. LRL-2016-00006

Notifications for all Nationwide Permits (NWP) shall be in accordance with General Condition No. 32.

1. For activities that would impact Outstanding State or National Resource Waters (OSNRWs), Exceptional Waters (EWs), Coldwater Aquatic Habitat Waters (CAHs) under the Endangered Species Act for the NWP listed below, a Pre-Construction Notification (PCN) will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWP (Section 404 activities), for impacts to these waters.

- NWP 3 (Maintenance)
- NWP 4 (Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities)
- NWP 5 (Scientific Measurement Devices)
- NWP 6 (Survey Activities)
- NWP 7 (Outfall Structures and Associated Intake Structures)
- NWP 12 (Utility Line Activities)
- NWP 13 (Bank Stabilization)
- NWP 14 (Linear Transportation Projects)
- NWP 15 (U.S. Coast Guard Approved Bridges)
- NWP 16 (Return Water from Upland Contained Disposal Areas)
- NWP 17 (Hydropower Projects)
- NWP 18 (Minor Discharges)
- NWP 19 (Minor Dredging)
- NWP 20 (Response Operations for Oil or Hazardous Substances)
- NWP 21 (Surface Coal Mining Activities)
- NWP 22 (Removal of Vessels)
- NWP 23 (Approved Categorical Exclusions)
- NWP 25 (Structural Discharges)
- NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)
- NWP 29 (Residential Developments)
- NWP 30 (Moist Soil Management for Wildlife)
- NWP 31 (Maintenance of Existing Flood Control Facilities)
- NWP 32 (Completed Enforcement Actions)
- NWP 33 (Temporary Construction, Access, and Dewatering)
- NWP 34 (Cranberry Production Activities)
- NWP 36 (Boat Ramps)
- NWP 37 (Emergency Watershed Protection and Rehabilitation)
- NWP 38 (Cleanup of Hazardous and Toxic Waste)
- NWP 39 (Commercial and Institutional Developments)
- NWP 40 (Agricultural Activities)
- NWP 41 (Reshaping Existing Drainage Ditches)
- NWP 42 (Recreational Facilities)
- NWP 43 (Stormwater Management Facilities)
- NWP 44 (Mining Activities)
- NWP 45 (Repair of Uplands Damaged by Discrete Events)

Regulatory Division
Public Notice No. LRL-2016-00006

NWP 46 (Discharges in Ditches)
NWP 48 (Commercial Shellfish Aquaculture Activities)
NWP 49 (Coal Remining Activities)
NWP 50 (Underground Coal Mining Activities)
NWP 51 (Land-Based Renewable Energy Generation Facilities)
NWP 52 (Water-Based Renewable Energy Generation Pilot Projects)
NWP 53 (Removal of Low-Head Dams)
NWP 54 (Living Shorelines)

2. In addition to the notification and agency coordination requirements in the NWPs, for impacts greater than 0.25 acres in all “waters of the U.S.” for the NWPs listed below, a PCN will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWPs:

NWP 3 (Maintenance)
NWP 7 (Outfall Structures and Associated Intake Structures)
NWP 12 (Utility Line Activities)
NWP 14 (Linear Transportation Projects)
NWP 29 (Residential Developments)
NWP 39 (Commercial and Institutional Developments)
NWP 40 (Agricultural Activities)
NWP 41 (Reshaping Existing Drainage Ditches)
NWP 42 (Recreational Facilities)
NWP 43 (Stormwater Management Facilities)
NWP 44 (Mining Activities)
NWP 51 (Land-Based Renewable Energy Generation Facilities)
NWP 52 (Water-Based Renewable Energy Generation Pilot Projects)
NWP 53 (Removal of Low-Head Dams)

3. For activities in all “waters of the U.S.” for the NWPs listed below, a PCN will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWPs:

NWP 21 (Surface Coal Mining Activities)
NWP 27 (Aquatic Habitat Restoration, Establishment & Enhancement Activities)
NWP 49 (Coal Remining Activities)
NWP 50 (Underground Coal Mining Activities)

4. Nationwide Permit No. 14 – Linear Transportation Projects.

- (a) New road alignments or realignments are limited to a permanent loss of 500 linear feet of intermittent or perennial stream length at each crossing. Road crossings with permanent losses greater than 500 linear feet of intermittent or perennial stream associated with new alignments or realignments will be evaluated as an individual permit (i.e., a Letter of Permission or as a Standard Individual Permit).

Regulatory Division
Public Notice No. LRL-2016-00006

- (b) In addition to the notification requirements contained in NWP 14, the permittee must submit a PCN to the district engineer prior to commencing the activity for the permanent loss of greater than 300 feet of ephemeral, intermittent and perennial stream of all “waters of the U.S.” (See General Condition 32 and the definition of "loss of waters of the United States" in the Nationwide Permits for further information.)
5. Notification in accordance with General Condition 32 is required to the Corps for all activities which are subject to jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 6. All applications are required as both a paper copy and in an electronic media format, including electronic mail or compact disc.
 7. For all activities, the applicant shall review the U.S. Fish and Wildlife Service’s IPaC website: <http://ecos.fws.gov/ipac> to determine if the activity might affect threatened and/or endangered species or designated critical habitat. If federally-listed species or designated critical habitat are identified, a PCN in accordance with General Condition 18 and 32 would be triggered and the official species list generated from the IPaC website must be submitted with the PCN.

Further information:

Outstanding State or National Resource Water (OSNRWs), Exceptional Waters (EWs), and Coldwater Aquatic Habitat Waters (CAHs) are waters designated by the Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet. The list can be found at the following link: <http://eppcapp.ky.gov/spwaters/>

Information on Pre-Construction Notification (PCN) can be found at NWP General Condition No. 32 in the Federal Register (Volume 81, No. 105 of June 1, 2017, pp 35211).

Regulatory Division
Public Notice No. LRL-2016-00006

COORDINATING RESOURCE AGENCIES

Chief, Wetlands Regulatory Section
U.S. Environmental Protection Agency
Region IV
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303

Supervisor
U.S. Fish & Wildlife Service
JC Watts Federal Building, Room 265
330 West Broadway
Frankfort, Kentucky 40601

Supervisor
401 Water Quality Certification
Kentucky Division of Water
300 Sower Boulevard, 3rd Floor
Frankfort, Kentucky 40601

Commissioner
Department of Fish and Wildlife Resources
#1 Game Farm Road
Frankfort, Kentucky 40601

Executive Director and State Historic Preservation Officer
Kentucky Heritage Council
300 Washington Street
Frankfort, Kentucky 40601

ADDITIONAL COORDINATING RESOURCE AGENCY
FOR NWPS 21, 49, AND 50

Kentucky Department for Natural Resources
Division of Mine Permits
300 Sower Boulevard
Frankfort, Kentucky 40601

2017 Nationwide Permit

14. Linear Transportation Projects. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to

ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

2017 Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot

begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those

waters. The district engineer may authorize activities under these NWP's only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on

what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWRPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a

State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer.

The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;
- (2) Location of the proposed activity;
- (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
- (4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other

waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction

notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.



MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

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

R. BRUCE SCOTT
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

**General Certification--Nationwide Permit # 14
Linear Transportation Projects**

This General Certification is issued March 19, 2017, in conformity with the requirements of Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C. §1341), as well as Kentucky Statute KRS 224.16-050.

For this and all nationwide permits, the definition of surface water is as per 401 KAR 10:001 Chapter 10, Section 1(80): Surface Waters means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the commonwealth.

Agricultural operations, as defined by KRS 224.71-100(1) conducting activities pursuant to KRS 224.71-100 (3), (4), (5), (6), or 10 are deemed to have certification if they are implementing an Agriculture Water Quality Plan pursuant to KRS 224.71-145.

For all other operations, the Commonwealth of Kentucky hereby certifies under Section 401 of the Clean Water Act (CWA) that it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 304, 306 and 307 of the CWA, will not be violated for the activity covered under NATIONWIDE PERMIT 14, namely Linear Transportation Projects, provided that the following conditions are met:

1. The activity will not occur within surface waters of the Commonwealth identified by the Kentucky Division of Water as Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters.
2. The activity will not occur within surface waters of the Commonwealth identified as perpetually-protected (e.g. deed restriction, conservation easement) mitigation sites.
3. The activity will impact less than 1/2 acre of wetland/marsh.

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 2

4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth. Stream realignment greater than 100 feet and in-stream stormwater detention/retention basins are not covered under this general water quality certification.
5. For complete linear transportation projects, all impacts shall not exceed a cumulative length of 500 linear feet within each Hydrologic Unit Code (HUC) 14.
6. Any crossings must be constructed in a manner that does not impede natural water flow.
7. Stream impacts covered under this General Water Quality Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KWQP).
8. The Kentucky Division of Water may require submission of a formal application for an individual certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
9. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
10. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:
 - Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
 - Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur (401 KAR 10:031 Section 2 and KRS 224.70-100).
 - Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to,

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 3

upstream, or downstream of the structures. All sediment and erosion control devices shall be removed and the natural grade restored within the completion timeline of the activities.

- Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
- Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access.
- To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
- Heavy equipment, e.g. bulldozers, backhoes, draglines, etc., if required for this project, should not be used or operated within the stream channel. In those instances in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation.
- Any fill shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement.
- If there are water supply intakes located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when such work will be done.
- Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the KDOW shall be notified immediately by calling (800) 928-2380.

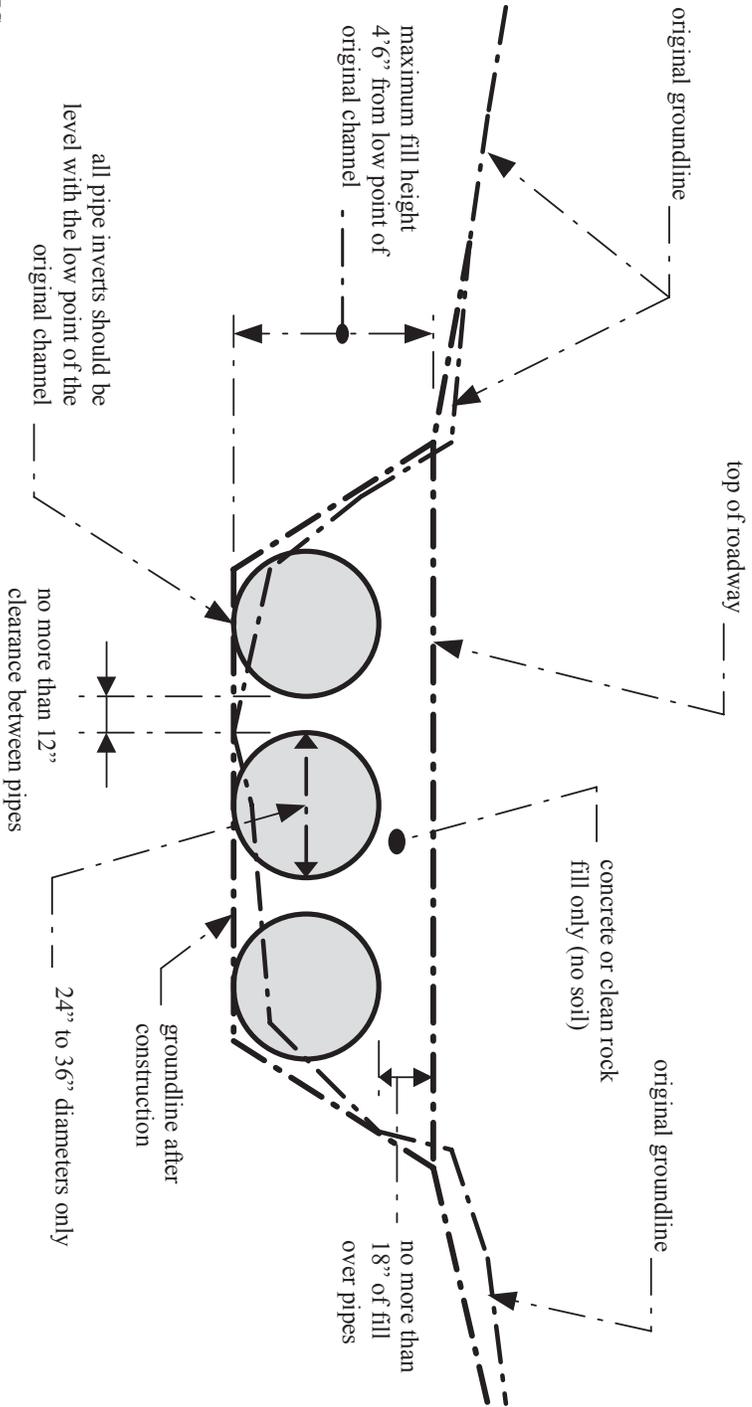
Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

GENERAL CONDITIONS FOR WATER QUALITY CERTIFICATION

1. The Kentucky Division of Water may require submission of a formal application for an Individual Certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
2. Nationwide permits issued by the U.S. Army Corps of Engineers for projects in Outstanding State Resource Waters, Cold Water Aquatic Habitats, and Exceptional Waters as defined by 401 KAR 10:026 shall require individual water quality certifications.
3. Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
4. Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur.
5. Sediment and erosion control measures (e.g., check-dams, silt fencing, or hay bales) shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, placement shall not be conducted in such a manner that may cause instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control measures shall be removed and the natural grade restored prior to withdrawal from the site.
6. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
7. To the maximum extent practicable, all in-stream work under this certification shall be performed during low flow.
8. Heavy equipment (e.g. bulldozers, backhoes, draglines, etc.), if required for this project, should not be used or operated within the stream channel. In those instances where such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize re-suspension of sediments and disturbance to the channel, banks, or riparian vegetation.
9. If there are water supply intakes located downstream that may be affected by increased turbidity, the permittee shall notify the operator when work will be performed.
10. Removal of existing riparian vegetation should be restricted to the minimum necessary for project construction.

11. Should stream pollution, wetland impairment, and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling 800/564-2380.

ATTACHMENT 1



NOTES:

1. This is a conceptual drawing. The number and size of pipes and other details will vary depending on specific site conditions.
2. The pipes and backfill must be contained within the stream channel as shown above. During the construction of the approaches and access roadway across the floodplain, unstable and unconsolidated materials unsuitable for roadways may be excavated and replaced with riprap, crushed stone, or other stable road construction materials. This may only be done, however, with the following provisions: (1) the disposal of excess, unconsolidated materials thus excavated must be outside of the floodplain and (2) the finished surface of the completed road may be no more than three inches (3") above the pre-construction surface of the floodplain at any point beyond the top of banks.

LOW-WATER CROSSING

STANDARD DRAWING
Not to Scale

KYTC BMP Plan for Project CID 19-4226



Kentucky Transportation Cabinet

Highway District 12

And

_____ **(2), Construction**

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

Groundwater protection plan

For Highway Construction Activities

For

**Highway Safety Improvement Project on KY 632 in
Pike County**

Project: CID 19-4226

KYTC BMP Plan for Project CID 19-4226

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 12
2. Resident Engineer: (2)
3. Contractor name: (2)
Address: (2)

Phone number: (2)
Contact: (2)
Contractors agent responsible for compliance with the KPDES permit requirements (3):
4. Project Control Number: (2)
5. Route (Address): KY 632
6. Latitude/Longitude (project mid-point): 37° 29' 13", -82° 17' 57"
7. County (project mid-point): Pike
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

KYTC BMP Plan for Project CID 19-4226

A. Site description:

1. Nature of Construction Activity (from letting project description): (1)
2. Order of major soil disturbing activities: (2) and (3)
3. Projected volume of material to be moved: 2266 CY (Cut) & 3089 CY (Fill)
4. Estimate of total project area (acres): 33.9
5. Estimate of area to be disturbed (acres): 2.7
6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information.
7. Data describing existing soil condition: (1) & (2)
8. Data describing existing discharge water quality (if any): (1) & (2)
9. Receiving water name: Johns Creek
10. TMDLs and Pollutants of Concern in Receiving Waters: *No TDML's were involved on this project.*
11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.
12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

KYTC BMP Plan for Project CID 19-4226

B. Sediment and Erosion Control Measures:

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

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

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as "Do Not Disturb" until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP's shall be for the first phase (generally Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA's as the work progresses. All DDA's will have adequate BMP's in place before being disturbed.
3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:
 - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.
 - At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants. Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.
 - Clearing and Grubbing – The following BMP's will be considered and used where appropriate.

KYTC BMP Plan for Project CID 19-4226

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

KYTC BMP Plan for Project CID 19-4226

- Placing Sod
- Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are: *This project does not include storm water BMPs or flow controls for post-construction use.*

C. Other Control Measures

1. No solid materials, including building materials, shall be discharged to waters of the commonwealth, except as authorized by a Section 404 permit.
2. Waste Materials

All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in appropriate covered waste containers. Waste containers shall be removed from the project site on a sufficiently frequent basis as to not allow wastes to become a source of pollution. All personnel will be instructed regarding the correct procedure for waste disposal. Wastes will be disposed in accordance with appropriate regulations. Notices stating these practices will be posted in the office.

3. Hazardous Waste

All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the Section Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

4. Spill Prevention

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

- **Good Housekeeping:**

KYTC BMP Plan for Project CID 19-4226

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

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

➤ **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

➤ **Petroleum Products:**

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

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

KYTC BMP Plan for Project CID 19-4226

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

➤ **Fertilizers:**

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

➤ **Paints:**

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

➤ **Concrete Truck Washout:**

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

➤ **Spill Control Practices**

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

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

KYTC BMP Plan for Project CID 19-4226

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

D. Other State and Local Plans

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. *There are no other local (MS4) requirements that are expected to be necessary for this project.*

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.
- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.
 - Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. *There are no such BMP's for this project.*

F. Inspections

Inspection and maintenance practices that will be used to maintain erosion and sediment controls:

KYTC BMP Plan for Project CID 19-4226

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by individuals that have successfully completed the KEPSC-RI course as required by Section 213.02.02 of the Standard Specifications for Road and Bridge Construction, current edition.
- Inspection reports will be written, signed, dated, and kept on file.
- Areas at final grade will be seeded and mulched within 14 days.
- Areas that are not at final grade where construction has ceased for a period of 21 days or longer and soil stock piles shall receive temporary mulch no later than 14 days from the last construction activity in that area.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Sediment basins will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

G. Non – Storm Water discharges

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

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

KYTC BMP Plan for Project CID 19-4226

- Uncontaminated groundwater and rain water (from dewatering during excavation).

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

H. Groundwater Protection Plan (3)

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

- Contractors statement: (3)

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

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

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

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

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

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

_____ 2. (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

_____ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

KYTC BMP Plan for Project CID 19-4226

The contractor is responsible for the preparation of a plan that addresses the

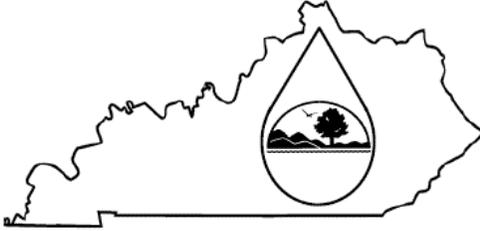
401 KAR 5:037 Section 3. (3) Elements of site specific groundwater protection plan:

- (a) General information about this project is covered in the Project information;
- (b) Activities that require a groundwater protection plan have been identified above;
- (c) Practices that will protect groundwater from pollution are addressed in section C. Other control measures.
- (d) Implementation schedule – all practices required to prevent pollution of groundwater are to be in place prior to conducting the activity;
- (e) Training is required as a part of the ground water protection plan. All employees of the contractor, sub-contractor and resident engineer personnel will be trained to understand the nature and requirements of this plan as they pertain to their job function(s). Training will be accomplished within one week of employment and annually thereafter. A record of training will be maintained by the contractor with a copy provide to the resident engineer.
- (f) Areas of the project and groundwater plan activities will be inspected as part of the weekly sediment and erosion control inspections
- (g) Certification (see signature page.)

CID 19-4226
Pike County
Highway Safety Improvement Project along KY 632
from MP 0-7.00
Item No.: 12-9002

An electronic Notice of Intent (eNOI) for obtaining coverage under the Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Stormwater Discharges Associated with Construction Activities (KYR10) has been drafted, a copy of which is attached. Upon award, the Contractor will be identified in Section III of the form as the "Building Contractor" and the eNOI will be submitted for approval to the Kentucky Division of Water. The Contractor shall be responsible for advancing the work within this contract in a manner that is compliant with all applicable and appropriate KYTC specifications for sediment and erosion control, as well as meeting the requirements of the KYR10 permit and the KDOW.

eForm Submittal ID: 166760

	<h2 style="margin: 0;">KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM (KPDES)</h2> <p style="margin: 5px 0;">Notice of Intent (NOI) for coverage of Storm Water Discharge Associated with Construction Activities Under the KPDES Storm Water General Permit KYR100000</p> <p style="margin: 5px 0;">Click here for Instructions (Controls/KPDES_FormKYR10_Instructions.htm)</p> <p style="margin: 5px 0;"><small>Click here to obtain information and a copy of the KPDES General Permit. (http://dep.ky.gov/formslibrary/Documents/KYR10PermitPage.pdf)</small></p> <p style="margin: 5px 0;"><small>(*) indicates a required field; (✓) indicates a field may be required based on user input or is an optionally required field</small></p>
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Reason for Submittal:(*) <input type="text" value="Application for New Permit Coverage"/>	Agency Interest ID: <input type="text" value="Agency Interest ID"/>	Permit Number:(✓) <input type="text" value="KPDES Permit Number"/>
----------------------------------------------------------------------------------------------	------------------------------------------------------------------------	-----------------------------------------------------------------------

If change to existing permit coverage is requested, describe the changes for which modification of coverage is being sought:(✓)

ELIGIBILITY:
Stormwater discharges associated with construction activities disturbing individually one (1) acre or more, including, in the case of a common plan of development, contiguous construction activities that cumulatively equal one (1) acre or more of disturbance.

EXCLUSIONS:
The following are excluded from coverage under this general permit:

- 1) Are conducted at or on properties that have obtained an individual KPDES permit for the discharge of other wastewaters which requires the development and implementation of a Best Management Practices (BMP) plan;
- 2) Any operation that the DOW determines an individual permit would better address the discharges from that operation;
- 3) Any project that discharges to an Impaired Water listed in the most recent Integrated Report, §305(b) as impaired for sediment and for which an approved TMDL has been developed.

SECTION I -- FACILITY OPERATOR INFORMATION (PERMITTEE)

Company Name:(✓) <input type="text" value="Kentucky Transportation Cabinet, District 12"/>	First Name:(✓) <input type="text" value="Mary"/>	M.I.: <input type="text" value="MI"/>	Last Name:(✓) <input type="text" value="Westfall-Holbrook"/>
Mailing Address:(*) <input type="text" value="109 Loraine Street"/>	City:(*) <input type="text" value="Pikeville"/>	State:(*) <input type="text" value="Kentucky"/>	Zip:(*) <input type="text" value="41501"/>
eMail Address:(*) <input type="text" value="MaryW.Holbrook@ky.gov"/>	Business Phone:(*) <input type="text" value="606-433-7791"/>	Alternate Phone: <input type="text" value="Phone"/>	

SECTION II -- GENERAL SITE LOCATION INFORMATION

Project Name:(*) <input type="text" value="KYTC Project: CID 194226"/>	Status of Owner/Operator(*) <input type="text" value="State Government"/>	SIC Code(*) <input type="text" value="1611 Highway and Street Constr"/>
Company Name:(✓) <input type="text" value="Company Name"/>	First Name:(✓) <input type="text" value="First Name"/>	M.I.: <input type="text" value="MI"/>
Last Name:(✓) <input type="text" value="Last Name"/>		
Site Physical Address:(*) <input type="text" value="KY Highway 632"/>		
City:(*) <input type="text" value="Kimper"/>	State:(*) <input type="text" value="Kentucky"/>	Zip:(*) <input type="text" value="41539"/>
County:(*) <input type="text" value="Pike"/>	Latitude(decimal degrees)(*)DMS to DD Converter (https://www.fcc.gov/media/radio/dms-decimal) <input type="text" value="37.487023"/>	Longitude(decimal degrees)(*) <input type="text" value="-82.299167"/>

SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION

Project Description:(*)

Is a Clean Water Act 404 permit required?:(*)	Yes ▾
Is a Clean Water Act 401 Water Quality Certification required?:(*)	Yes ▾

SECTION VII -- NOI PREPARER INFORMATION

First Name:(*) First Name	M.I.: MI	Last Name:(*) Last Name	Company Name:(*) Company Name	
Mailing Address:(*) Mailing Address	City:(*) City	State:(*) ▾	Zip:(*) Zip	
eMail Address:(*) eMail Address	Business Phone:(*) Phone	Alternate Phone: Phone		

SECTION VIII -- ATTACHMENTS

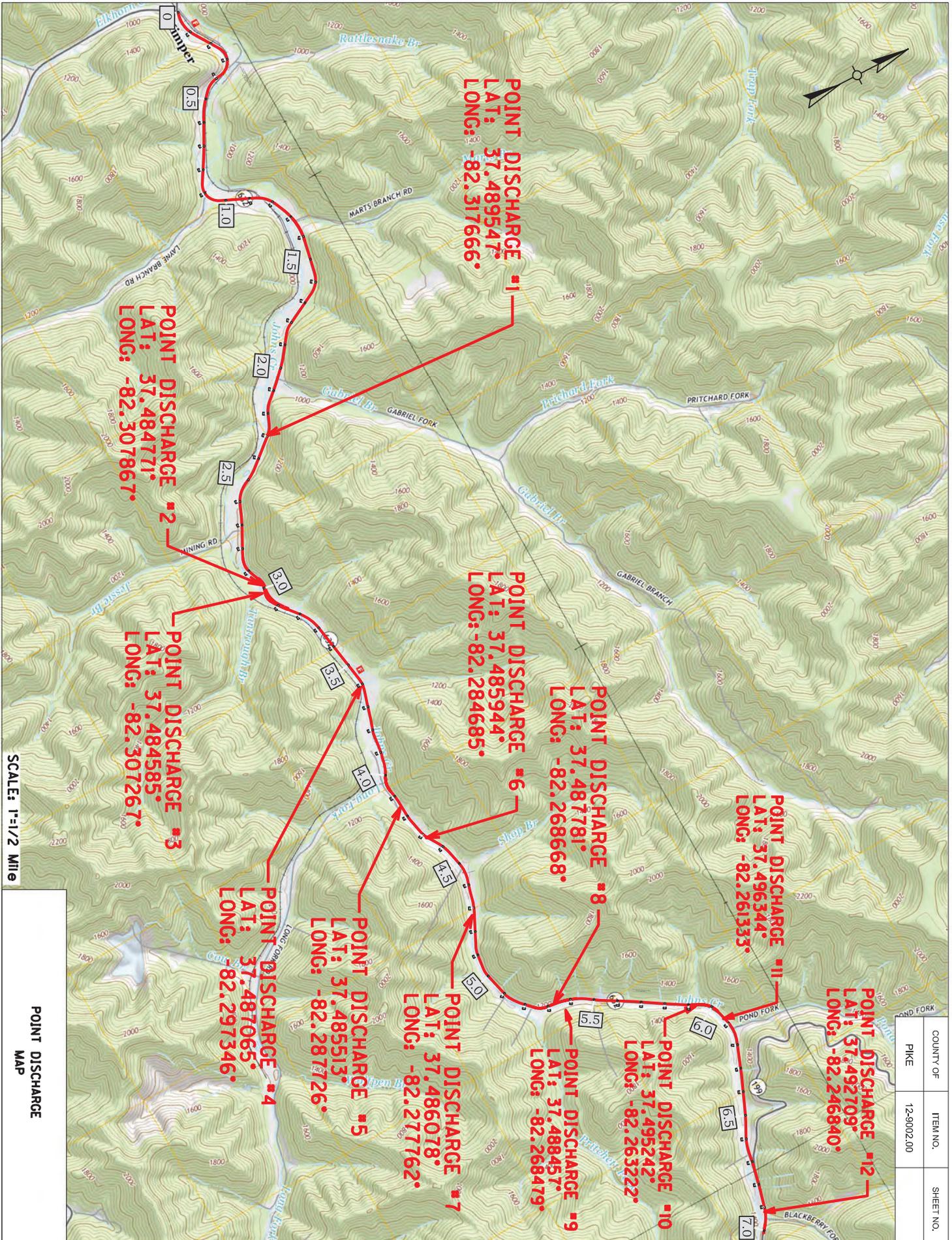
Facility Location Map:(*)	<input type="button" value="Upload file"/>
Supplemental Information:	<input type="button" value="Upload file"/>

SECTION IX -- CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:(*) Signature		Title:(*) Title	
First Name:(*) First Name	M.I.: MI	Last Name:(*) Last Name	
eMail Address:(*) eMail Address	Business Phone:(*) Phone	Alternate Phone: Phone	Signature Date:(*) Date

<input type="button" value="Click to Save Values for Future Retrieval"/>	<input type="button" value="Click to Submit to EEC"/>
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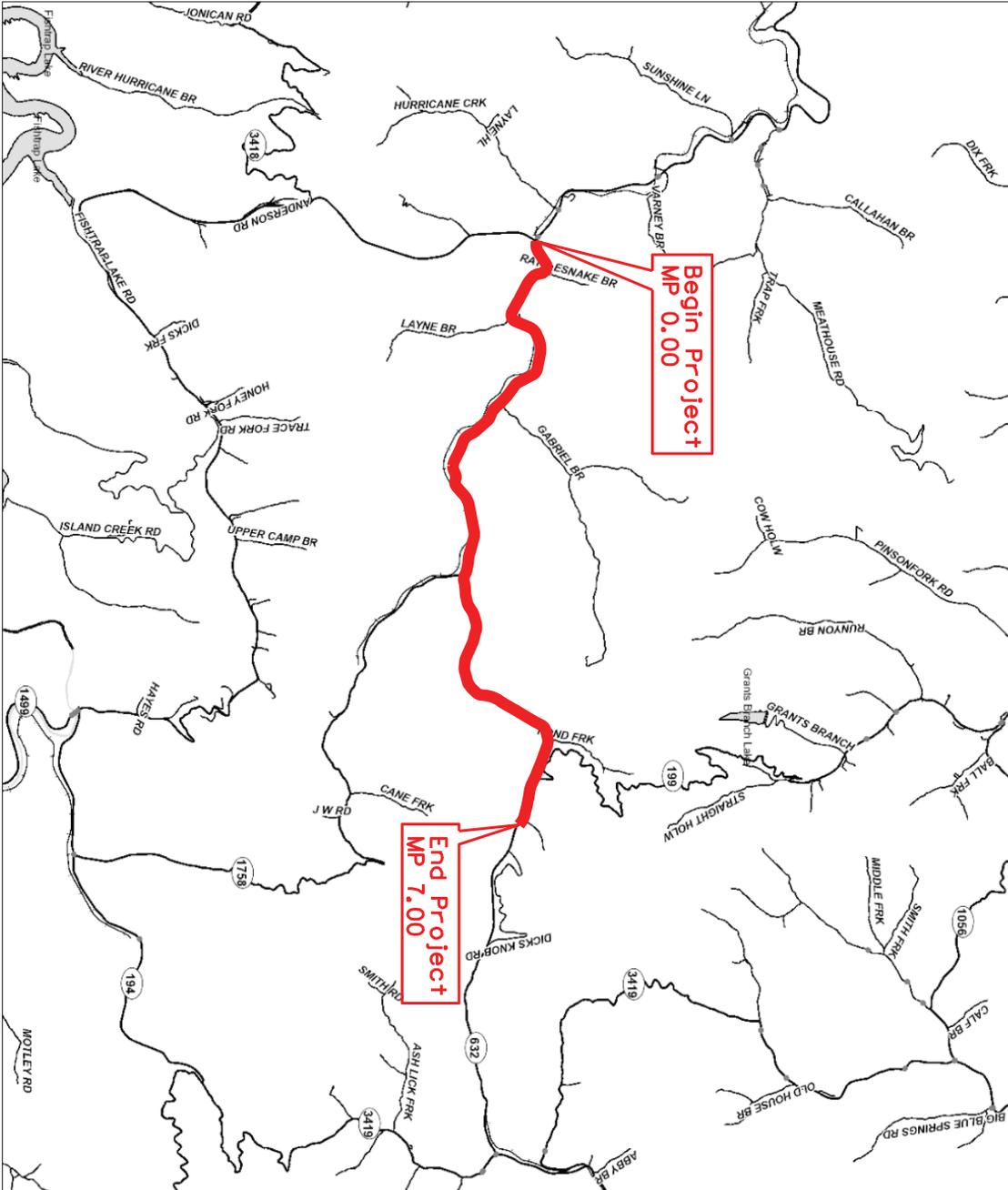
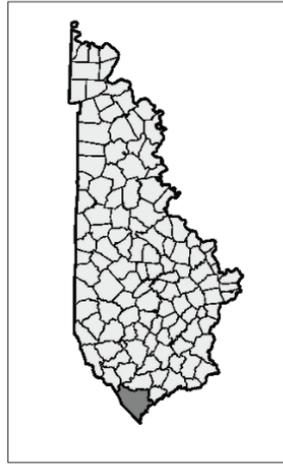
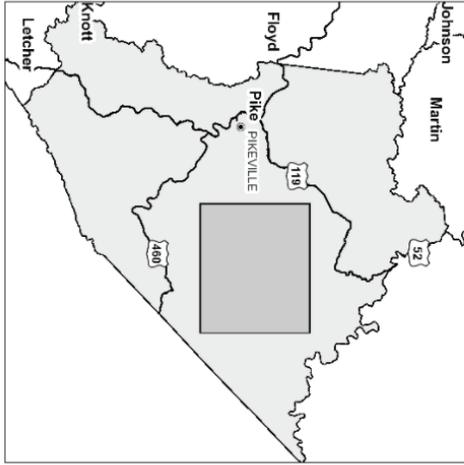


SCALE: 1"=1/2 Mile

POINT DISCHARGE
MAP

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
PLANS OF
PROPOSED PROJECT
PIKE COUNTY
KY 632



COUNTY OF	ITEM NO.
PIKE	12-9002.00

GENERAL SUMMARY

ITEM	DESCRIPTION	UNIT	Project Total
02230	EMBANKMENT IN PLACE	CUYD	3007
02650	MAINTAIN & CONTROL TRAFFIC	LS	1
02545	CLEARING AND GRUBBING	LS	1
02726	STAKING	LS	1
20458ES403	CENTERLINE RUMBLE STRIPS	LF	26400
02460	REMOVE TREES OR STUMPS	EACH	4
02351	GUARDRAIL-STEEL W BEAM-S FACE	LF	2956.5
02360	GUARDRAIL TERMINAL SECTION NO 1	EACH	4
02391	GUARDRAIL END TREATMENT TYPE 4A	EACH	3
02367	GUARDRAIL END TREATMENT TYPE 1	EACH	1
02381	REMOVE GUARDRAIL	LF	1625
01987	DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	EACH	63
02562	TEMPORARY SIGNS	SQFT	591
02575	DITCHING AND SHOULDERING	LF	1745
04934	TEMP SIGNAL MULTI PHASE	EACH	3
06578	PAVE MARKING-THERMO MERGE ARROW	EACH	3
02567	DELINEATOR POSTS	EACH	6
02690	SAFELOADING	CUYD	11.4
02585	EDGE KEY	LF	56
02091	REMOVE PAVEMENT	SOYD	798
02159	TEMP DITCH	LF	506
02160	CLEAN TEMP DITCH	LF	253
02701	TEMP SILT FENCE	LF	506
02703	SILT TRAP TYPE A	EACH	2
02704	SILT TRAP TYPE B	EACH	2
02705	SILT TRAP TYPE C	EACH	2
02706	CLEAN SILT TRAP TYPE A	EACH	2
02707	CLEAN SILT TRAP TYPE B	EACH	2
02708	CLEAN SILT TRAP TYPE C	EACH	2
05952	TEMP MULCH	SOYD	5163
05953	TEMP SEEDING AND PROTECTION	SOYD	5163
05964	MAINTENANCE FERTILIZER	TON	0.25
05963	INITIAL FERTILIZER	TON	0.16
05985	SEEDING AND PROTECTION	SOYD	4418
05992	AGRICULTURAL LIMESTONE	TON	3
03235	EXCAVATION AND BACKFILL	CUYD	82
03234	RAILROAD RAILS-DRILLED	LF	5296
03236	CRIBBING	SQFT	3762
02599	FABRIC-GEOTEXTILE TYPE IV	SOYD	1970
14060	W PIPE PVC 08 INCH	LF	940
14037	W PIPE DUCTILE IRON 08 INCH	LF	930
14095	W TIE-IN 08 INCH	EACH	14
14106	W VALVE 08 INCH	EACH	7
14144	W LINE MARKER	EACH	22
02671	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	2
21813NN	REMOVE AND RELOCATE SHEET SIGNS	EACH	3
06410	STEEL POST TYPE I	LF	2988
21373ND	REMOVE SIGN	EACH	93
06406	SBM ALUM SHEET SIGNS .080 IN	SQFT	1206.75
00001	DGA BASE	TON	1457
00339	CL3 ASPH SURF 0.38D PG64-22	TON	568
00223	CL3 ASPH BASE 0.75D PG64-22	TON	339
00205	CL3 ASPH BASE 1.50D PG64-22	TON	1026
00272	CL2 ASPH BIND 0.50D PG64-22	TON	62
00190	LEVELING & WEDGING PG64-22	TON	176
02429	RIGHT-OF-WAY MONUMENT TYPE I	EACH	7
02432	WITNESS POST	EACH	7

GENERAL SUMMARY

ITEM	DESCRIPTION	UNIT	Project Total
02676	MOBILIZATION FOR MILL & TEXT	LS	1
02677	ASPHALT PAVE MILLING & TEXTURING	TON	214
00100	ASPHALT SEAL AGGREGATE	TON	18.5
00103	ASPHALT SEAL COAT	TON	2.3
00356	ASPHALT MATERIAL FOR TACK	TON	4.8
00020	TRAFFIC BOUND BASE	TON	40.3
24694ED	BOX CULVERT (8'X4')	LF	25
24695ED	BOX CULVERT HEADWALL (8'X6', 0 DEG SK)	EACH	2
02403	REMOVE CONCRETE MASONRY	CY	2
08003	FOUNDATION PREPARATION (4'X8' RCBC EXTENSION AT 190+43.97)	LS	1
08003	FOUNDATION PREPARATION (4'X8' RCBC EXTENSION AT 313+44.16)	LS	1
02625	REMOVE HEADWALL	EACH	10
24695ED	BOX CULVERT HEADWALL (8'X6', 30 DEG SK)	EACH	1
24695ED	BOX CULVERT HEADWALL (8'X6', 15 DEG SK)	EACH	1
02596	FABRIC-GEOTEXTILE TYPE I	SQYD	440
02484	CHANNEL LINING CLASS III	TON	154
02555	CONCRETE-CLASS B	CUYD	70
03262	CLEAN PIPE STRUCTURE	EACH	3
01451	S & F BOX INLET-OUTLET-24 IN	EACH	1
01443	SLOPED AND PARALLEL HEADWALL-15 IN	EACH	1
01550	DROP BOX INLET TYPE I2A	LF	31.2
00461	CULVERT PIPE-15 IN	LF	50.7
02483	CHANNEL LINING CLASS II	TON	222
01729	SAFETY BOX INLET-24 IN DBL SDB-5	EACH	1
01200	PIPE CULVERT HEADWALL-12 IN	EACH	1
01202	PIPE CULVERT HEADWALL-15 IN	EACH	1
01443	SLOPED AND PARALLEL HEADWALL-15 IN	EACH	1
01451	S & F BOX INLET-OUTLET-24 IN	EACH	1
01200	PIPE CULVERT HEADWALL-12 IN	EACH	1
01202	PIPE CULVERT HEADWALL-15 IN	EACH	1
01204	PIPE CULVERT HEADWALL-18 IN	EACH	2
01208	PIPE CULVERT HEADWALL-24 IN	EACH	2
01212	PIPE CULVERT HEADWALL-36 IN	EACH	2
01216	PIPE CULVERT HEADWALL-48 IN	EACH	2
01544	DROP BOX INLET TYPE II	EACH	1
01490	DROP BOX INLET TYPE I	EACH	2
24583EC	HDPE PIPE LINER (48 IN)	LF	38
00468	CULVERT PIPE-36 IN	LF	42
00461	CULVERT PIPE-15 IN	LF	50.7
00460	CULVERT PIPE-12 IN	LF	16.3
00464	CULVERT PIPE-24 IN	LF	160.7
00462	CULVERT PIPE-18 IN	LF	19.9
01310	REMOVE PIPE	LF	43
23275ENIIF	TURF REINFORCEMENT MAT 2	SQYD	422
02569	DEMOBILIZATION	LS	1
23229EC	HIGH FRICTION SURFACE TREATMENT	SQYD	1826
06510	PAVE STRIPING-TEMP PAINT-4 IN	LF	3500
24189ER	DURABLE WATERBORNE MARKING-6 IN WHITE	LF	73920
24190ER	DURABLE WATERBORNE MARKING-6 IN YELLOW	LF	73920
02204	SPECIAL EXCAVATION	CY	254
00078	CRUSHED AGGREGATE NO. 2	TONS	463
2463IEC	BARCODE SIGN INVENTORY	EACH	249
20465EC	CLEAN CULVERT (STA. 190+43.97)	LS	1
20465EC	CLEAN CULVERT (STA. 313+44.16)	LS	1
02242	WATER	MGAL	5
02014	BARRICADE-TYPE III	EACH	2

Pike Co. KY 632
Milepoint 0.00 to 7.00
Item No. 12-9002.00
Superelevation Improvement Summary

PI Station	MP	Direction	Radius (ft)	Cross-Slope Left	Cross-Slope Right	Desired X-Slope (Adv. Speed e)	Leveling & Wedging PG 64-22 Tons	Asphalt Pave Milling & Texturing Tons	CL 3 Asph Base PG 64-22 Tons	CL 3 Asph Surf PG 64-22 Tons	Comments and Recommendations
150+64.55	2.87	LT	550			6.8%	60	41	63	41	Leveling and Wedging
152+43.91	2.9	LT	375			7.8%	41	36	51	36	Leveling and Wedging
270+34.35	5.1	LT	500	-7.60%	-0.22%		n/a	n/a	n/a	n/a	Apply High Friction Surface
278+35.31	5.27	LT	400			6%	75	137	141	n/a	Leveling and Wedging
316+73.12	6.0	RT	490	-7.36%	9.00%		n/a	n/a	n/a	n/a	Apply High Friction Surface

		Culvert Pipe										Inlets/Outlets										Miscellaneous											
Station Number	Item Code	00482	00484	00460	00461	00468	24593EC	07490	01944	01950	01204	01208	01212	1216	01451	01443	01202	01200	01729	02596	02899	03262	204596EC	02230	24894ED	24894ED	02625	01310		02595	02483	02484	
	Unit to Bid	LF	LF	LF	LF	LF	LF	Each	Each	LF	Each	Each	Each	Each	Each	Each	Each	Each	Each	SO YD	SQ YD	EACH	LS	CU YD	LF	LF	EACH	LF	CU YD	CU YD	Ton	Ton	
121+35.95			2																		4												
151+90.00*		57.2										1								8	108			4									8
159+43.96*		99.8						1												12	178			30	4							12	
219+43.87																				60			1									50	
219+33.61		1.7						1												222	4			10	4						222	25	
228+29.62										31.2										25	172			40								28	
248+91.11																				28													
281+57.72																				4													
284+27.71																				5			1		6	6							31
313+44.16																				10				6									
320+66.57		7																		21				46									
365+49.20		8.9																			21												
SUMMARY TOTALS		19.9	160.7	16.3	50.7	42	38	2	1	31.2	2	2	2		1	1	1	1	1	440	506	3	2	136	10	15	10	43	47	70	222	154	

NOTES:
(1) The Contractor shall field verify types and dimensions prior to ordering.
* Stationing based on Staffed Curve CL

Pike Co. KY 632
Milepoint 0.00 to 7.00
Item No. 123902.00
Pipe Drainage Summary

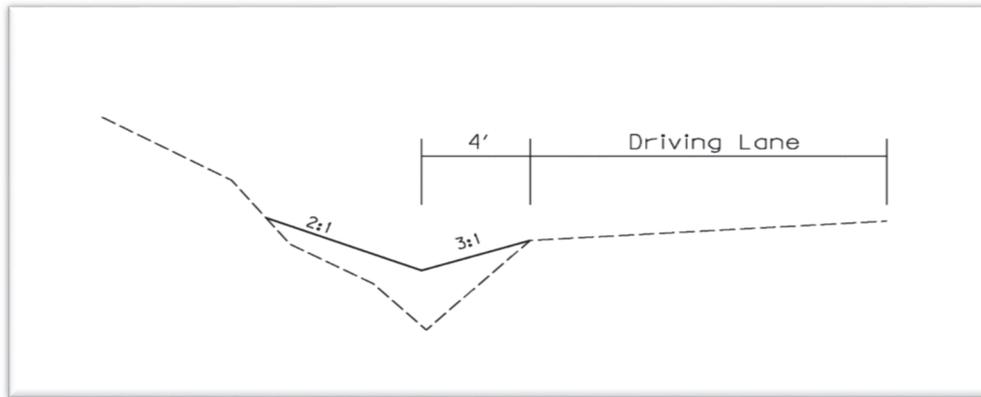
Pike Co. KY 632 Milepoint 0.00 to 7.00 Item No. 12-9002.00 Embankment Repair Summary										
Station Unit to Bid	Offset	Length FT	Cribbing Depth FT	Depth To Rock "H" FT	Number of Rows	Rail Spacing FT	Cribbing SQ FT	Railroad Rails Drilled LF	Excavation & Backfill CU YD	Fabric- Geotextile Type IV SQ YD
Item Code							03236	03234	03235	02599
278+49 to 285+51	RT	702	**	**	1	3	3762	5296	82	538
SUMMARY TOTALS							3762	5296	82	538

NOTES:
These numbers are for estimate purposes only. Actual Locations and quantities will be determined by the Engineer in the field.

** See Geotechnical Data for more information with regard to rock depth.

Pike Co. KY 632
Milepoint 0.00 to 7.00
Item No. 12-9002.00
Ditching and Shouldering Summary

Begin Station	End Station	Offset	Ditch (Feet) (Improve/Need)	Type	Quantity (Tons)	Geotext. Fabric (SQ. YD)
149+20	153+50	LT & RT	430	n/a	n/a	n/a
211+50	214+50	LT	300	n/a	n/a	n/a
276+60	286+75	LT & RT	1015	n/a	n/a	n/a



- 1) Compacted Embankment (Incidental to Ditching & Shouldering). Contractor shall properly bench into existing slope and apply proper compaction. Compact material according to standard specifications (Sect. 206). Final Payment will be paid as LF of Ditching & Shouldering and include all work necessary to perform work. Shoulder embankment material shall be suitable for vegetation growth. Locations that are limited due to r/w, utility poles, trees, fences, or other sensitive obstruction may require embankment but only out to the edge of r/w or sensitive sensitive obstruction(s). (Slope may be steeper than 3:1.)
- 2) Excavation to achieve the proposed ditches is incidental to the bid item "Ditching and Shouldering".

Item Number	Item	Unit	Quantity
02575	Ditching and Shouldering	LF	1745

PIKE COUNTY MILEPOINT 0.00 TO 7.00 ITEM NO. 12-9002.00 CLEARING AND GRUBBING SUMMARY				
BEGIN STATION	END STATION	SIDE	OFFSET LIMIT	QUANTITY
150+15*	160+25*	BOTH	VARIES	1.72 ACRES
211+50	214+50	LT	VARIES	0.08 ACRES
TOTAL: 1.80 ACRES				
TREE CUTTING SUMMARY				
BEGIN STATION	END STATION	SIDE	QUANTITY	
307+30	309+00	LT	4 TREES	
TOTAL: 4 TREES				
THESE NUMBERS ARE FOR ESTIMATE PURPOSES ONLY. ACTUAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.				
* STATIONING BASED OFF OF SHIFTED CURVE ALIGNMENT				

County: Pike

KY 632

Date: August, 2017

Consultant :

KYTC, D12

Team :

Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION						
ID	Route Log		GPS		Loc.	MUTCD Code	Size (in) W H	S _{PH}	TEXT / DESCRIPTION	NOTES
	Dir.	MP	Latitude	Longitude						
1	EB	0.150			R	S3-1	30 30	6.25	School Bus Stop Ahead	Remove
1	EB	0.177			R	W1-4R	30 30	6.25	Reverse Curve	Remove
1	EB	0.177			R	W13-1P	18 18	2.25	35 MPH Advisory	Remove
1	EB	0.177			R	W1-4R	30 30	6.25	Reverse Curve	Install
1	EB	0.177			R	W13-1P	18 18	2.25	35 MPH Advisory	Install
1	PC	0.220						0.00		PC Curve #01
1	WB	0.220			R	W1-8L	18 24	3.00		
1	EB	0.243			L	W1-8R	18 24	3.00		
1	WB	0.243			R	W1-8L	18 24	3.00		
1	EB	0.266			L	W1-8R	18 24	3.00		
1	WB	0.266			R	W1-8L	18 24	3.00		
1	EB	0.290			L	W1-8R	18 24	3.00		
1	WB	0.290			R	W1-8L	18 24	3.00		
1	EB	0.310			L	W1-8R	18 24	3.00		
1	WB	0.310			R	W1-8L	18 24	3.00		
1	EB	0.340			L	W1-8R	18 24	3.00		
1	WB	0.340			R	W1-8L	18 24	3.00		
1	EB	0.360			L	W1-8R	18 24	3.00		PT Curve #1
1	EB	0.370						0.00		PT Curve #2
2	EB	0.410						0.00		PC Curve #1
2	WB	0.430			L	W1-6R	24 48	8.00	Right Arrow	
2	EB	0.460			R	W1-6L	24 48	8.00	Left Arrow	
2	EB	0.470						0.00		PT Curve #2
2	WB	0.510			R	W1-4R	30 30	6.25	Reverse Curve	PC
3	EB	0.530						0.00		PT
3	EB	0.580						0.00		
3	WB	0.610			R	W1-4R	30 30	6.25	Reverse Curve	Remove
4	EB	0.780			R	W1-2L	30 30	6.25	Left Curve	Replace & Relocate to MP0.80
4	EB	0.780			R	W13-1P	18 18	2.25	35 MPH Advisory	Replace & Relocate to MP0.80
4	EB	0.800			R	W1-2L	30 30	6.25	Left Curve	Relocated from MP 0.78
4	EB	0.800			R	W13-1P	18 18	2.25	35 MPH Advisory	Relocated from MP 0.78
4	EB	0.850						0.00		PC
4	WB	0.850			L	W1-8R	18 24	3.00		
4	EB	0.873			R	W1-8L	18 24	3.00		
4	WB	0.873			L	W1-8R	18 24	3.00		
4	EB	0.896			R	W1-8L	18 24	3.00		
4	WB	0.896			L	W1-8R	18 24	3.00		

County: Pike

KY 632

Date: August, 2017

Consultant :

KYTC, D12

Team :

Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION						
ID	Route Log		GPS		Loc.	MUTCD Code	Size (in) W H	S _{PH}	TEXT / DESCRIPTION	NOTES
	Dir.	MP	Latitude	Longitude						
4	EB	0.919			R	W1-8L 18 24	3.00			
4	WB	0.919			L	W1-8R 18 24	3.00			
4	EB	0.942			R	W1-8L 18 24	3.00			
4	WB	0.942			L	W1-8R 18 24	3.00			
4	EB	0.965			R	W1-8L 18 24	3.00			
4	WB	0.965			L	W1-8R 18 24	3.00			
4	EB	0.988			R	W1-8L 18 24	3.00			
4							0.00			PT Curve #04
5	EB	1.050			R	W1-2R 30 30	6.25		Right Curve	Remove
5	EB	1.050			R	W1-1P 18 18	2.25		35 MPH Advisory	Remove
5	EB	1.050			R	W1-2R 30 30	6.25		Right Curve	Install
5	EB	1.050			R	W1-1P 18 18	2.25		35 MPH Advisory	Install
4	WB	1.060			R	W1-2R 30 30	6.25		Right Curve	Remove
4	WB	1.060			R	W1-1P 18 18	2.25		35 MPH Advisory	Remove
4	WB	1.060			R	W1-2R 30 30	6.25		Right Curve	Install
4	WB	1.060			R	W1-1P 18 18	2.25		40 MPH Advisory	Install
5	WB	1.120			R	W1-8L 18 24	3.00			PC Curve #05
5	EB	1.143			L	W1-8R 18 24	3.00			
5	WB	1.143			R	W1-8L 18 24	3.00			
5	EB	1.166			L	W1-8R 18 24	3.00			
5	WB	1.166			R	W1-8L 18 24	3.00			
5	EB	1.189			L	W1-8R 18 24	3.00			
5	WB	1.189			R	W1-8L 18 24	3.00			
5	EB	1.212			L	W1-8R 18 24	3.00			
5	WB	1.212			R	W1-8L 18 24	3.00			
5	EB	1.235			L	W1-8R 18 24	3.00			
5	WB	1.235			R	W1-8L 18 24	3.00			
5	EB	1.258			L	W1-8R 18 24	3.00			
5	WB	1.258			R	W1-8L 18 24	3.00			
5	EB	1.281			L	W1-8R 18 24	3.00			
5	WB	1.281			R	W1-8L 18 24	3.00			
5	EB	1.304			L	W1-8R 18 24	3.00			
5	WB	1.304			R	W1-8L 18 24	3.00			
5	EB	1.327			L	W1-8R 18 24	3.00			
5	WB	1.327			R	W1-8L 18 24	3.00			
5	EB	1.350			L	W1-8R 18 24	3.00			

County: Pike

KY 632

Date: August, 2017

Consultant :

KYTC, D12

Team :

Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES
ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S _{PH}	TEXT / DESCRIPTION	
5	WB 1.350		R	W1-8L 18 24	3.00			
5	EB 1.373		L	W1-8R 18 24	3.00			
5	WB 1.373		R	W1-8L 18 24	3.00			
5	EB 1.396		L	W1-8R 18 24	3.00			
5	WB 1.396		R	W1-8L 18 24	3.00			
5	EB 1.420		L	W1-8R 18 24	3.00			
5	WB 1.410		R	W1-2L 30 30	6.00		Left Curve	Remove
5	WB 1.450		R	W1-3-1P 18 18	2.00		35 MPH Advisory	Remove
5	WB 1.450		R	W1-2L 30 30	6.00		Left Curve	Install
5	WB 1.450		R	W1-1P 18 18	2.00		35 MPH Advisory	Install
6	EB 1.480		R	W1-2R 30 30	6.00		Right Curve	Remove
6	EB 1.480		R	W1-1P 18 18	2.00		35 MPH Advisory	Remove
6	EB 1.480		R	W1-2R 30 30	6.00		Right Curve	Install
6	EB 1.480		R	W1-1P 18 18	2.00		50 MPH Advisory	Install
6	EB 1.560		R	W1-8L 18 24	3.00			PC Curve #06
6	WB 1.560		R	W1-8L 18 24	3.00			
6	EB 1.583		L	W1-8R 18 24	3.00			
6	WB 1.583		R	W1-8L 18 24	3.00			
6	EB 1.606		L	W1-8R 18 24	3.00			
6	WB 1.606		R	W1-8L 18 24	3.00			
6	EB 1.629		L	W1-8R 18 24	3.00			
6	WB 1.629		R	W1-8L 18 24	3.00			
6	EB 1.652		L	W1-8R 18 24	3.00			
6	WB 1.652		R	W1-8R 18 24	3.00			
6	EB 1.675		L	W1-8R 18 24	3.00			
6	EB 1.660							PT Curve #06
6	WB 1.730		R	W1-2R 30 30	6.00		Left Curve	Remove
6	WB 1.730		R	W1-3-1P 18 18	2.00		35 MPH Advisory	Remove
6	WB 1.730		R	W1-2R 30 30	6.00		Left Curve	Install
6	WB 1.730		R	W1-1P 18 18	2.00		45 MPH Advisory	Install 45 mph Advisory
7	EB 1.760		R	W1-2L 30 30	6.00		Left Curve	Remove
7	EB 1.760		R	W1-3-1P 18 18	2.00		35 MPH Advisory	Remove
7	EB 1.760		R	W1-2L 30 30	6.00		Left Curve	Install
7	EB 1.760		R	W1-1P 18 18	2.00		50 MPH Advisory	Install 50 MPH Advisory
7	EB 1.800							PC Curve#07
7	WB 1.830		L	W1-6R 24 48	8.00		Right Arrow	Install

County: Pike

KY 632

Date: August, 2017

Consultant: KYTC, D12

Team: Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES
ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S R	TEXT / DESCRIPTION	
7	EB 1.860		R	W1-6L 24	48	8.00	Left Arrow	Install
7	EB 1.860							PC Curve#07
7	WB 1.930		R	W1-2R 30	30	6.00	Right Curve	Remove
7	WB 1.930		R	W1-1P 18	18	2.00	35 MPH Advisory	Remove
7	WB 1.930		R	W1-2R 30	30	6.00	Right Curve	Install
7	WB 1.930		R	W1-1P 18	18	2.00	50 MPH Advisory	Install
8	EB 2.100		R	W1-4L 30	30	6.00	Reverse Curve	Remove
8	EB 2.100		R	W1-1P 18	18	2.00	45MPH Advisory	Remove
8	EB 2.100		R	W1-4L 30	30	6.00	Reverse Curve	Install
8	EB 2.100		R	W1-1P 18	18	2.00	45 MPH Advisory	Install
8	WB 2.140		L	W1-6R 24	48	8.00	Right Arrow	PC Curve #08
8	WB 2.140							Install
8	EB 2.200		R	W1-6L 24	48	8.00	Left Arrow	PT Curve#08
8	EB 2.200							Install
9	WB 2.230		R	W1-6L 24	48	8.00	Left Arrow	PC Curve #9
9	WB 2.230							Install
9	EB 2.260		R	W1-6L 24	48	8.00	Left Arrow	Install
9	EB 2.280		L	W1-6R 24	48	8.00	Right Arrow	Install
9	EB 2.290							PT Curve #09
9	WB 2.360		R	W1-4L 30	30	6.00	Reverse Curve	Remove
9	WB 2.360		R	W1-1P 18	18	2.00	45 MPH Advisory	Remove
9	WB 2.360		R	W1-4L 30	30	6.00	Reverse Curve	Install
9	WB 2.360		R	W1-1P 18	18	2.00	45 MPH Advisory	Install
10	EB 2.380		R	W1-4R 30	30	6.00	Reverse Curve	Remove
10	EB 2.380		R	W1-4R 30	30	6.00	Reverse Curve	Remove
10	EB 2.380		R	W1-1P 18	18	2.00	40 MPH Advisory	Remove
10	EB 2.380		R	W1-4R 30	30	6.00	Reverse Curve	Install
10	EB 2.380		R	W1-1P 18	18	2.00	50 MPH Advisory	Install
10	EB 2.450							PC Curve#10
10	WB 2.460		R	W1-6L 24	48	8.00	Left Arrow	Install
10	EB 2.480							PT Curve #10
10	EB 2.490		L	W1-6R 24	48	8.00	Right Arrow	Install
11	EB 2.510							PC Curve#11
11	WB 2.510		L	W1-8R 18	24	3.00		
11	EB 2.533		R	W1-8L 18	24	3.00		
11	WB 2.533		L	W1-8R 18	24	3.00		
11	EB 2.556		R	W1-8L 18	24	3.00		
11	WB 2.556		L	W1-8R 18	24	3.00		
11	EB 2.579		R	W1-8L 18	24	3.00		

County: Pike

KY 632

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ID	Route Log Dir.	MP	GPS Latitude	Longitude	Loc.	MUTCD Code	Size (in) W H		S _{PH}	TEXT / DESCRIPTION	
11	WB	2.579			L	W1-8R	18 24	3.00			
11	EB	2.602			R	W1-8L	18 24	3.00			
11	EB	2.610									PT Curve #11
11	WB	2.670			R	W1-4R	30 30	6.00	Reverse Curve		Remove
11	WB	2.670			R	W1-3-1P	18 18	2.00	40 MPH Advisory		Remove
11	WB	2.670			R	W1-4R	30 30	6.00	Reverse Curve		Install
11	WB	2.670			R	W1-3-1P	18 18	2.00	50 MPH Advisory		Install
12	EB	2.710			R	W1-2L	30 30	6.00	Left Curve		Remove
12	EB	2.710			R	W1-3-1P	18 18	2.00	40 MPH Advisory		Remove
12	EB	2.710			R	W1-5L	30 30	6.00	Winding Curve		Install
12	EB	2.710			R	W1-3-1P	18 18	2.00	35 MPH Advisory		Install
12	EB	2.800									PC Curve#12
12	WB	2.800			L	W1-8R	18 24	3.00			
12	EB	2.823			R	W1-8L	18 24	3.00			
12	WB	2.823			L	W1-8R	18 24	3.00			
12	EB	2.846			R	W1-8L	18 24	3.00			
12	WB	2.846			L	W1-8R	18 24	3.00			
12	EB	2.869			R	W1-8L	18 24	3.00			
12	WB	2.869			L	W1-8R	18 24	3.00			
12	EB	2.890			R	W1-3R	30 30	6.00	Reverse Turn		Remove
12	EB	2.890			R	W1-3-1P	18 18	2.00	25 MPH Advisory		Remove
12	EB	2.892			R	W1-8L	18 24	3.00			
12	WB	2.892			L	W1-8R	18 24	3.00			
12	EB	2.915			R	W1-8L	18 24	3.00			PT Curve#12
13	EB	2.950									PC Curve#13
13	WB	2.970			R	W1-6L	24 48	8.00	Left Arrow		Install
13	EB	2.980			L	W1-6R	24 48	8.00	Right Arrow		Install
13	EB	2.990									PT Curve #2.99
14	EB	3.020									PC CURVE#14
14	WB	3.040			L	W1-6R	24 48	8.00	Right Arrow		Install
14	EB	3.050			R	W1-6L	24 48	8.00	Left Arrow		Install
14	EB	3.100									PT Curve#14
14	WB	3.130			R	W1-3R	30 30	6.00	Reverse Turn		Remove
14	WB	3.130			R	W1-3-1P	18 18	2.00	25 MPH Advisory		Remove
14	WB	3.130			R	W1-5R	30 30	6.00	Winding Curve		Install
14	WB	3.130			R	W1-3-1P	18 18	2.00	35 MPH Advisory		Install

County: Pike

KY 632

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Team: Patton, Mercer

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ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S _{PH}	TEXT / DESCRIPTION	
15	EB 3.200							PC Curve #15
15	EB 3.300							PT Curve #15
16	EB 3.540		R	W1-2R	30 30	6.00	Right Curve	Install
16	EB 3.540		R	W13-1P	18 18	2.00	50 MPH Advisory	Install
16	EB 3.550							PC CURVE #16
16	WB 3.590		R	W1-6L	24 48	8.00	Left Arrow	Install
16	EB 3.600		L	W1-6L	24 48	8.00	Right Arrow	Install
16	EB 3.630							PT Curve#16
16	WB 3.670		R	W1-2L	30 30	6.00	Left Curve	Install
16	WB 3.670		R	W13-1P	18 18	2.00	45 MPH Advisory	Install
17	EB 3.700		R	W1-2L	30 30	6.00	Left Curve	Remove
17	EB 3.700		R	W13-1P	18 18	6.00	40 MPH Advisory	Remove
17	EB 3.700		R	W1-2L	30 30	6.00	Left Curve	Install
17	EB 3.700		R	W13-1P	18 18	6.00	50 MPH Advisory	Install
17	EB 3.780							PC Curve #17
17	EB 3.820							PT Curve #17
17	EB 3.830		R	W1-6	24 48	8.00	Left Arrow	Install
17	WB 3.870		R	W1-2R	30 30	6.00	RightCurve	Remove
17	WB 3.870		R	W13-1P	18 18	2.00	40 MPH Advisory	Remove
17	EB 3.900		R	W1-4R	30 30	6.00	Reverse Curve	Remove
17	WB 3.900		R	W13-1P	30 30	6.00	30 MPH Advisory	Remove
17	EB 3.900		R	W1-5R	30 30	6.00	Winding Curve	Install
17	EB 3.900		R	W13-1P	18 18	2.00	30 MPH Advisory	Install
18	EB 3.930							PC Curve#3,930
18	WB 3.960		R	W1-6L	24 48	8.00	Left Arrow	Install
18	EB 3.970							PT Curve #18
18	EB 3.990		L	W1-6R	24 48	8.00	Right Arrow	Install
19	EB 4.000							PC Curve#19
19	WB 4.000		L	W1-8R	18 24	3.00		
19	EB 4.023		R	W1-8L	18 24	3.00		
19	WB 4.046		L	W1-8R	18 24	3.00		
19	EB 4.069		R	W1-8L	18 24	3.00		
19	EB 4.070							PT Curve#19
20	EB 4.080							PC Curve#20
20	WB 4.120							PT Curve#20
20	WB 4.120		R	W1-6L	24 48	8.00	Left Arrow	Install
20	WB 4.120		R	NS	30 30	6.00	Prepare for Sudden Stop	Remove

County: Pike

KY 632

Date: August, 2017

Consultant:

KYTC, D12

Team:

Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES
ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S R	TEXT / DESCRIPTION	
20	EB	4.130	R	W1-4L	30 30	6.00	Reverse Curve	Remove
20	EB	4.130	R	W13-1P	18 18	2.00	40 MPH Advisory	Remove
20	WB	4.140	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
20	EB	4.140	L	W1-6R	24 48	8.00	Right Arrow	Install
20	WB	4.150	R	W1-4R	30 30	6.00	Reverse Curve	Remove
20	WB	4.150	R	W13-1P	18 18	2.00	30 MPH Advisory	Remove
20	WB	4.155	R	W2-2	30 30	6.00	Side Road Warning Sign	Remove
20	WB	4.170	R	W1-5R	30 30	6.00	Winding Road	Install
21	EB	4.180						PC Curve#21
21	EB	4.210	R	W11-10	30 30	6.00	Truck Xing	Remove
21	EB	4.230						PT Curve #21
21	WB	4.240	R	NS	30 30	6.00	Congested Area	Remove
22	EB	4.240	R	W1-4L	30 30	6.00	Reverse Curve	Install
22	EB	4.240	R	W13-1P	18 18	2.00	45 MPH Advisory	Install
22	EB	4.280						PC Curve #22
22	WB	4.305	L	W1-6R	24 48	8.00	Right Arrow	Install
22	EB	4.320	R	W1-6L	24 48	8.00	Left Arrow	Install
22	EB	4.330						PT Curve #22
23	EB	4.370						PC Curve#23
23	WB	4.390	R	W1-6L	24 48	8.00	Left Arrow	Install
23	EB	4.430	L	W1-6R	24 48	8.00	Right Arrow	Install
23	EB	4.440						PT Curve#23
24	EB	4.480	R	W1-2R	30 30	6.00	Right Curve	Remove
24	EB	4.480	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
23	WB	4.480	R	W1-4L	30 30	6.00	Reverse Curve	Remove
23	WB	4.480	R	W1-4L	30 30	6.00	Reverse Curve	Install
23	WB	4.480	R	W13-1P	18 18	2.00	40 MPH Advisory	Remove
23	WB	4.480	R	W13-1P	18 18	2.00	40 MPH Advisory	Install
23	WB	4.480	R	W13-1P	18 18	2.00	40 MPH Advisory	Remove
23	WB	4.480	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
24	EB	4.510						PC Curve#24
24	EB	4.580						PT Curve#24
24	EB	4.590	R	W11-10	30 30	6.00	Truck Xing	Remove
25	EB	4.660						PC Curve#25
25	EB	4.700	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
25	EB	4.700	R	S3-1	30 30	6.00	School Bus Stop Ahead	Install
25	EB	4.710						PT Curve#25
26	EB	4.800	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove

County: Pike

KY 632

Date: August, 2017

Consultant :

KYTC, D12

Team :

Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES
ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S R	TEXT / DESCRIPTION	
26	EB	4.830	R	W1-2L	30 30	6.00	Left Curve	Remove
26	EB	4.830	R	W1-2L	30 30	6.00	Left Curve	Install
26	EB	4.830	R	W13-1P	30 30	6.00	45 MPH Advisory	Install
26	EB	4.850						PC Curve#485
26	WB	4.870	L	W1-6R	24 48	8.00	Right Arrow	Install
26	EB	4.880	R	W1-6L	24 48	8.00	Left Arrow	Install
26	EB	4.910						PT Curve #25
26	EB	4.920	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
26	WB	4.920	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
26	WB	4.920	R	S3-1	30 30	6.00	School Bus Stop Ahead	Install
26	WB	4.950	R	W1-2R	30 30	6.00	Right Curve	Install
26	WB	4.950	R	W13-1P	18 18	2.00	45 MPH Advisory	Install
27	EB	4.950						PC Curve #27
27	WB	4.980	L	W1-6R	24 48	8.00	Right Arrow	Install
27	EB	5.000	R	W1-6L	24 48	8.00	Left Arrow	Install
27	EB	5.000						PT Curve #27
28	EB	5.040	R	W1-2L	30 30	6.00	Left Curve	Remove
28	EB	5.040	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
28	EB	5.040	R	W1-2L	30 30	6.00	Left Curve	Install
28	EB	5.040	R	W13-1P	18 18	2.00	35 MPH Advisory	Install
28	WB	5.090	R	W1-2R	30 30	6.00	Right Curve	Remove
28	WB	5.090	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
28	WB	5.090	R	W1-2R	30 30	6.00	Right Curve	Install
28	WB	5.090	R	W13-1P	18 18	2.00	35 MPH Advisory	Install
28	EB	5.090						PC Curve#28
28	WB	5.090	L	W1-8R	18 24	3.00		Remove existing Chevrons
28	EB	5.113	R	W1-8L	18 24	3.00		
28	WB	5.113	L	W1-8R	18 24	3.00		
28	EB	5.136	R	W1-8L	18 24	3.00		
28	WB	5.136	L	W1-8R	18 24	3.00		
28	EB	5.159	R	W1-8L	18 24	3.00		
28	WB	5.159	L	W1-8R	18 24	3.00		
28	WB	5.170	R	W1-2R	30 30	6.00	Right Curve	Remove
28	WB	5.170	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
28	EB	5.182	R	W1-8L	18 24	3.00		
28	WB	5.182	L	W1-8R	18 24	3.00		
28	EB	5.190	R	W1-2L	30 30	6.00	Left Curve	Remove

County: Pike

KY 632

Date: August, 2017

Consultant: KYTC, D12

Team: Patton, Mercer

SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES
ID	Route Log Dir. MP	GPS Latitude Longitude	Loc.	MUTCD Code	Size (in) W H	S P	TEXT / DESCRIPTION	
28	EB	5.190	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove "
28	EB	5.205	R	W1-8L	18 24	3.00		"
28	WB	5.205	L	W1-8R	18 24	3.00		"
28	EB	5.228	R	W1-8L	18 24	3.00		"
28	WB	5.228	L	W1-8R	18 24	3.00		"
28	EB	5.251	R	W1-8L	18 24	3.00		"
28	WB	5.251	L	W1-8R	18 24	3.00		"
28	EB	5.274	R	W1-8L	18 24	3.00		"
28	WB	5.274	L	W1-8R	18 24	3.00		"
28	EB	5.297	R	W1-8L	18 24	3.00		"
28	WB	5.330	R	W1-2R	30 30	6.00	Right Curve	Remove
28	WB	5.330	R	W13-1P	18 18	2.00	35MPH Advisory	Remove
28	WB	5.330	R	W1-2R	30 30	6.00	Right Curve	Install
28	WB	5.330	R	W13-1P	18 18	2.00	45 MPH Advisory	Install
29	EB	5.330						PC Curve #29
29	EB	5.490						PT Curve #29
29	WB	5.660	R	S3-1	30 30	6.00	School Bus Stop Ahead	Remove
30	EB	5.870	R	W1-2R	30 30	6.00	Right Curve	Remove
30	EB	5.870	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
30	EB	5.870	R	W1-2R	30 30	6.00	Right Curve	Install
30	EB	5.870	R	W13-1P	18 18	2.00	45 MPH Advisory	Install
30	EB	5.950						PC Curve #30
30	EB	6.000	L	W1-6R	24 48	8.00	Right Arrow	Install
30	WB	6.010	R	W1-6L	24 48	8.00	Left Arrow	Install
30	EB	6.040						PT Curve #30
31	EB	6.060	R	W1-2R	30 30	6.00	Right Curve	Remove
31	EB	6.060	R	W1-2R	30 30	6.00	Right Curve	Install
31	EB	6.060	R	W13-1P	18 18	2.00	50 MPH Advisory	Install
30	WB	6.080	R	W1-2L	30 30	6.00	Left Curve	Remove
30	WB	6.080	R	W13-1P	18 18	2.00	35 MPH Advisory	Remove
30	WB	6.080	R	W1-2L	30 30	6.00	Left Curve	Install
30	WB	6.080	R	W13-1P	18 18	2.00	40 MPH Advisory	Install
31	EB	6.100						PC Curve#31
31	WB	6.140	R	W1-6L	24 48	8.00	Left Arrow	Install
31	EB	6.160	L	W1-6R	24 48	8.00	Right Arrow	Install
31	EB	6.200						PT Curve #31
31	WB	6.200	R	W1-2L	30 30	6.00	Left Curve	Remove

County: Pike

KY 632

Date: August, 2017

Consultant :

KYTC, D12

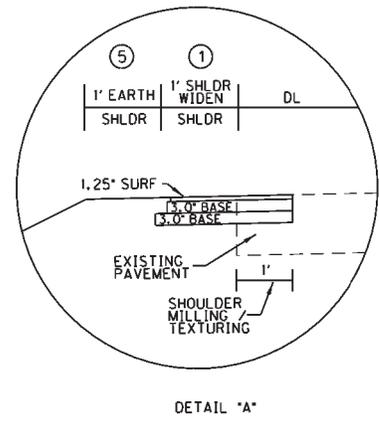
Team :

Patton, Mercer

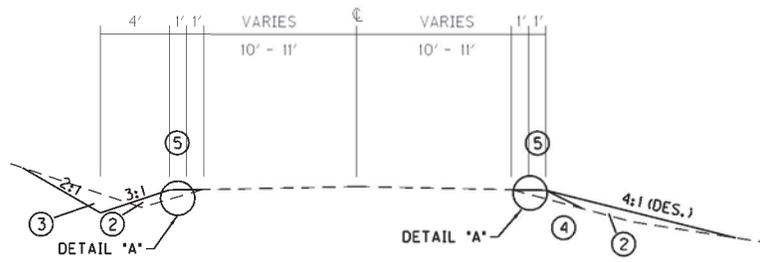
SIGN LOCATION				SIGN TYPE, SIZE, AND DESCRIPTION				NOTES			
ID	Route Log		GPS		Loc.	MUTCD Code	Size (in)				
	Dir.	MP	Latitude	Longitude			W	H	S _q Ft	TEXT / DESCRIPTION	
31	WB	6.200			R	W1-2L	30	30	6.00	Left Curve	Install
31	WB	6.200			R	W13-1P	18	18	2.00	50 MPH Advisory	Install
32	EB	6.590									PC Curve #32
32	EB	6.700									PT Curve #32
33	EB	6.890									PC Curve #33
33	WB	6.920			R	W1-6L	24	48	8.00	Left Arrow	Install
33	EB	6.970									PT Curve #33
33	WB	7.020			R	W1-2L	30	30	6.00	Left Curve	Install
33	WB	7.020			R	W13-1P	18	18	2.00	50 MPH Advisory	Install

TYPICAL SECTIONS

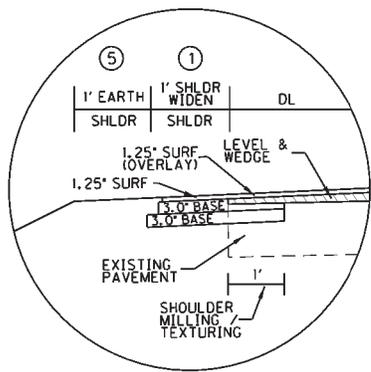
COUNTY OF	ITEM NO.	SHEET NO.
Pike	12-9002	



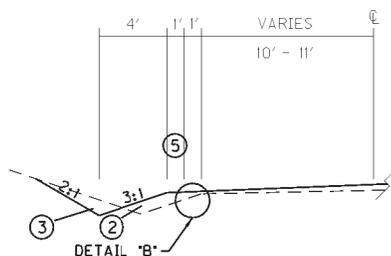
DETAIL "A"



NORMAL SECTION

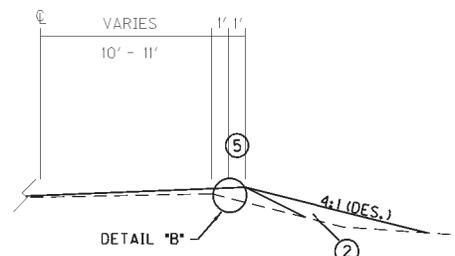


DETAIL "B"



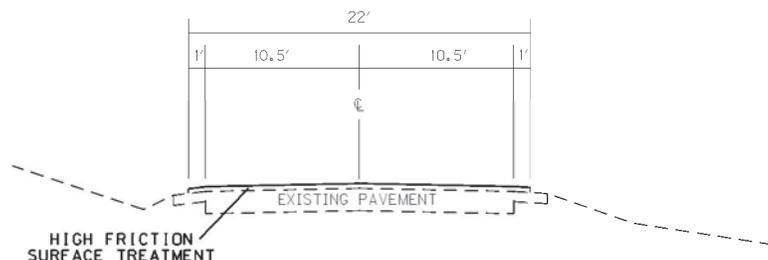
SUPERELEVATED SECTION

CUT



SUPERELEVATED SECTION

FILL



ASPHALT SURFACE MUST CURE A MINIMUM OF 30 DAYS BEFORE INSTALLING HIGH FRICTION SURFACE TREATMENT

HIGH FRICTION SURFACE TREATMENT

- ① DESIRABLE 1 FOOT SHOULDER WIDENING.
- ② COMPACTED EMBANKMENT (INCIDENTAL TO DITCHING & SHOULDERING). CONTRACTOR SHALL PROPERLY BENCH INTO EXISTING SLOPE AND APPLY PROPER COMPACTION. COMPACT MATERIAL ACCORDING TO STANDARD SPECIFICATIONS (SECT. 206). FINAL PAYMENT WILL BE PAID AS LF OF DITCHING & SHOULDERING AND INCLUDE ALL WORK NECESSARY TO PERFORM WORK. SHOULDER EMBANKMENT MATERIAL SHALL BE SUITABLE FOR VEGETATION GROWTH. LOCATIONS THAT ARE LIMITED DUE TO R/W, UTILITY POLES, TREES, FENCES, OR OTHER SENSITIVE OBSTRUCTIONS MAY REQUIRE EMBANKMENT BUT ONLY OUT TO THE EDGE OF R/W OR SENSITIVE OBSTRUCTION(S). (SLOPE MAY BE STEEPER THAN 3:1)
- ③ EXCAVATION TO ACHIEVE THE PROPOSED DITCHES IS INCIDENTAL TO THE BID ITEM DITCHING & SHOULDERING.
- ④ CONTRACTOR TO USE CAUTION IN CONSTRUCTING SIDE SLOPES AND PLACING FILL.
- ⑤ DESIRABLE 1' EARTH SHOULDER

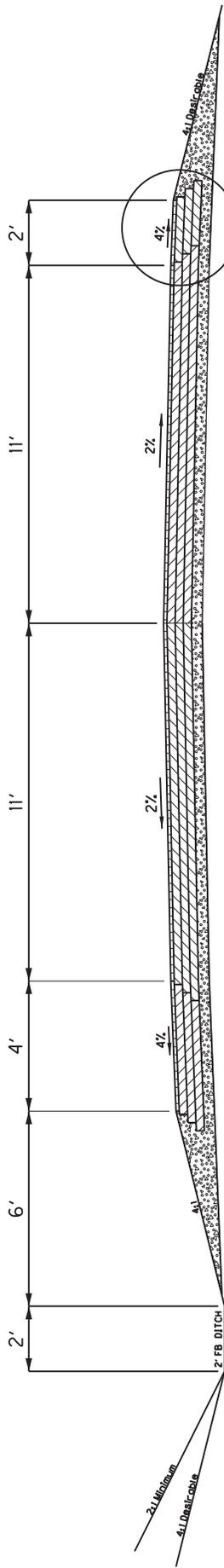
NOT TO SCALE

TYPICAL SECTION

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002	

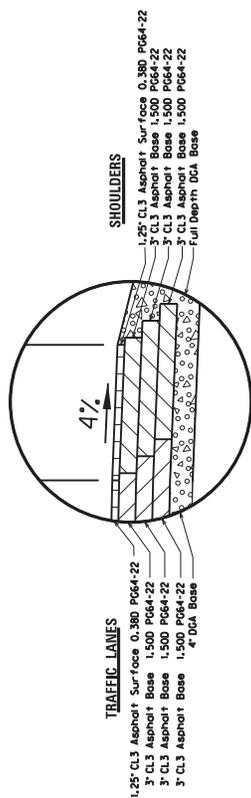
TYPICAL SECTION

Sta. 150 + 15.03 to Sta. 160 + 00



DETAIL "A"

NORMAL SECTION



DETAIL "A"

NEW CONSTRUCTION

Grade, Drain & Flexible Pavement

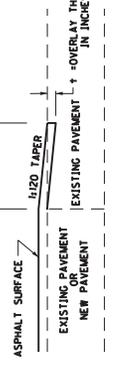
TRAFFIC LANES

- 4" Compacted Depth DGA Base
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 1.25' Compacted Depth CL3 Asphalt Surface 0.380 PG64-22

SHOULDERS

- Full Depth DGA Base
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 3" Compacted Depth CL3 Asphalt Base 1,500 PG64-22
- 1.25' Compacted Depth CL3 Asphalt Surface 0.380 PG64-22
- Asphalt Seal Required From Outside Edge of Paved Shoulder To a Point 2' Down the Ditch or Fill Slope. Two Applications of the Following:
- 2.40 Lb/Sq. Yd. Emulsified Asphalt RS-2
- 20 Lb/Sq. Yd. Asphalt Seal Aggregate

TAPER LENGTH
IN INCHES
= 120 x t (in.)

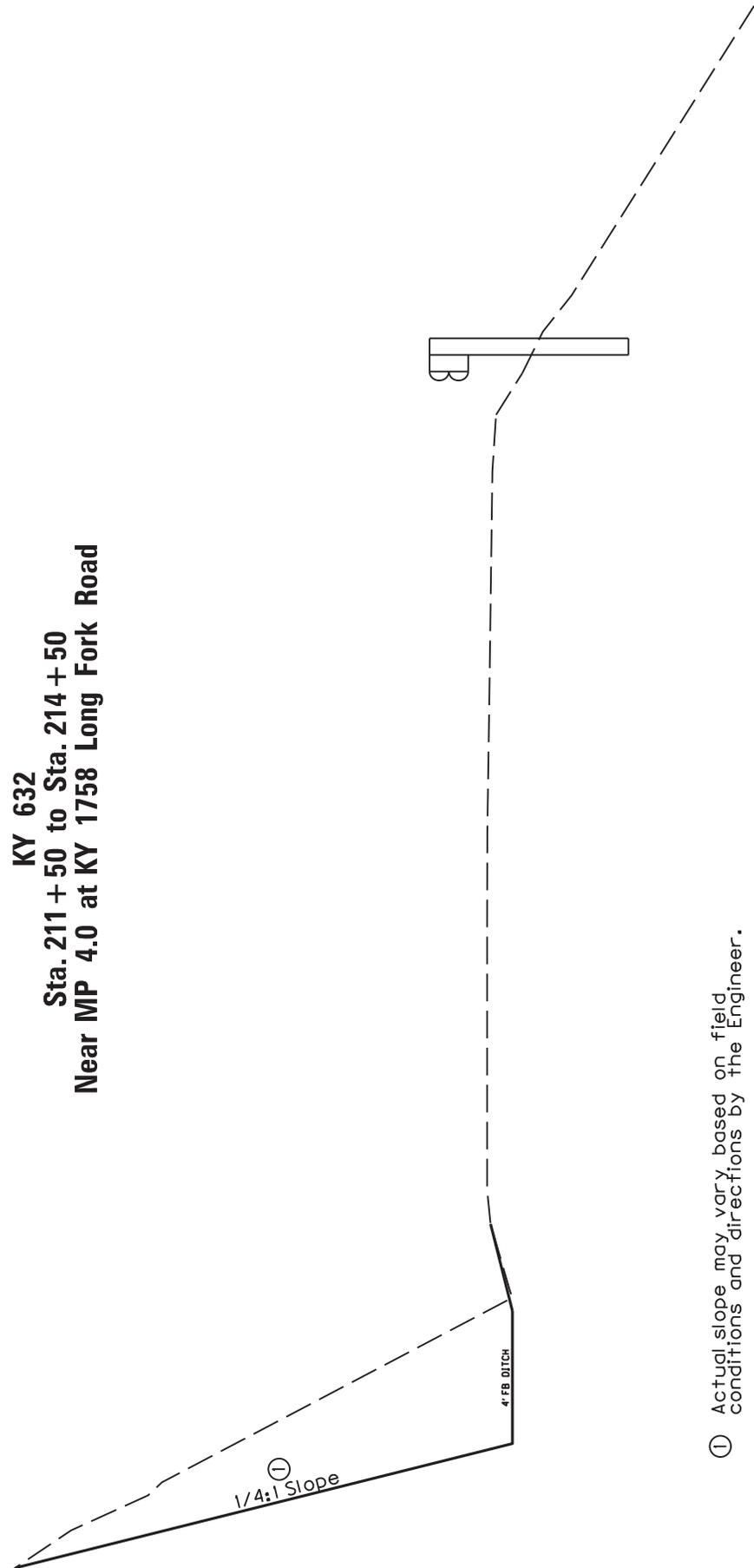


TAPERING OF OVERLAYS ON LOW SPEED FACILITIES (< 45 MPH)

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002	

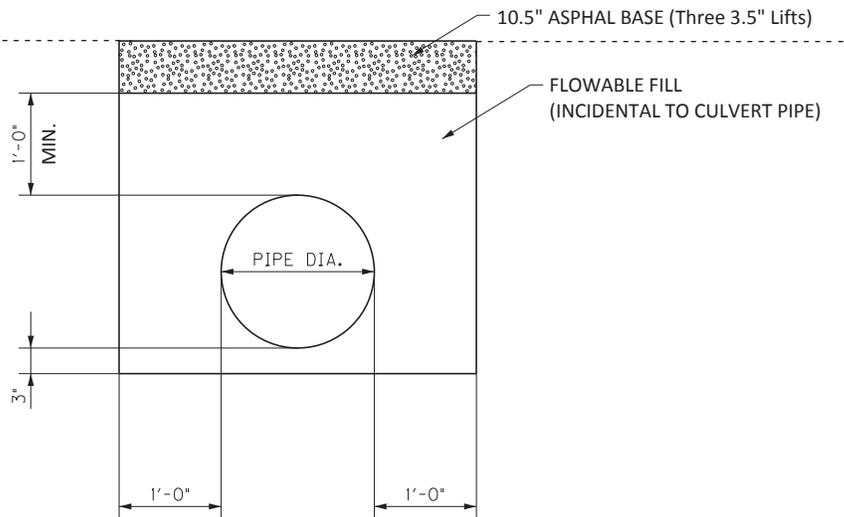
TYPICAL SECTION

KY 632
Sta. 211 + 50 to Sta. 214 + 50
Near MP 4.0 at KY 1758 Long Fork Road



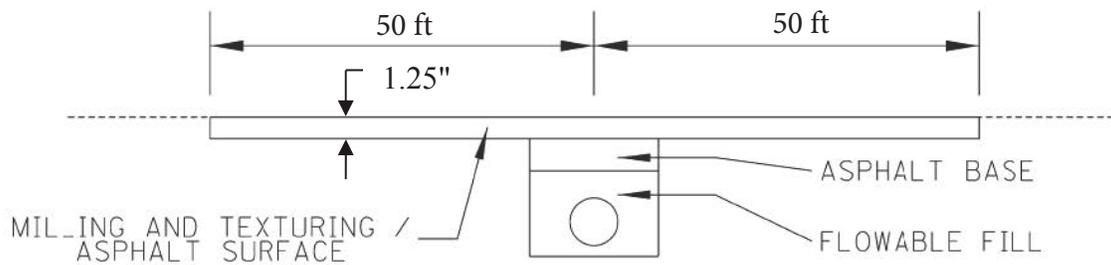
① Actual slope may vary based on field conditions and directions by the Engineer.

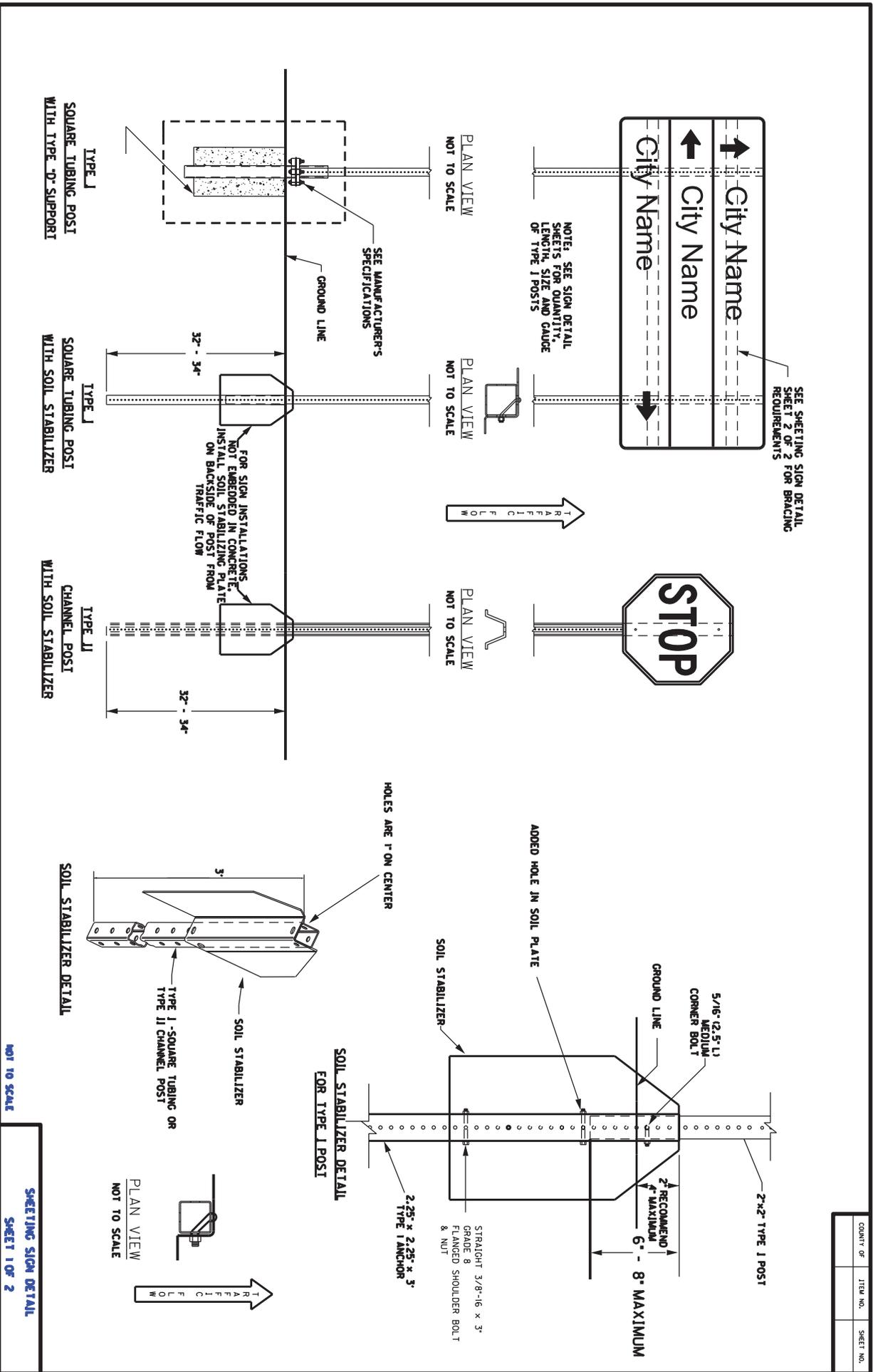
CULVERT PIPE REPLACEMENT DETAIL



CULVERT PIPE REPLACEMENTS - INITIAL BACKFILL

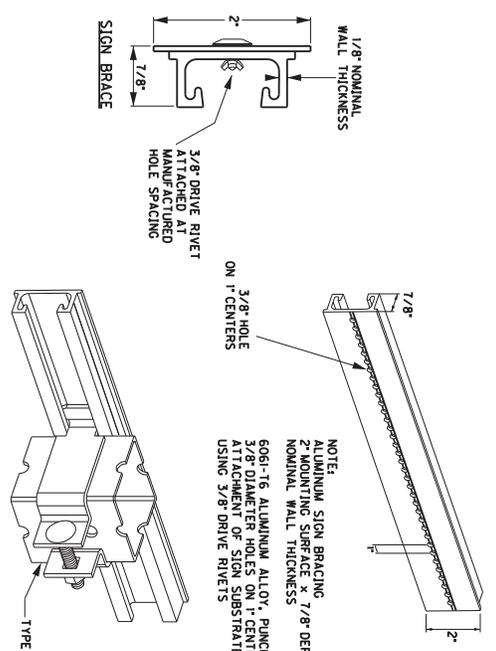
Culvert Pipe Replacements shall be constructed according to the Initial Backfill Detail shown above, or as directed by the Engineer. Allow the asphalt base to be exposed to traffic a minimum of 14 days to allow for settlement. After the 14 day waiting period, mill and inlay 1.25 inches of asphalt surface according to the detail below.





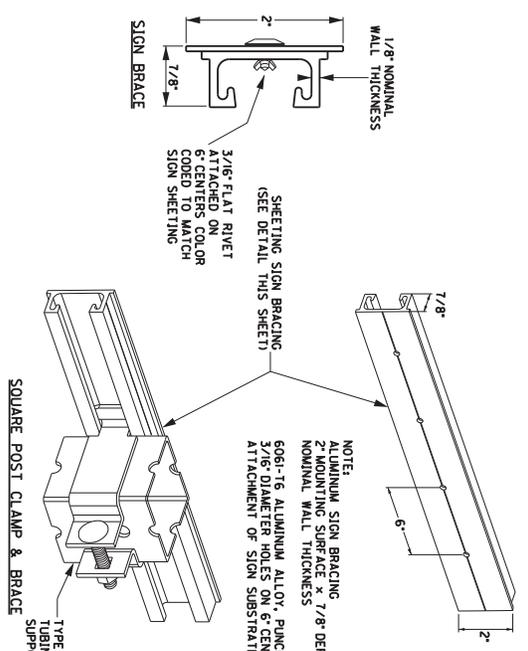
COUNTY OF	ITEM NO.	SHEET NO.

COUNTY OF	ITEM NO.	SHEET NO.
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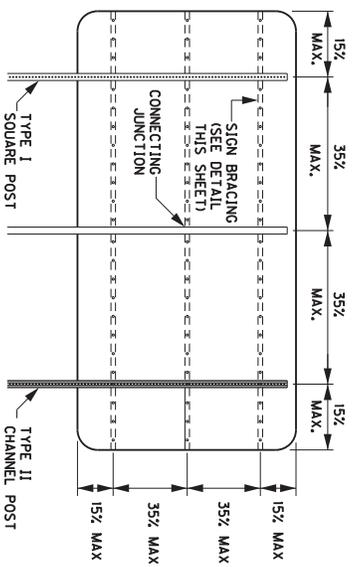
FOR ATTACHMENT OF SIGNS LESS THAN 72" IN WIDTH USING MANUFACTURED 3/8" HOLES ACCORDING TO 2004 STANDARD HIGHWAY SIGNS BLANK STANDARDS POS 7-1 THRU 7-6

SQUARE POST CLAMP & BRACE



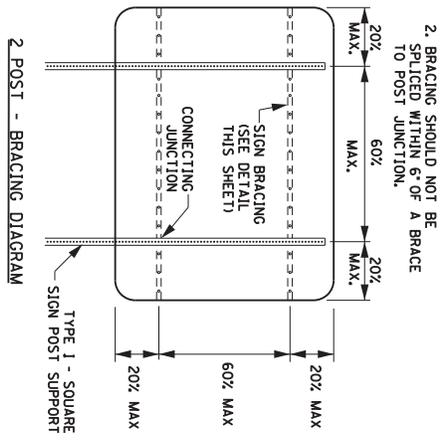
FOR ATTACHMENT OF SIGNS GREATER THAN 72" IN WIDTH, RIVETS SHALL BE COLOR CODED TO MATCH SHEETING IN ORDER TO MINIMIZE CLARE FROM RIVETS

SQUARE POST CLAMP & BRACE



3 POST - BRACING DIAGRAM

NOTE:
1. MAXIMUM AREA PER CONNECTING JUNCTION = 16 SQ. FT.

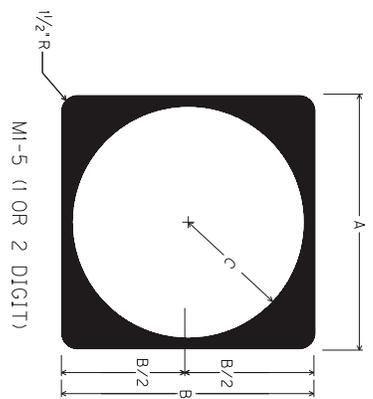
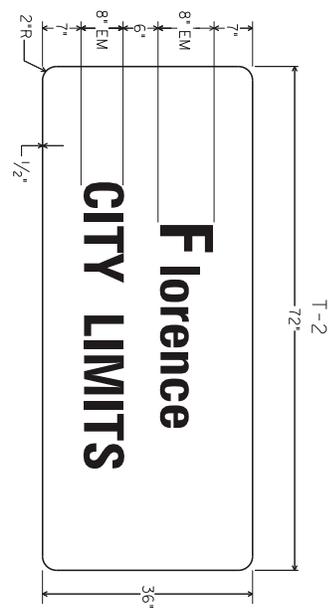
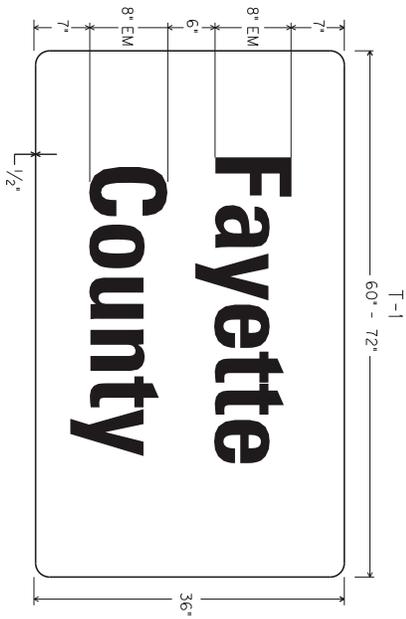


2 POST - BRACING DIAGRAM

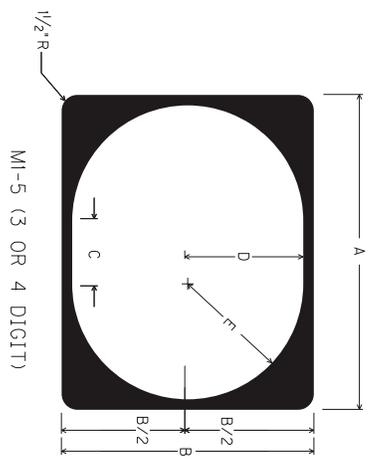
NOTE:
USE OF SIGN BRACING NOT SHOWN ON THIS SHEET MAY BE PERMITTED BY PROJECT ENGINEER AND/OR DISTRICT TRAFFIC ENGINEER.

NOT TO SCALE
SHEETING SIGN DETAIL
SHEET 2 OF 2

COUNTY OF	ITEM NO.	SHEET NO.
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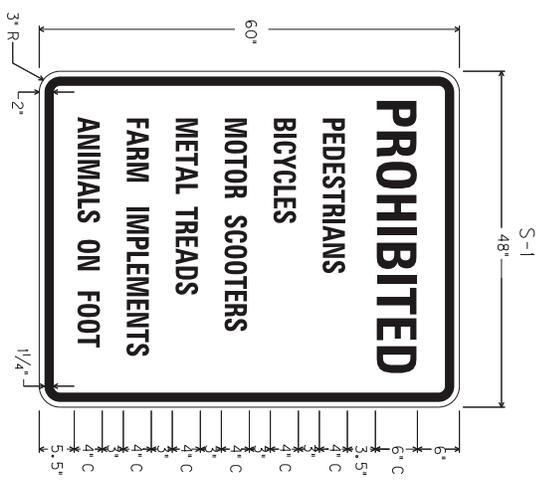
	A	B	C	FONT
CONVENTIONAL	24"	24"	11"	12D
EXPRESSWAY/ FREEWAY	36"	36"	17"	18D



	A	B	C	D	E	FONT	
						3 DIGIT	4 DIGIT
CONVENTIONAL	30"	24"	6"	11"	11"	12D	12B
EXPRESSWAY/ FREEWAY	45"	36"	9"	16.5"	16.5"	18D	18B

NOTE: FOR ROUTE MARKERS, IF NECESSARY, ADJUSTMENTS TO THE DIGIT LAYOUT AND/OR FONT TYPE MAY BE MADE TO ENSURE VISUAL ACUTY

NOTE: EXPRESSWAY/FREEWAY DEFINED AS A DIVIDED HIGHWAY WITH PARTIAL OR FULL CONTROL OF ACCESS



NOT TO SCALE

TYPICAL SIGNS

FIGURE 1

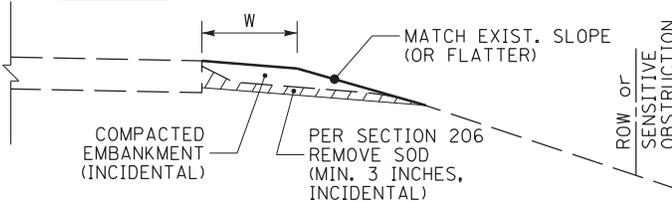


FIGURE 2

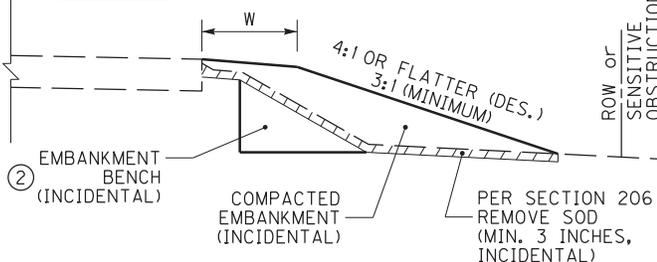


FIGURE 3

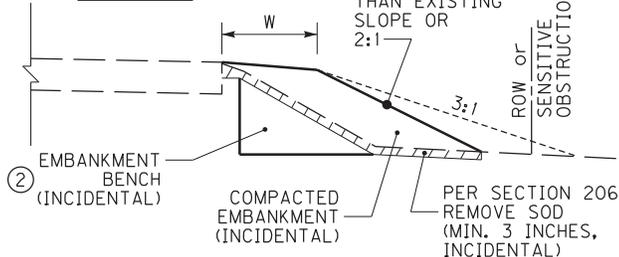


FIGURE 4

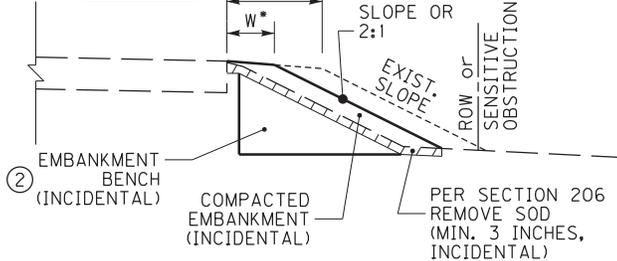


FIGURE 5

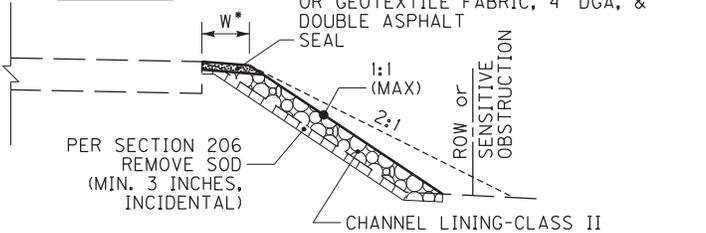
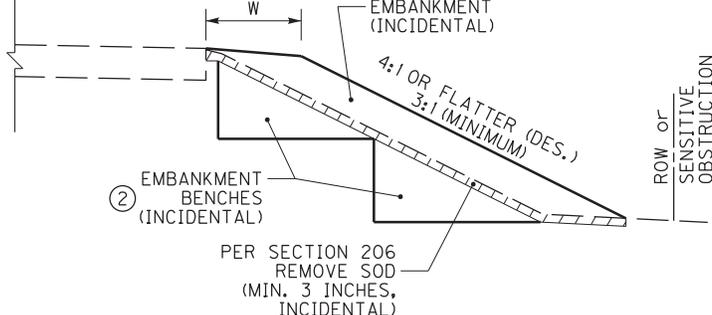


FIGURE 6



~ NOTES ~

BID ITEM AND UNIT TO BID:
2575 - DITCHING & SHOULDERING - LF

1. THE BID ITEM 'DITCHING & SHOULDERING' SHALL CONSIST OF ANY AND ALL NECESSARY CLEARING & GRUBBING, GRADING, AND/OR RESHAPING OF THE EXISTING SHOULDER, DITCH, AND/OR ROADSIDE TO ACHIEVE THE PROPOSED SHOULDER, DITCH, AND/OR ROADSIDE DIMENSIONS, AS DETAILED ON THE TYPICAL SECTIONS. FINAL PAYMENT WILL BE BASED ON THE ACTUAL LINEAR FEET OF DITCHING AND SHOULDERING PERFORMED, AND WILL INCLUDE ALL WORK AND INCIDENTALS NECESSARY TO PERFORM THE DITCHING AND SHOULDERING ACCORDING TO THESE DETAILS, NOTES, AND ANY OTHER INFORMATION FOUND ELSEWHERE IN THE PROPOSAL OR STANDARD SPECIFICATIONS. IN THE CASE OF A DISCREPANCY, REFER TO SECTION 105.05 OF THE STANDARD SPECIFICATIONS. DEPENDING ON THE EXISTING CONDITIONS ENCOUNTERED, DITCHING AND SHOULDERING MAY ALSO INCLUDE, BUT IS NOT LIMITED TO:

- PROVIDING ADDITIONAL EARTH MATERIAL AND GRADING, SHAPING, AND COMPACTING THE EARTH MATERIAL TO ACHIEVE THE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS. COMPACT MATERIAL ACCORDING TO SECTION 206 OF THE STANDARD SPECIFICATIONS.
- NOTE: ADDITIONAL EARTH MATERIAL PROVIDED SHALL BE SUITABLE FOR VEGETATION GROWTH.
- EXCAVATING AND REMOVING EXCESS MATERIAL TO ACHIEVE THE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS
- EMBANKMENT BENCHING

② EMBANKMENT BENCHING WILL BE REQUIRED WHEN THE EXISTING GROUNDLINE HAS AN INCLINE GREATER THAN 15% (APPROX. 6:1). ANY AND ALL REQUIRED EMBANKMENT BENCHING SHALL BE INCIDENTAL TO THE BID ITEM 'DITCHING AND SHOULDERING'. THE FOLLOWING ARE GUIDELINES FOR EMBANKMENT BENCHING USED IN CONJUNCTION WITH THE BID ITEM 'DITCHING AND SHOULDERING':

- THE TYPICAL HEIGHT (OR RISE) IS 1' TO 6'
- THE TYPICAL WIDTH (OR RUN) WILL VARY BASED ON THE HEIGHT OF THE BENCH
- MULTIPLE SMALL BENCHES MAY BE USED, AND MAY BE MORE ADVANTAGEOUS AS THIS WILL REQUIRE PROCESSING LESS EARTHWORK.

3. AS SHOWN IN FIGURE 1, IN SOME SITUATIONS, MINOR SHOULDERING, WITH MINIMAL ADDITIONAL EARTH MATERIAL, MAY BE ALL THAT IS REQUIRED TO RESHAPE THE EARTH SHOULDER TO THE PROPOSED WIDTH AND BRING IT FLUSH WITH THE EDGE OF PAVEMENT.

4. AS SHOWN IN FIGURE 2, MOST SITUATIONS WILL REQUIRE ADDITIONAL EARTH MATERIAL TO ACHIEVE THE PROPOSED EARTH SHOULDER WIDTH. IT IS DESIRED THAT THE RESULTING FILL SLOPE BE INSTALLED AS FLAT AS POSSIBLE AND REMAIN WITHIN THE RIGHT-OF-WAY AND/OR AVOID SENSITIVE OBSTRUCTIONS.

5. AS SHOWN IN FIGURE 3, IF A 3:1 FILL SLOPE WILL RESULT IN THE TOE OF SLOPE EXTENDING BEYOND THE RIGHT-OF-WAY OR IMPACT A SENSITIVE OBSTRUCTION, THEN THE FILL SLOPE MAY BE INSTALLED STEEPER THAN 3:1, BUT NO STEEPER THAN THE EXISTING FILL SLOPE, OR A 2:1, WHICHEVER IS FLATTER.

6. AS SHOWN IN FIGURE 4, IF MATCHING THE EXISTING FILL SLOPE OR INSTALLING A 2:1 FILL SLOPE (WHICHEVER IS FLATTER) STILL RESULTS IN THE TOE OF SLOPE EXTENDING BEYOND THE RIGHT-OF-WAY OR STILL IMPACTS A SENSITIVE OBSTRUCTION, THEN THE PROPOSED EARTH SHOULDER WIDTH MAY BE REDUCED SO THAT THE RESULTING TOE OF SLOPE WILL REMAIN WITHIN THE RIGHT-OF-WAY AND/OR NOT IMPACT THE SENSITIVE OBSTRUCTION.

7. AS SHOWN IN FIGURE 5, IF THE EXISTING FILL SLOPE IS STEEPER THAN 2:1 AND THERE IS NOT ENOUGH SPACE TO INSTALL A 2:1 FILL SLOPE WITHOUT EXTENDING BEYOND THE RIGHT-OF-WAY AND/OR IMPACTING A SENSITIVE OBSTRUCTION, THEN CLASS II CHANNEL LINING MAY BE INSTALLED ALONG THE STEEP EXISTING SLOPE IN ORDER TO ESTABLISH A WIDTH OF AGGREGATE SHOULDER. THESE LOCATIONS WILL BE NOTED ELSEWHERE IN THE PROPOSAL AS SLOPE PROTECTION. THE CHANNEL LINING IS TO BE CAPPED WITH GEOTEXTILE FABRIC TYPE IV AND 4" OF CRUSHED STONE BASE, OR 4" OF DGA WITH DOUBLE ASPHALT SEAL COAT.

8. AS SHOWN IN FIGURE 6, AS THE HEIGHT OF THE FILL INCREASES, MULTIPLE EMBANKMENT BENCHES MAY BE REQUIRED.

SEE SHEET 2 FOR
NOTES 9 THRU 13

KENTUCKY
DEPARTMENT OF HIGHWAYS

DITCHING & SHOULDERING
AND EMBANKMENT
BENCHING DETAILS
(SHEET 1 OF 2)

NOT TO SCALE

FIGURE 7

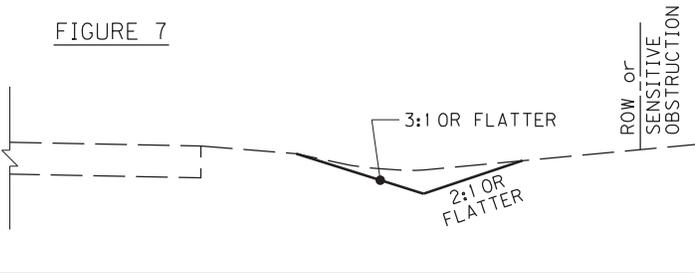


FIGURE 8

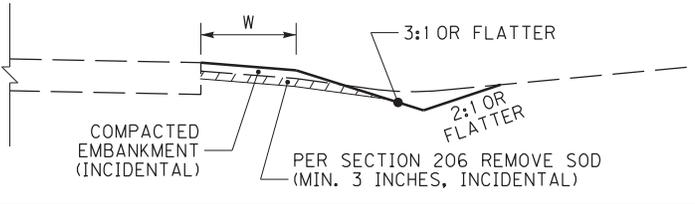


FIGURE 9

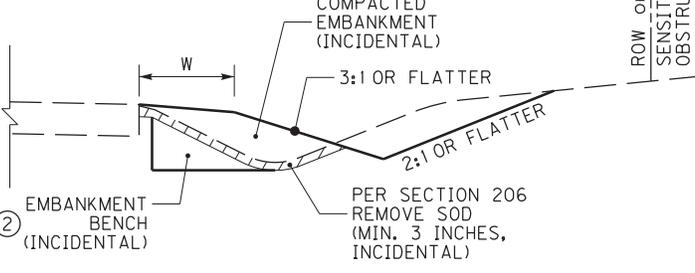


FIGURE 10

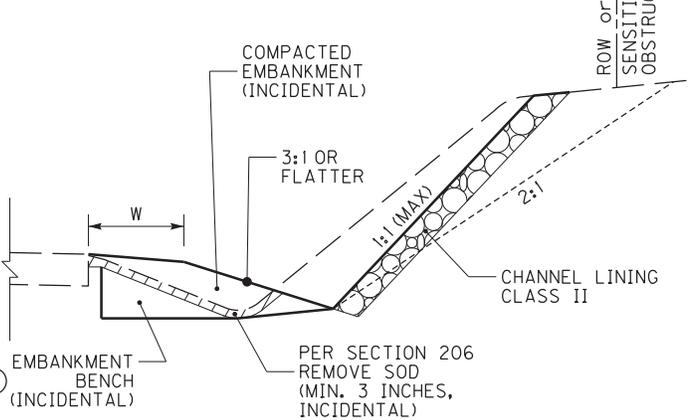
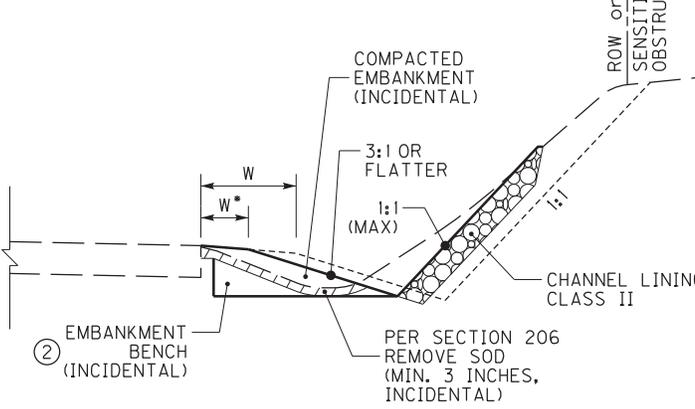


FIGURE 11



~ NOTES ~

BID ITEM AND UNIT TO BID:
2575 - DITCHING & SHOULDERING - LF

1. THE BID ITEM 'DITCHING & SHOULDERING' SHALL CONSIST OF ANY AND ALL NECESSARY CLEARING & GRUBBING, GRADING, AND/OR RESHAPING OF THE EXISTING SHOULDER, DITCH, AND/OR ROADSIDE TO ACHIEVE THE PROPOSED SHOULDER, DITCH, AND/OR ROADSIDE DIMENSIONS, AS DETAILED ON THE TYPICAL SECTIONS. FINAL PAYMENT WILL BE BASED ON THE ACTUAL LINEAR FEET OF DITCHING AND SHOULDERING PERFORMED, AND WILL INCLUDE ALL WORK AND INCIDENTALS NECESSARY TO PERFORM THE DITCHING AND SHOULDERING ACCORDING TO THESE DETAILS, NOTES, AND ANY OTHER INFORMATION FOUND ELSEWHERE IN THE PROPOSAL OR STANDARD SPECIFICATIONS. IN THE CASE OF A DISCREPANCY, REFER TO SECTION 105.05 OF THE STANDARD SPECIFICATIONS. DEPENDING ON THE EXISTING CONDITIONS ENCOUNTERED, DITCHING AND SHOULDERING MAY ALSO INCLUDE, BUT IS NOT LIMITED TO:

- PROVIDING ADDITIONAL EARTH MATERIAL AND GRADING, SHAPING, AND COMPACTING THE EARTH MATERIAL TO ACHIEVE THE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS. COMPACT MATERIAL ACCORDING TO SECTION 206 OF THE STANDARD SPECIFICATIONS.
- NOTE: ADDITIONAL EARTH MATERIAL PROVIDED SHALL BE SUITABLE FOR VEGETATION GROWTH.
- EXCAVATING AND REMOVING EXCESS MATERIAL TO ACHIEVE THE DIMENSIONS SHOWN ON THE TYPICAL SECTIONS
- EMBANKMENT BENCHING

② EMBANKMENT BENCHING WILL BE REQUIRED WHEN THE EXISTING GROUNDLINE HAS AN INCLINE GREATER THAN 15% (APPROX. 6:1). ANY AND ALL REQUIRED EMBANKMENT BENCHING SHALL BE INCIDENTAL TO THE BID ITEM 'DITCHING AND SHOULDERING'. THE FOLLOWING ARE GUIDELINES FOR EMBANKMENT BENCHING USED IN CONJUNCTION WITH THE BID ITEM 'DITCHING AND SHOULDERING':

- THE TYPICAL HEIGHT (OR RISE) IS 1' TO 6'
- THE TYPICAL WIDTH (OR RUN) WILL VARY BASED ON THE HEIGHT OF THE BENCH
- MULTIPLE SMALL BENCHES MAY BE USED, AND MAY BE MORE ADVANTAGEOUS AS THIS WILL REQUIRE PROCESSING LESS EARTHWORK.

SEE SHEET 2 FOR NOTES 3. THRU 8.

9. AS SHOWN IN FIGURE 7, IN SOME SITUATIONS, ALL THAT MAY BE REQUIRED IS TO CLEAN OUT THE EXISTING DITCH AND RESHAPE IT TO THE PROPOSED DIMENSIONS. THE MATERIAL EXCAVATED FROM THE DITCH MAY BE RE-USED ELSEWHERE ON THE PROJECT, PROVIDED THE ENGINEER DETERMINES THE MATERIAL REMOVED FROM THE DITCH IS SUITABLE FOR THE INTENDED RE-USE.
10. AS SHOWN IN FIGURE 8, IN SOME SITUATIONS, THE DITCH AND SHOULDER MAY ONLY NEED MINOR REGRADING AND/OR RESHAPING. THE MATERIAL EXCAVATED FROM THE DITCH MAY BE USED TO RESHAPE THE EARTH SHOULDER, PROVIDED THE ENGINEER DETERMINES THE MATERIAL REMOVED FROM THE DITCH IS SUITABLE FOR SHOULDERING. IF THE MATERIAL IS NOT SUITABLE, ADDITIONAL EARTH MATERIAL MAY BE REQUIRED.
11. AS SHOWN IN FIGURE 9, IN MOST SITUATIONS, REGRADING AND RESHAPING THE ROADSIDE TO ACHIEVE THE PROPOSED SHOULDER, DITCH, AND/OR ROADSIDE DIMENSIONS WILL RESULT IN MOVING THE DITCH FURTHER AWAY FROM THE ROADWAY. IT IS DESIRED THAT DITCH FORESLOPES BE 3:1 OR FLATTER AND DITCH BACKSLOPES BE 2:1 OR FLATTER.
12. AS SHOWN IN FIGURE 10, IF INSTALLING A 2:1 DITCH BACKSLOPE WILL RESULT IN THE TOP OF CUT EXTENDING BEYOND THE RIGHT-OF-WAY OR IMPACTING A SENSITIVE OBSTRUCTION, THEN THE DITCH BACK SLOPE MAY BE INSTALLED STEEPER THAN 2:1, UP TO 1:1 MAXIMUM. IN THIS SITUATION, THE DITCH BACKSLOPE SHALL HAVE CLASS II CHANNEL LINING INSTALLED FOR SLOPE PROTECTION.
13. AS SHOWN IN FIGURE 11, IF USING A 1:1 DITCH BACKSLOPE STILL RESULTS IN THE TOP OF CUT EXTENDING BEYOND THE RIGHT-OF-WAY OR STILL IMPACTS A SENSITIVE OBSTRUCTION, THEN THE PROPOSED EARTH SHOULDER WIDTH MAY BE REDUCED SO THAT THE STEEP DITCH BACKSLOPE CAN BE INSTALLED WITHIN THE RIGHT-OF-WAY AND/OR TO AVOID A SENSITIVE OBSTRUCTION.

**KENTUCKY
DEPARTMENT OF HIGHWAYS**

DITCHING & SHOULDERING
AND EMBANKMENT
BENCHING DETAILS
(SHEET 2 OF 2)

NOT TO SCALE



PI 3+42.72
Delta = 49°26'02.06"
T = 322.21'
L = 603.95'
R = 7000.00'
E = 7026.60'

POB 0+00.00
PC 0+20.50

PT 6+24.45

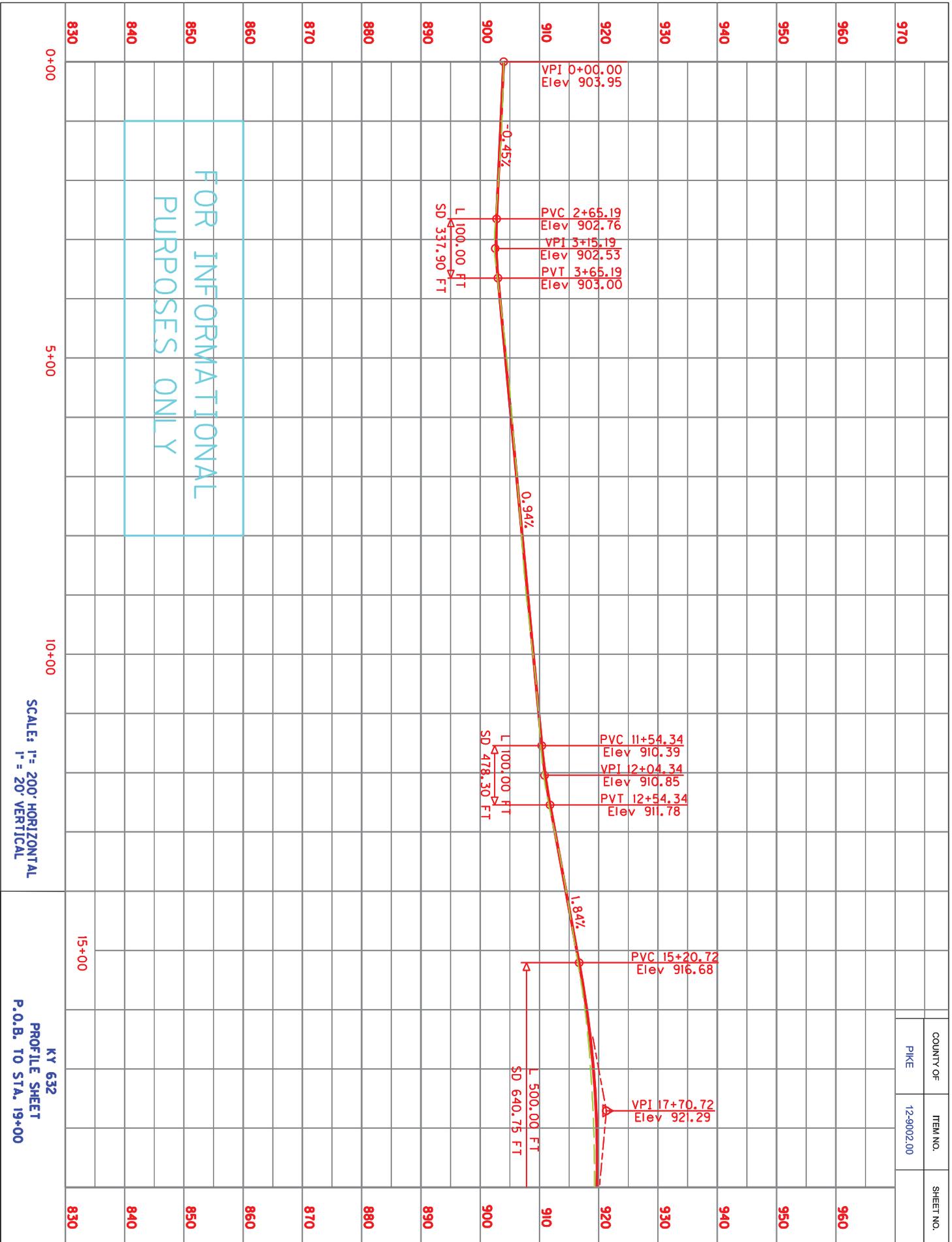
PC 12+77.23

PI 17+24.25
Delta = 103°52'53.41"
T = 447.03'
L = 634.58'
R = 350.00'
E = 217.14'

SCALE: 1"=200'

KY 632
PLAN SHEET
P.O.B. TO STA. 19+00

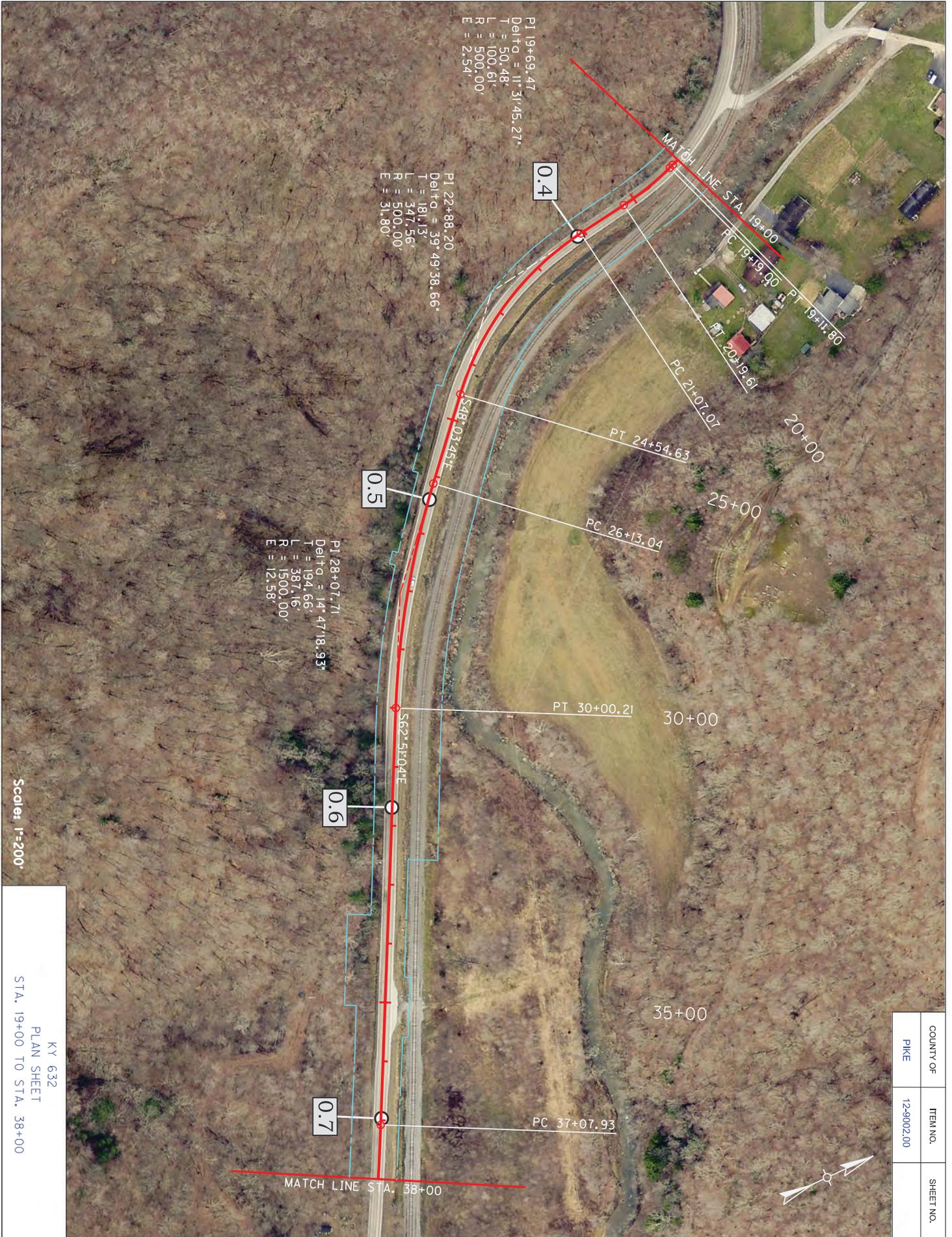
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
P.O.B. TO STA. 19+00

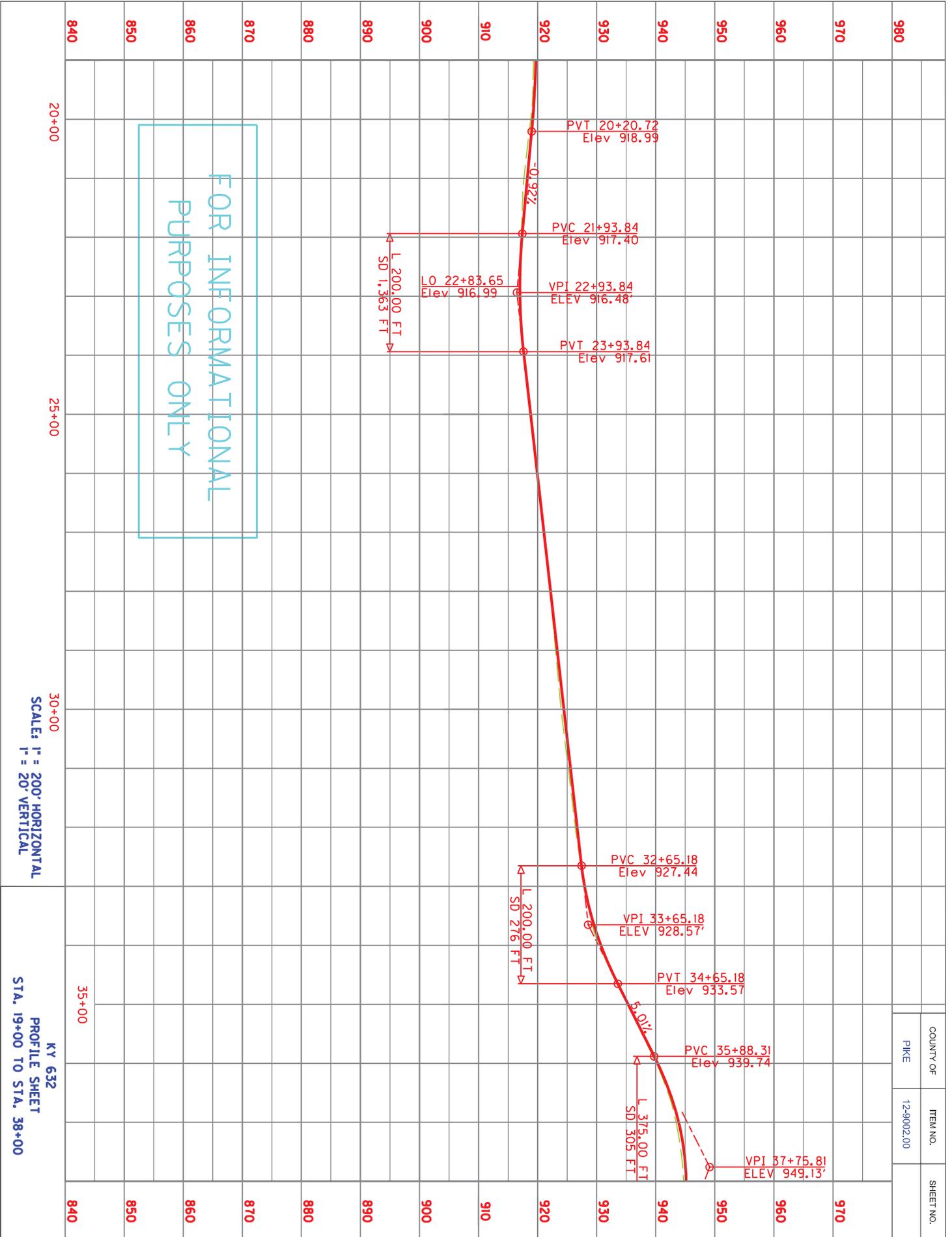
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

Scale: 1"=200'

PLAN SHEET
KY 632
STA. 19+00 TO STA. 38+00



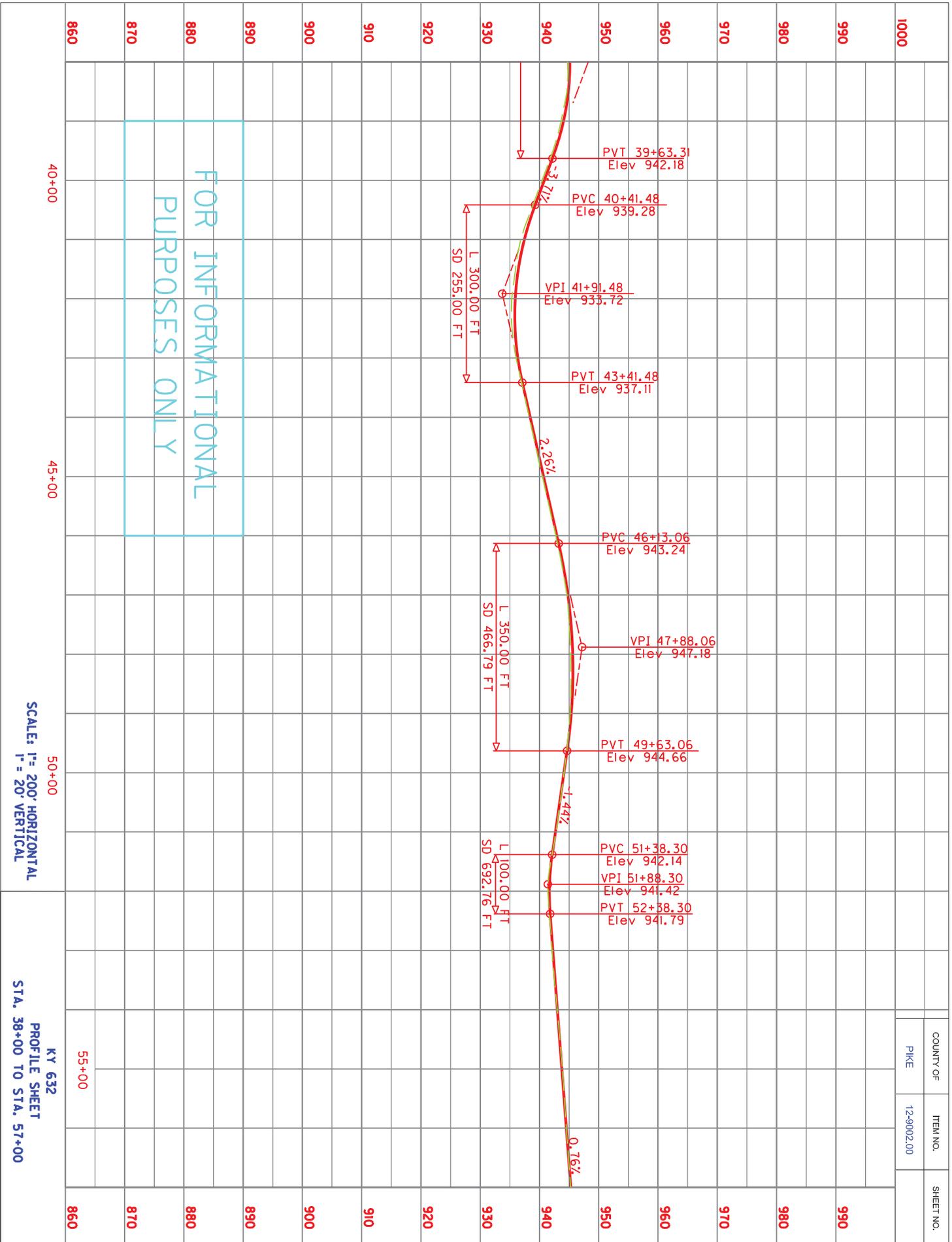
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



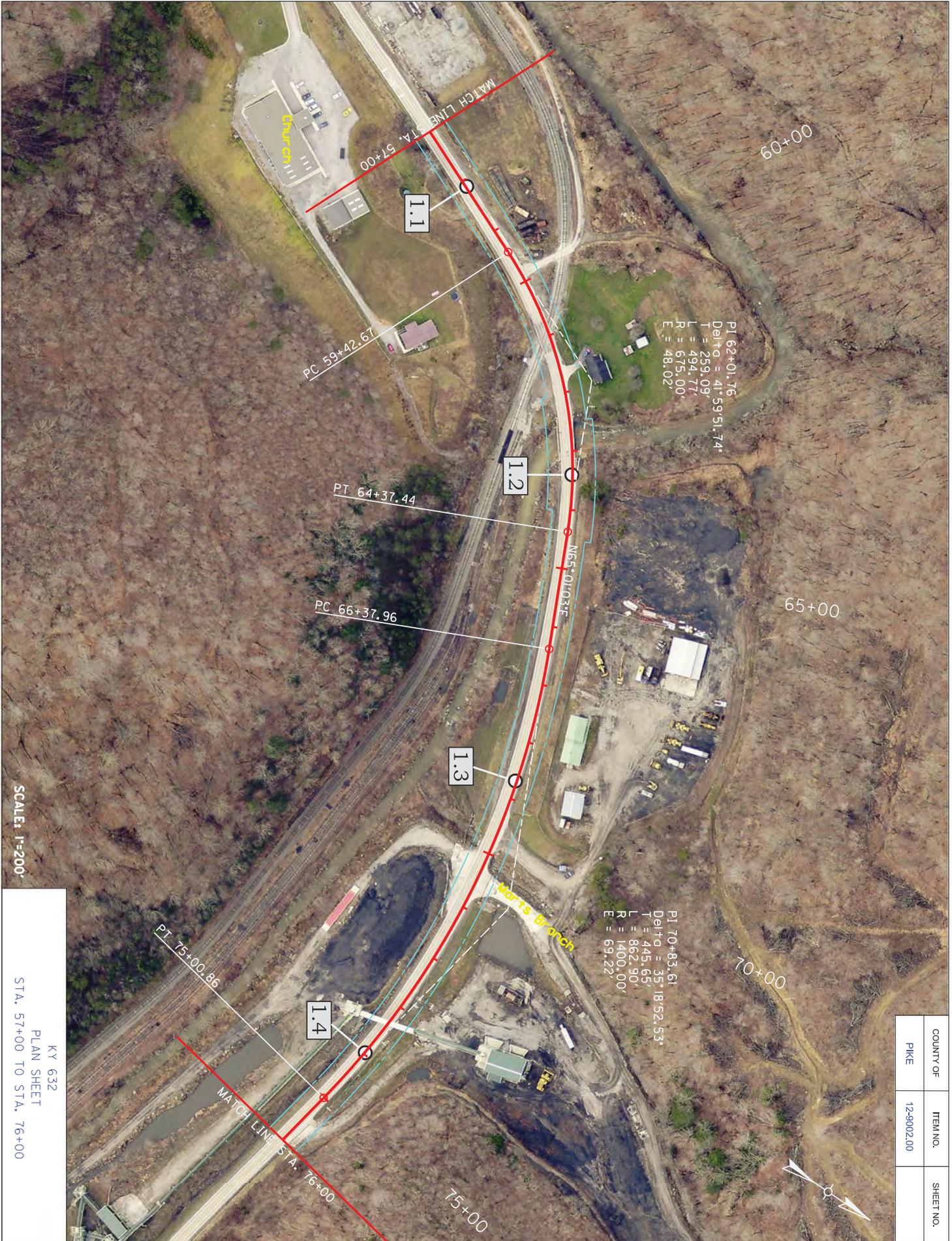
SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 38+00 TO STA. 57+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



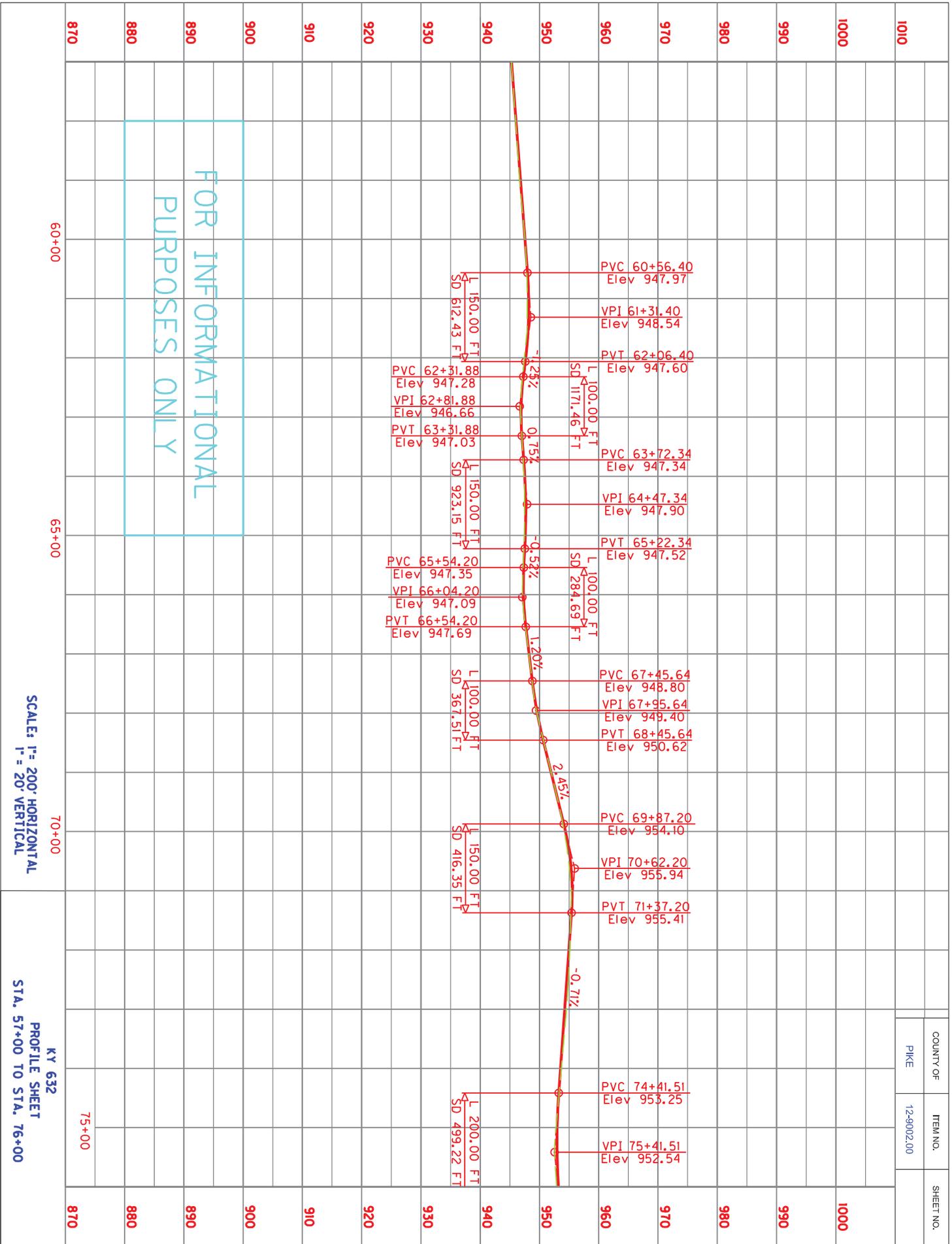
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=200'

PLAN SHEET
KY 632
STA. 57+00 TO STA. 76+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



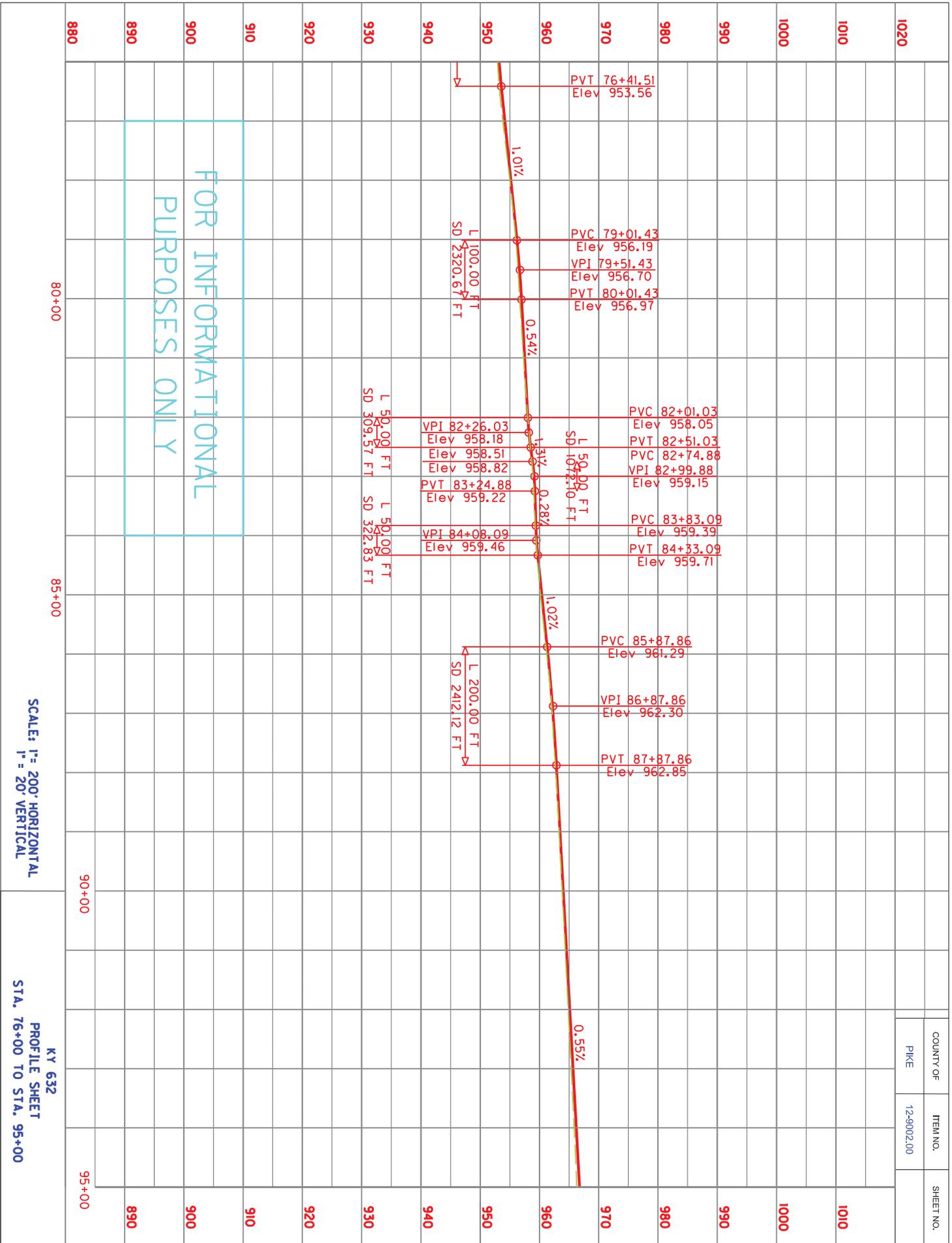
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=200'

KY 632
PLAN SHEET
76+00 TO STA. 95+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

CONSTRUCT CENTERLINE RUMBLE STRIPS		
START M.P.	END M.P.	LENGTH
2.0	7.0	26,400 LF



PI 96+74.26
Delta = 25°42'36.39"
T = 114.10'
L = 224.36'
R = 500.00'
E = 12.85'

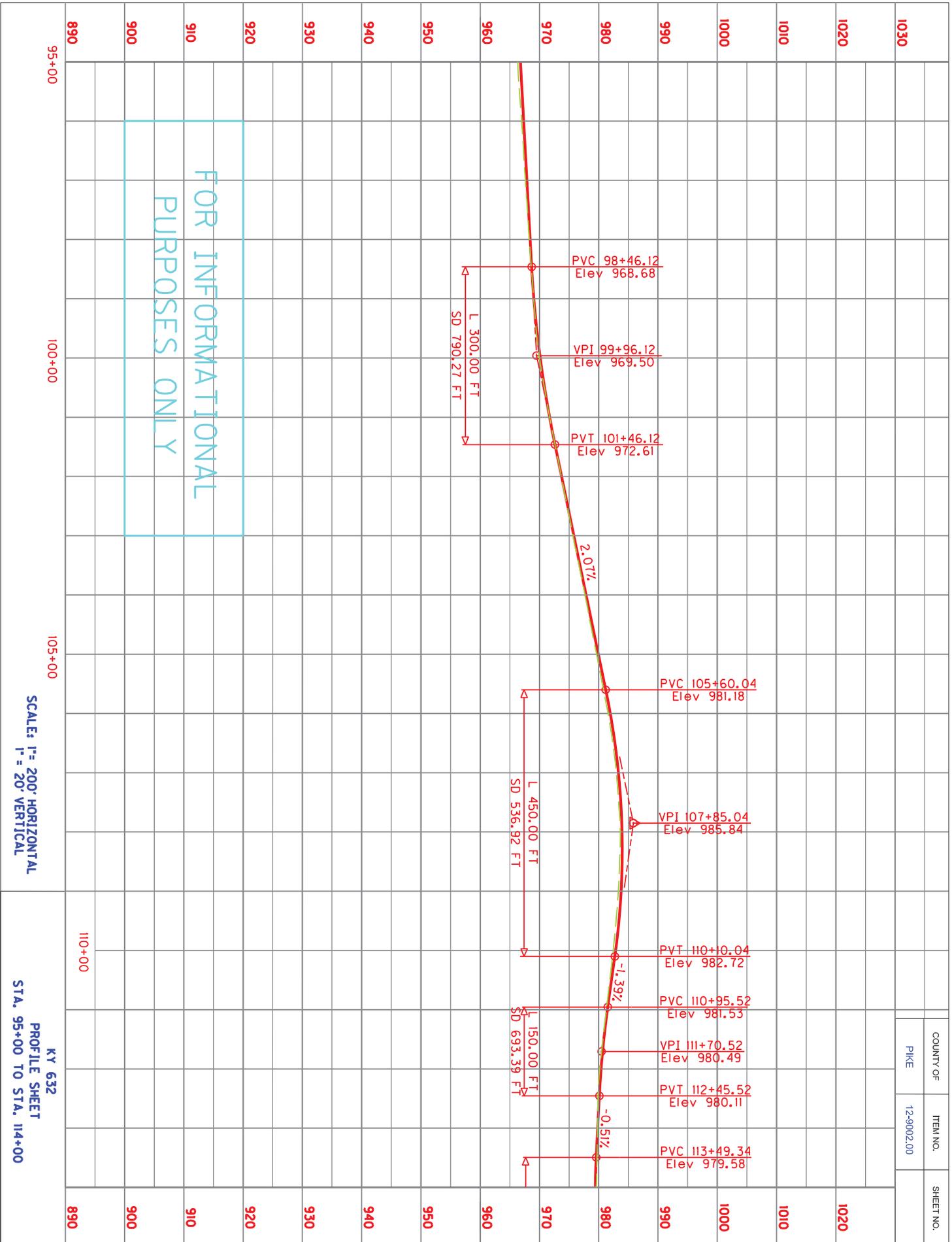
PI 104+60.09
Delta = 8°14'02.39"
T = 143.96'
L = 287.42'
R = 2000.00'
E = 5.17'

PI 111+15.91
Delta = 4°53'21.42"
T = 213.4'
L = 426.67'
R = 5000.00'
E = 4.55'

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

Scale: 1"=200'

KY 632
PLAN SHEET
95+00 TO STA. 114+00



FOR INFORMATIONAL
PURPOSES ONLY

SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 95+00 TO STA. 114+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

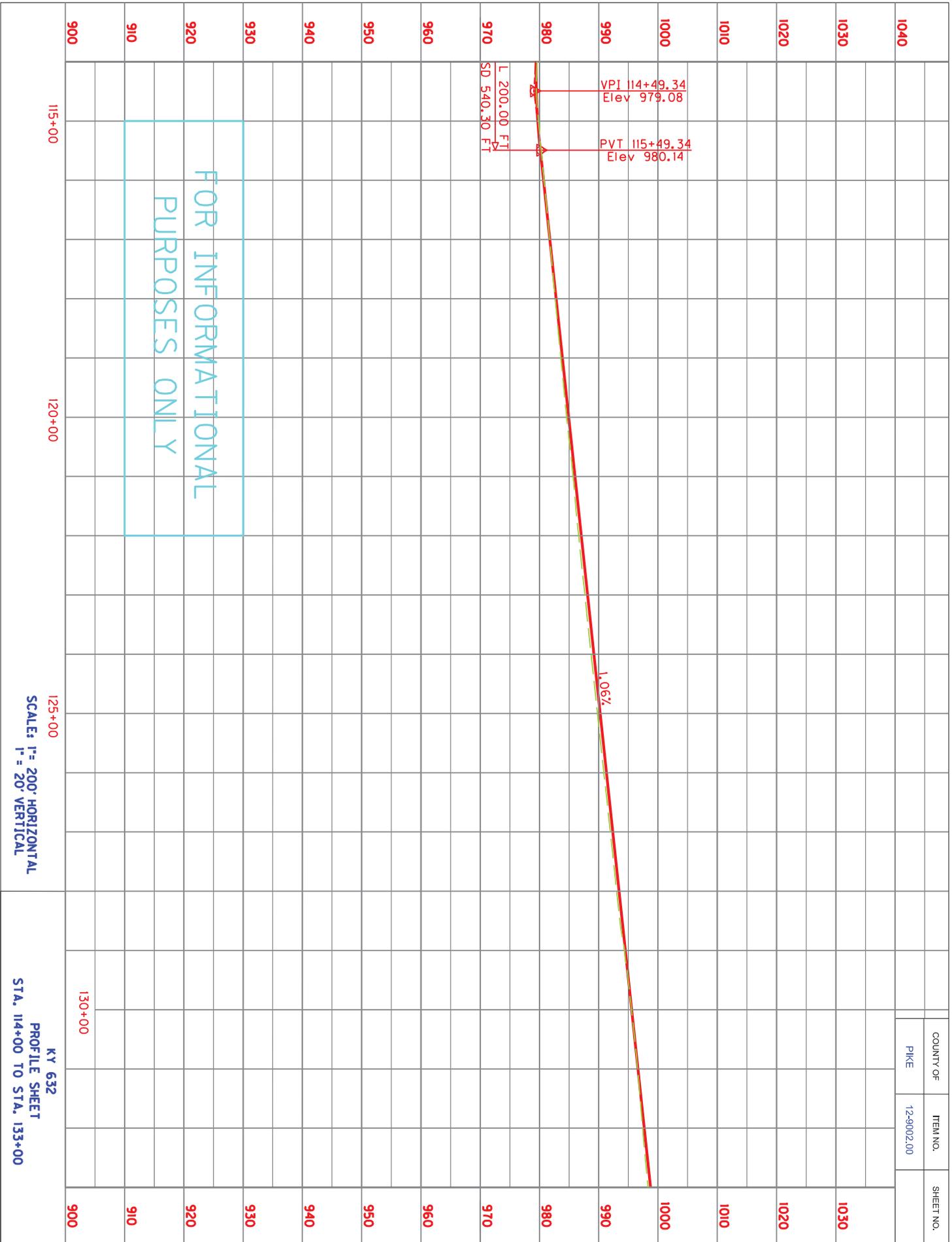


STA. 121+35.95 @ 7°20'22.2" LT SKEW
(SEE PIPE SECTION)

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

Scale: 1"=200'

PLAN SHEET
KY 632
STA. 114+00 TO STA. 133+00



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 114+00 TO STA. 133+00



PI 135+74.52
Delta = 42°06'12.66"
T = 269.43'
L = 514.39'
R = 200.00'
E = 50.06'

PI 141+52.95
Delta = 5°44'37.84"
T = 200.67'
L = 401.00'
R = 4000.00'
E = 5.03'

PI 150+64.55
Delta = 17°56'21.87"
T = 86.81'
L = 172.21'
R = 550.00'
E = 6.81'

2.6

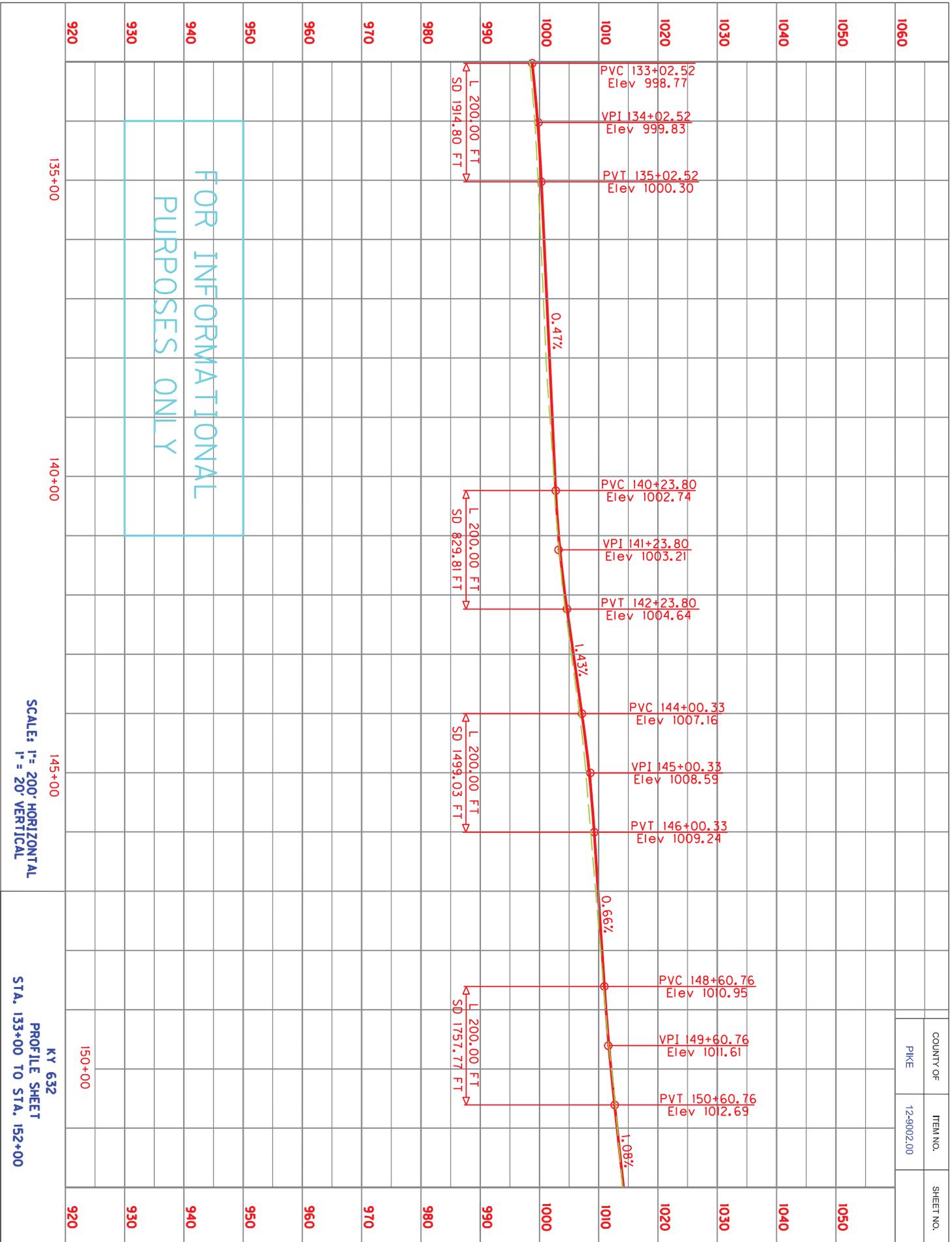
2.7

2.8

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 133+00 TO STA. 152+00

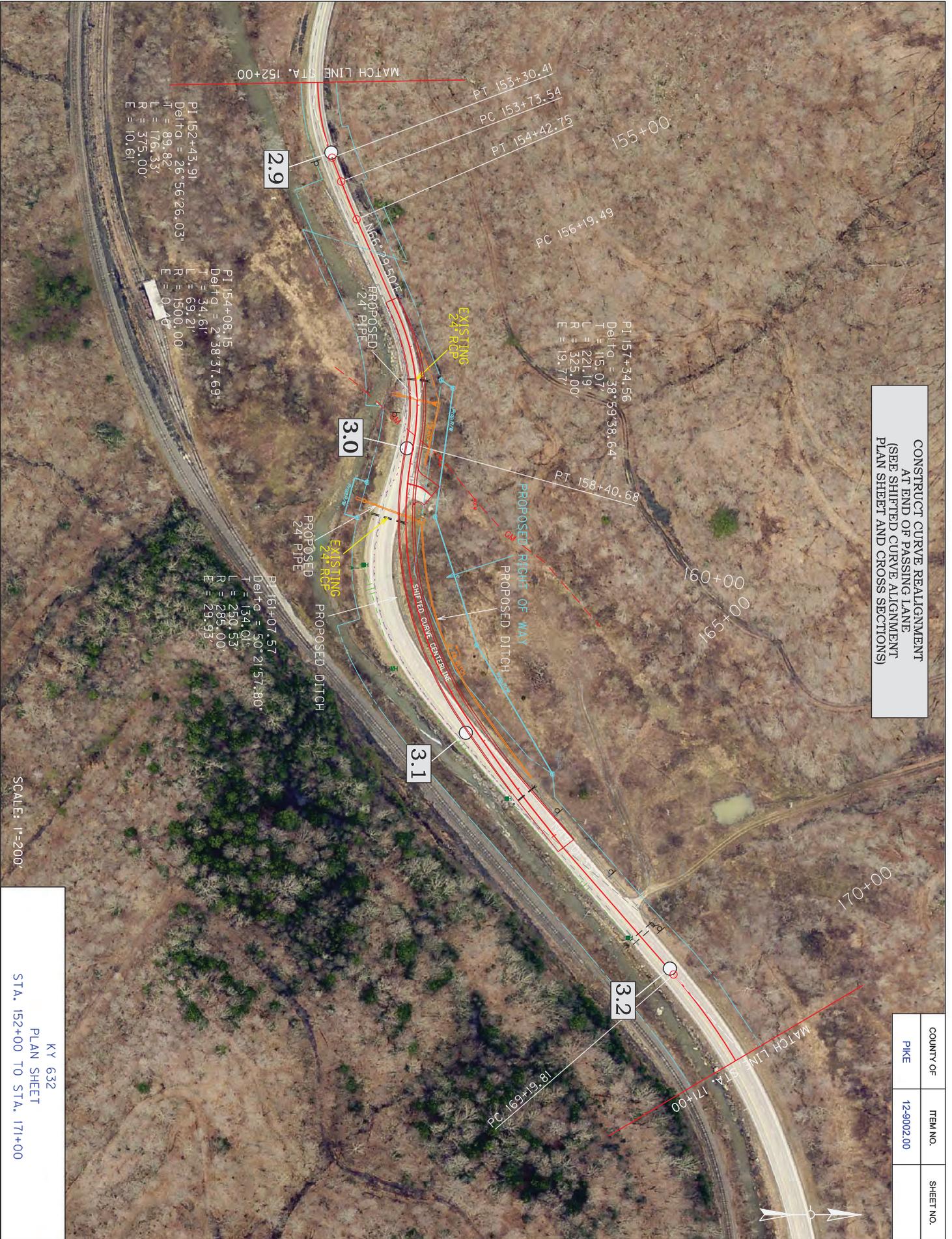
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: H = 200' HORIZONTAL
V = 20' VERTICAL

PROFILE SHEET
KY 632
STA. 133+00 TO STA. 152+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

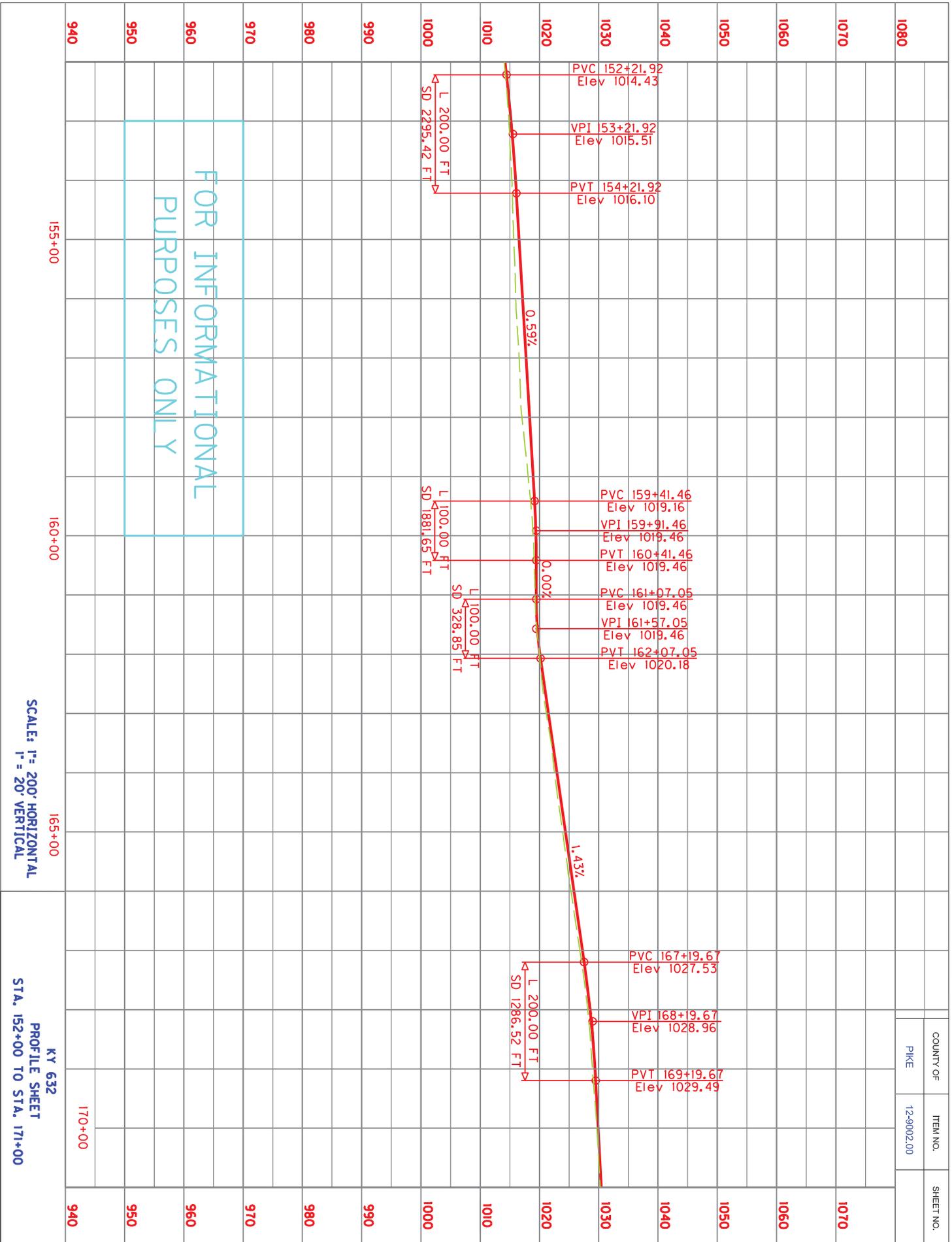


CONSTRUCT CURVE REALIGNMENT
AT END OF PASSING LANE
(SEE SHIFTED CURVE ALIGNMENT
PLAN SHEET AND CROSS SECTIONS)

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 152+00 TO STA. 171+00



SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 152+00 TO STA. 171+00

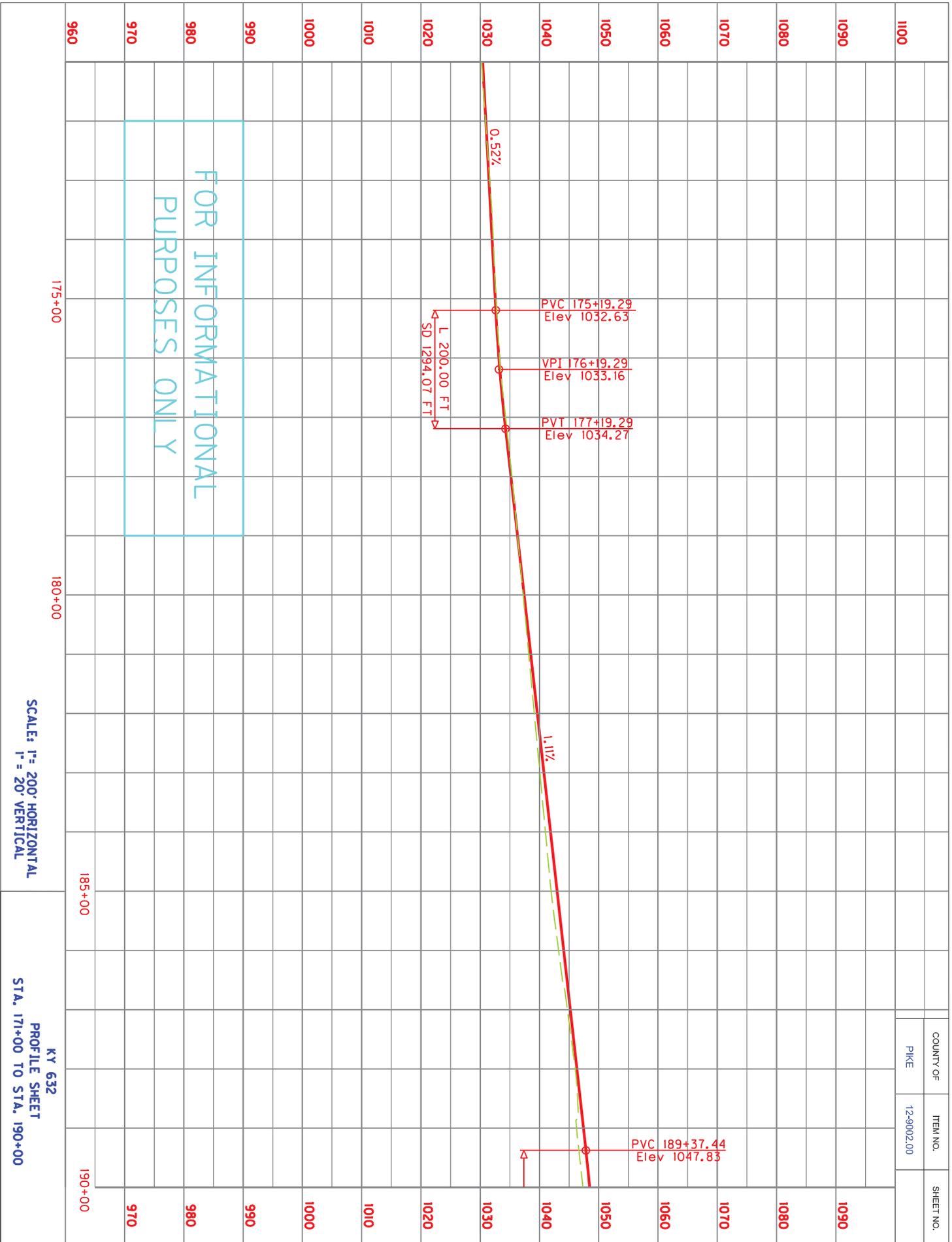
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

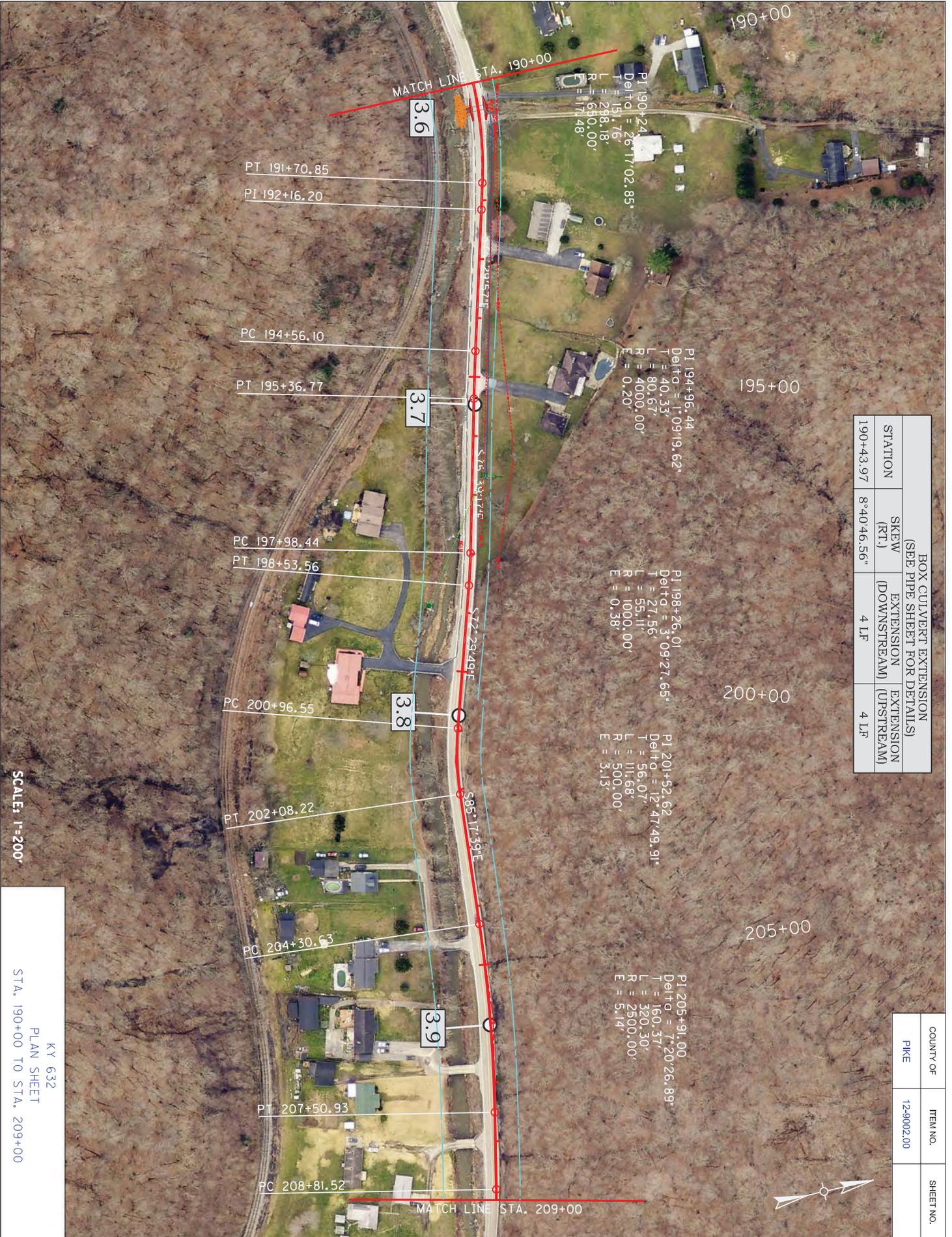
KY 632
PLAN SHEET
STA. 171+00 TO STA. 190+00



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: H= 200' HORIZONTAL
V= 20' VERTICAL

KY 632
PROFILE SHEET
STA. 171+00 TO STA. 190+00



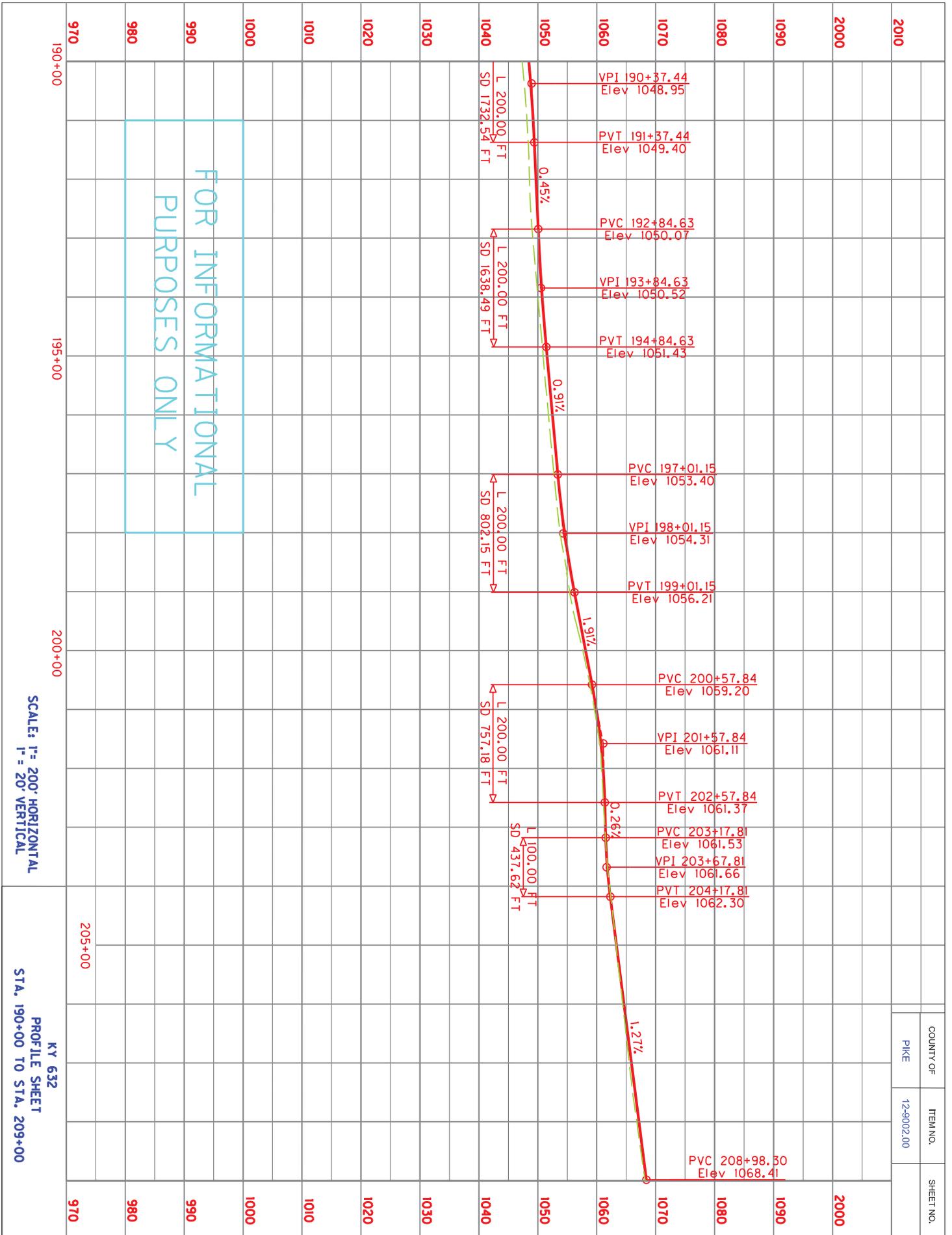
BOX CULVERT EXTENSION (SEE PIPE SHEET FOR DETAILS)			
STATION	SKIEW (RT.)	EXTENSION (DOWNSTREAM)	EXTENSION (UPSTREAM)
190+43.97	8°40'46.56"	4 LF	4 LF

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 190+00 TO STA. 209+00





SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 190+00 TO STA. 209+00

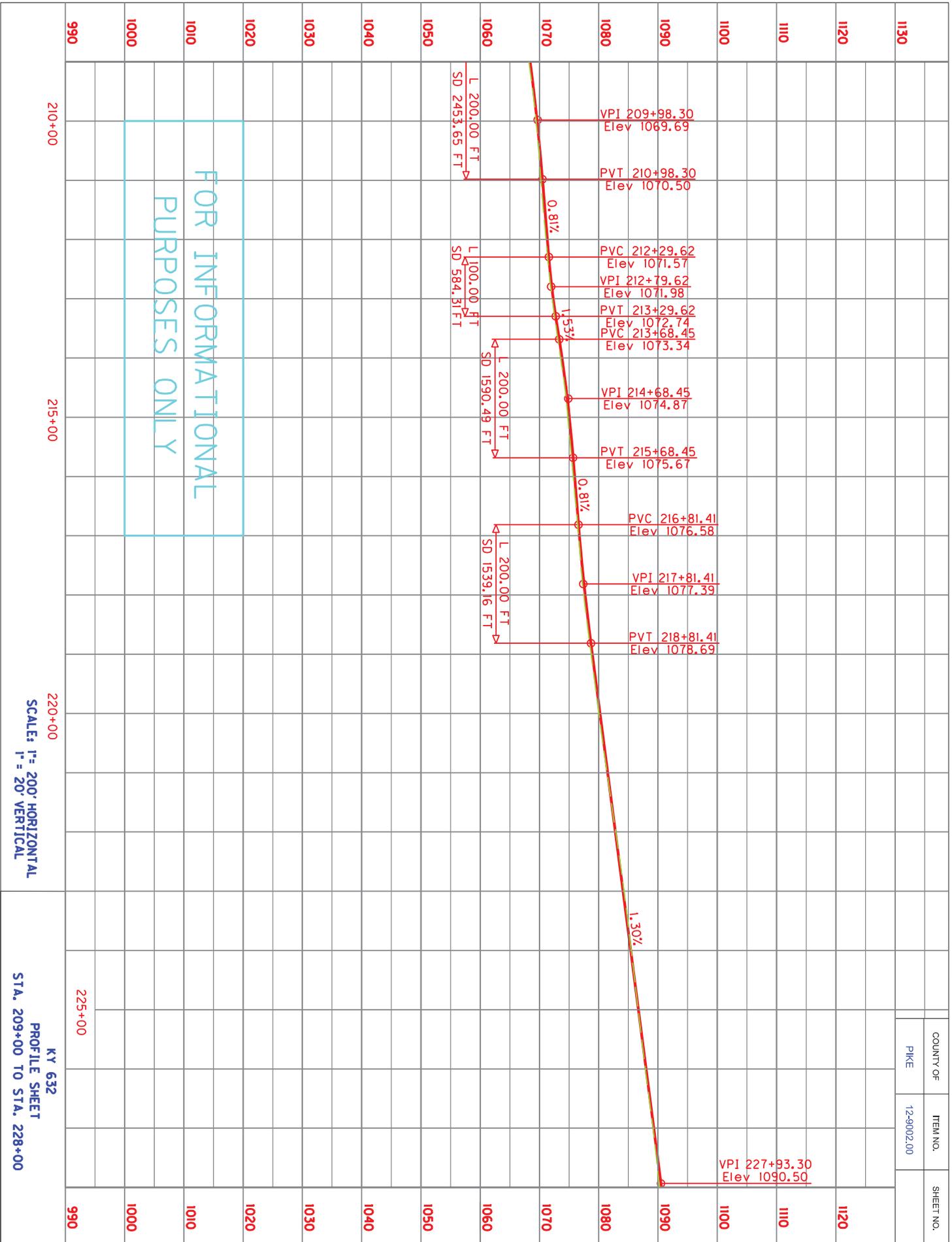
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



LONG FORK CURVE SIGHT DISTANCE CUT
(SEE PLAN SHEET AND CROSS SECTIONS FOR DETAILS)

STA. 219+33.61, 01+34+24.6" RT
(SEE PIPE SECTION)

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-902.00	



SCALE: H=200' HORIZONTAL
V=20' VERTICAL

PROFILE SHEET
STA. 209+00 TO STA. 228+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

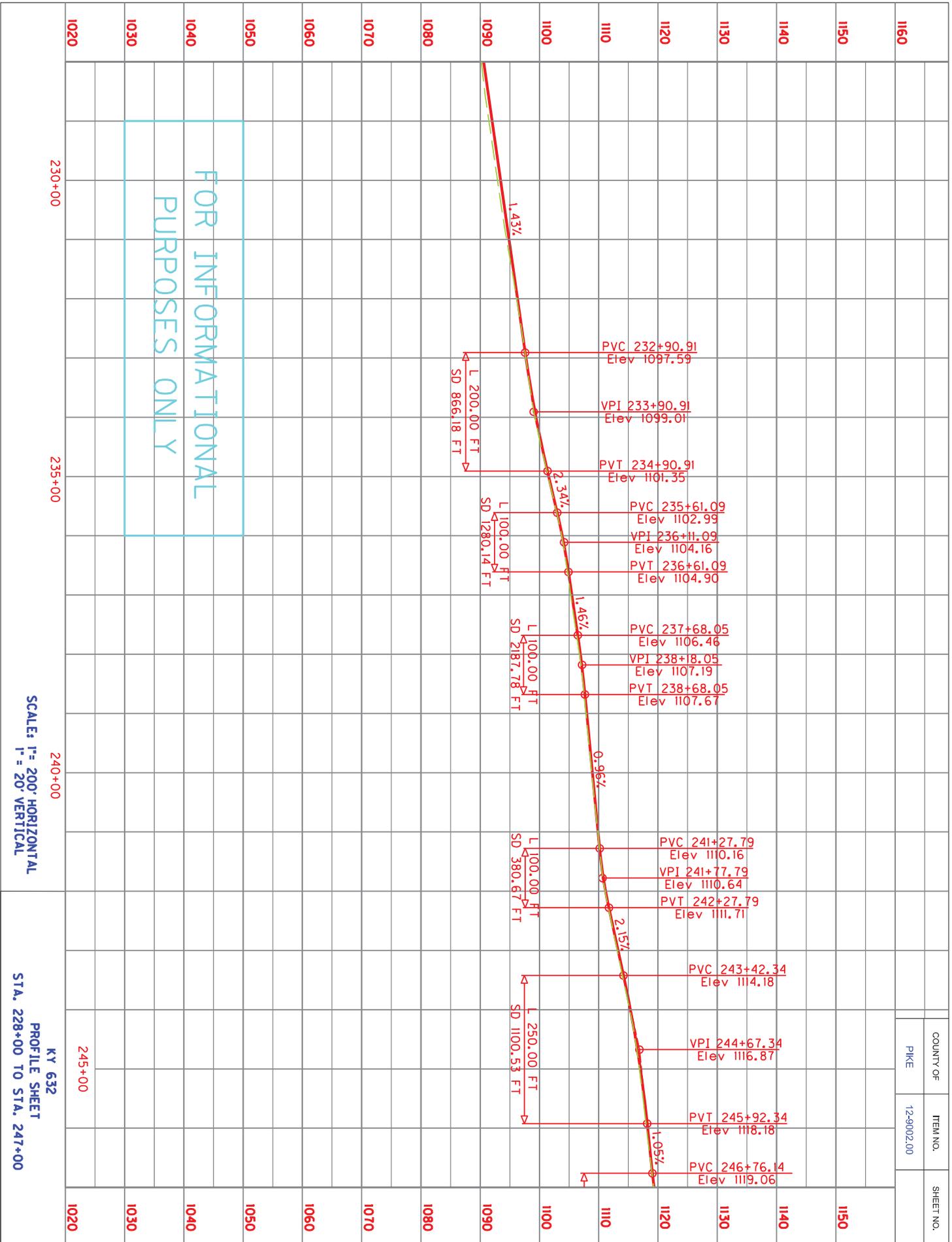
STA. 228+29.62, 15'x37'46.6" RT
(SEE PLAN SHEET & PIPE SECTION)



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 228+00 TO STA. 247+00



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 228+00 TO STA. 247+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



PI 247+73.87
Delta = 12°12'01.41"
T = 128.25'
L = 255.52'
R = 1200.00'
E = 6.83'

PI 257+83.37
Delta = 19°21'01.62"
T = 93.77'
L = 185.75'
R = 550.00'
E = 7.94'

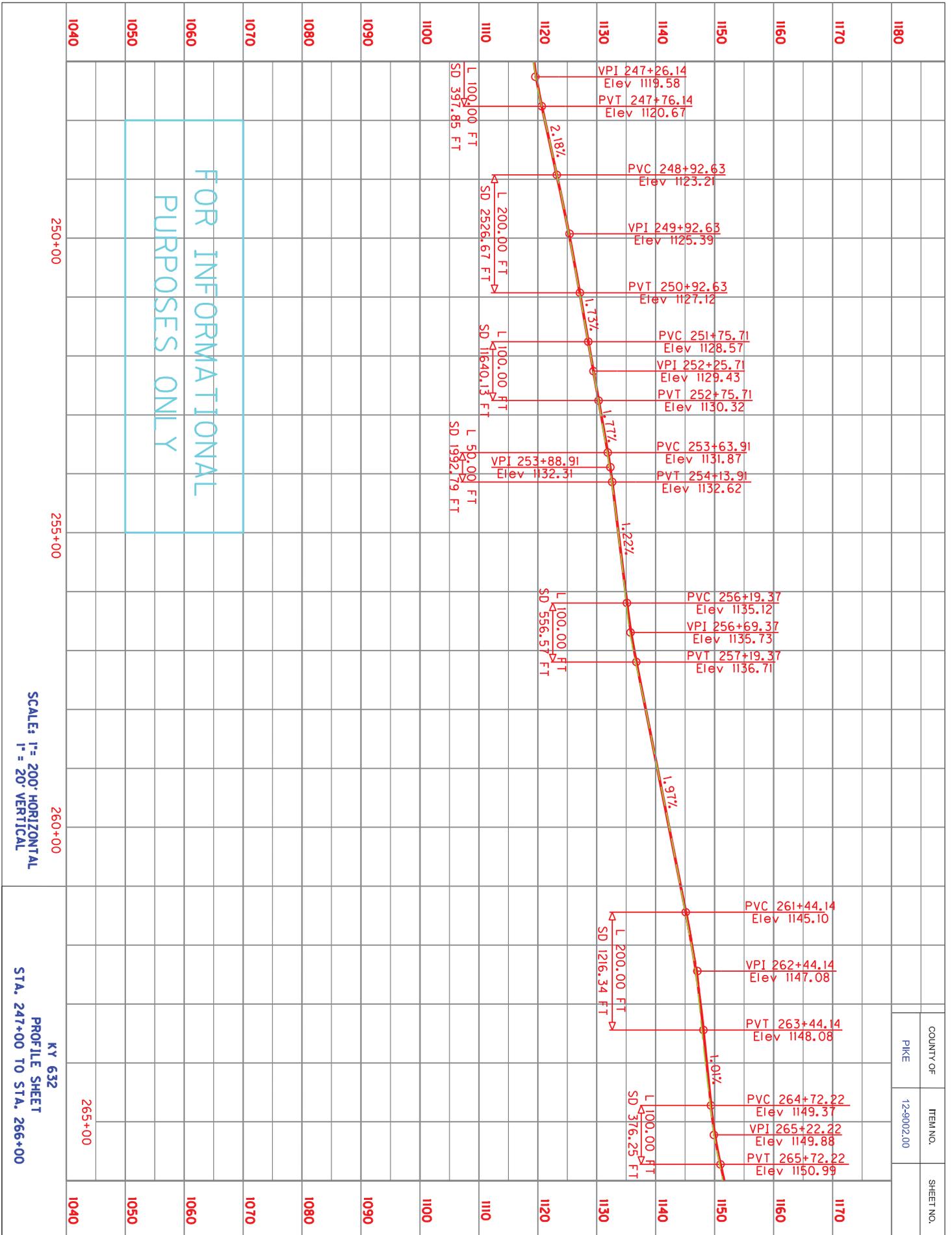
PI 263+09.57
Delta = 20°41'00.21"
T = 109.49'
L = 216.60'
R = 600.00'
E = 9.91'

PIPE CULVERT LINER (SEE PIPE SHEET FOR DETAILS)	
STATION	SKIEW (LT.)
249+91.11	0°21'35.28"

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 247+00 TO STA. 266+00



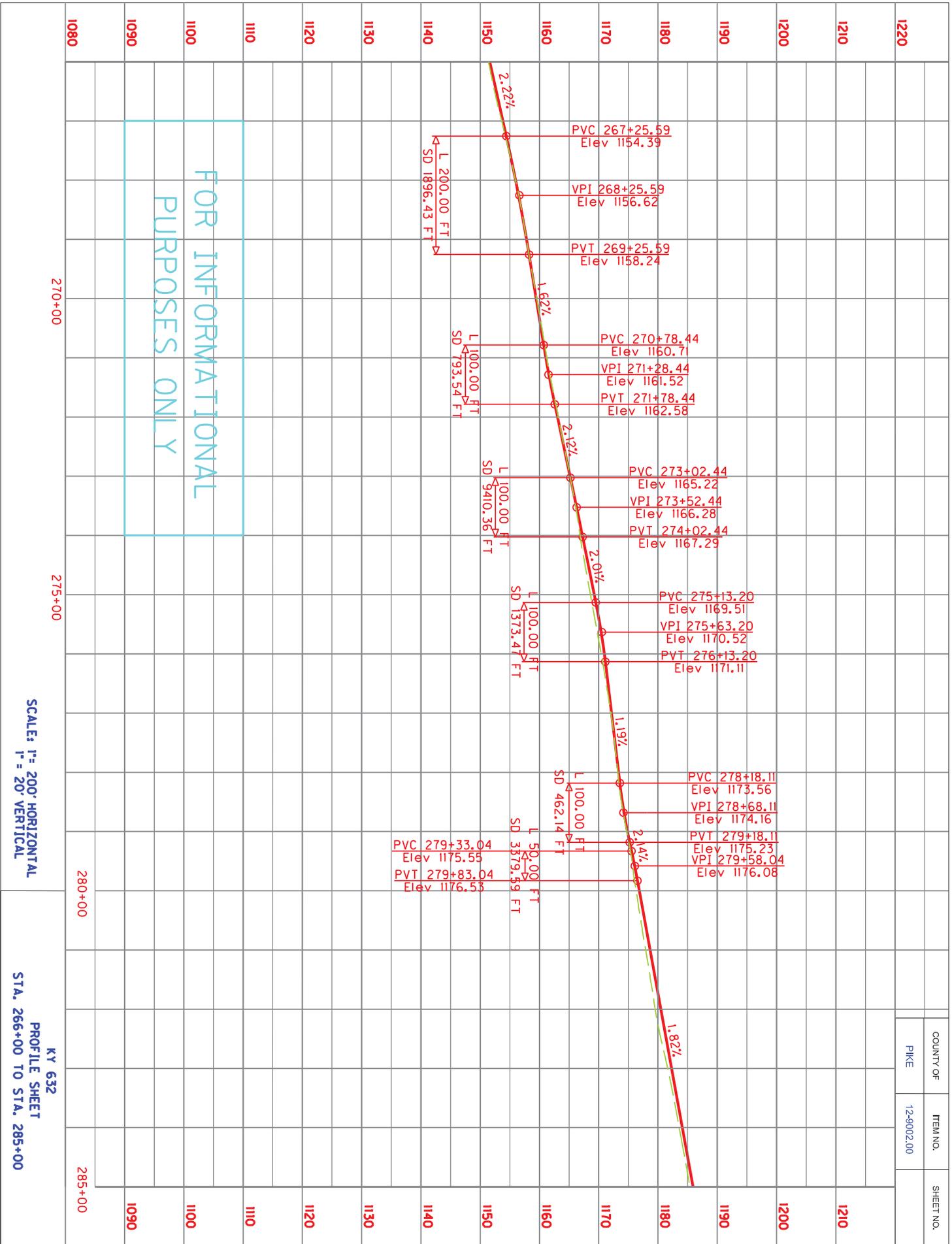
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



CONSTRUCT HIGH FRICTION SURFACE TREATMENT		
BEGIN STATION	END STATION	LENGTH
269+09.80	271+57.81	248.01'

SHOULDER WIDENING, DRIVE RAILROAD STEEL, EXTEND GUARDRAIL, ADD LEVEL AND WEDGING (SEE PLAN AND CROSS SECTIONS)		
BEGIN STATION	END STATION	LENGTH
276+60	286+75	10.15'

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-902.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

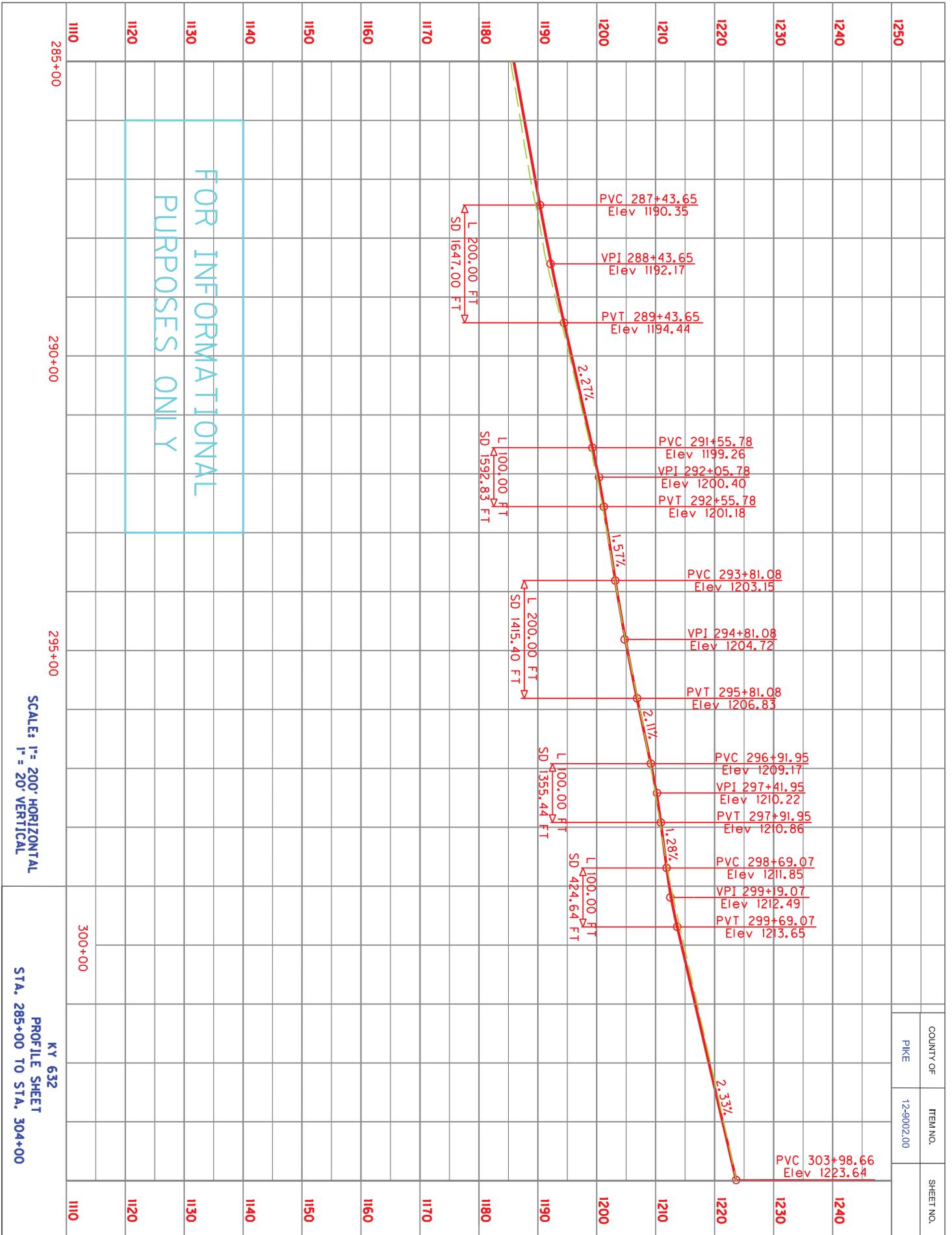


COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 285+00 TO STA. 304+00



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

PROFILE SHEET
STA. 285+00 TO STA. 304+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

CUT TREES AND POSTS WITHIN RIGHT OF WAY LIMITS	
STATION (START)	STATION (END)
307+30	310+90

MP 5.9 BOX CULVERT EXTENSION			
STATION	SKIEW (RT.)	EXTENSION (UPSTREAM)	EXTENSION (DOWNSTREAM)
313+44.16	28°29'26.9"	6 LF	11 LF

HIGH FRICTION SURFACE TREATMENT		
BEGIN STATION	END STATION	LENGTH
314+05.87	319+14.84	508.97'

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-902.00	



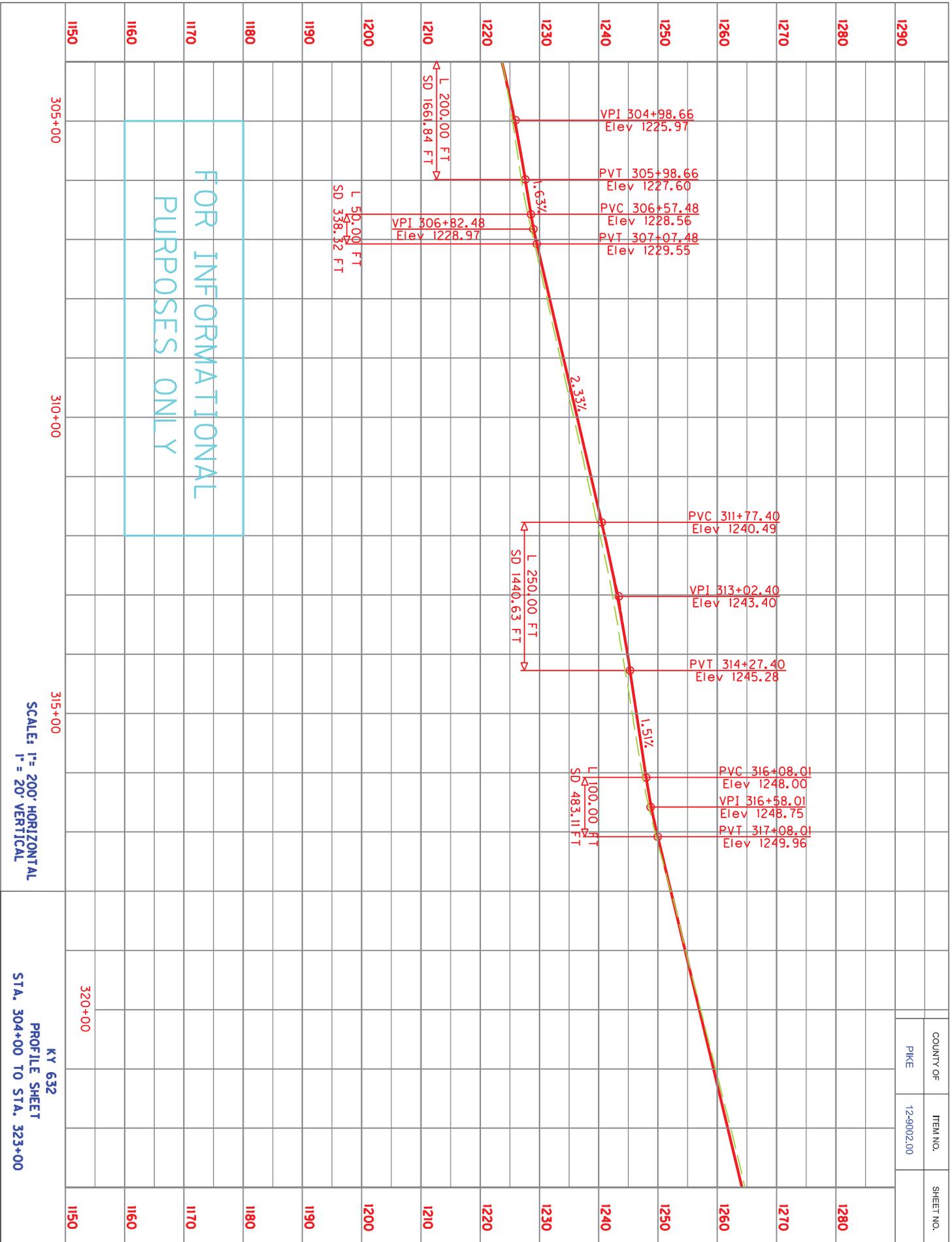
STA. 320+66.57, @ 1°38'48.84" LT SKEW
(SEE PIPE SECTION)

PI 311+24.60
Delta = 4°21'42.85"
T = 95.21'
L = 190.32'
R = 2500.00'
E = 1.81'

PI 316+73.12
Delta = 47°49'13.75"
T = 217.24'
L = 408.97'
R = 490.00'
E = 46.00'

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 304+00 TO STA. 323+00



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 304+00 TO STA. 323+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



PI 324+36.18
 Del'to. = 35°24'30.86"
 T = 255.38'
 L = 494.40'
 R = 800.00'
 E = 391.77'

PT 326+75.20

6.2

S70°37'59"E

6.3

PI 334+19.00

S68°07'31"E

6.4

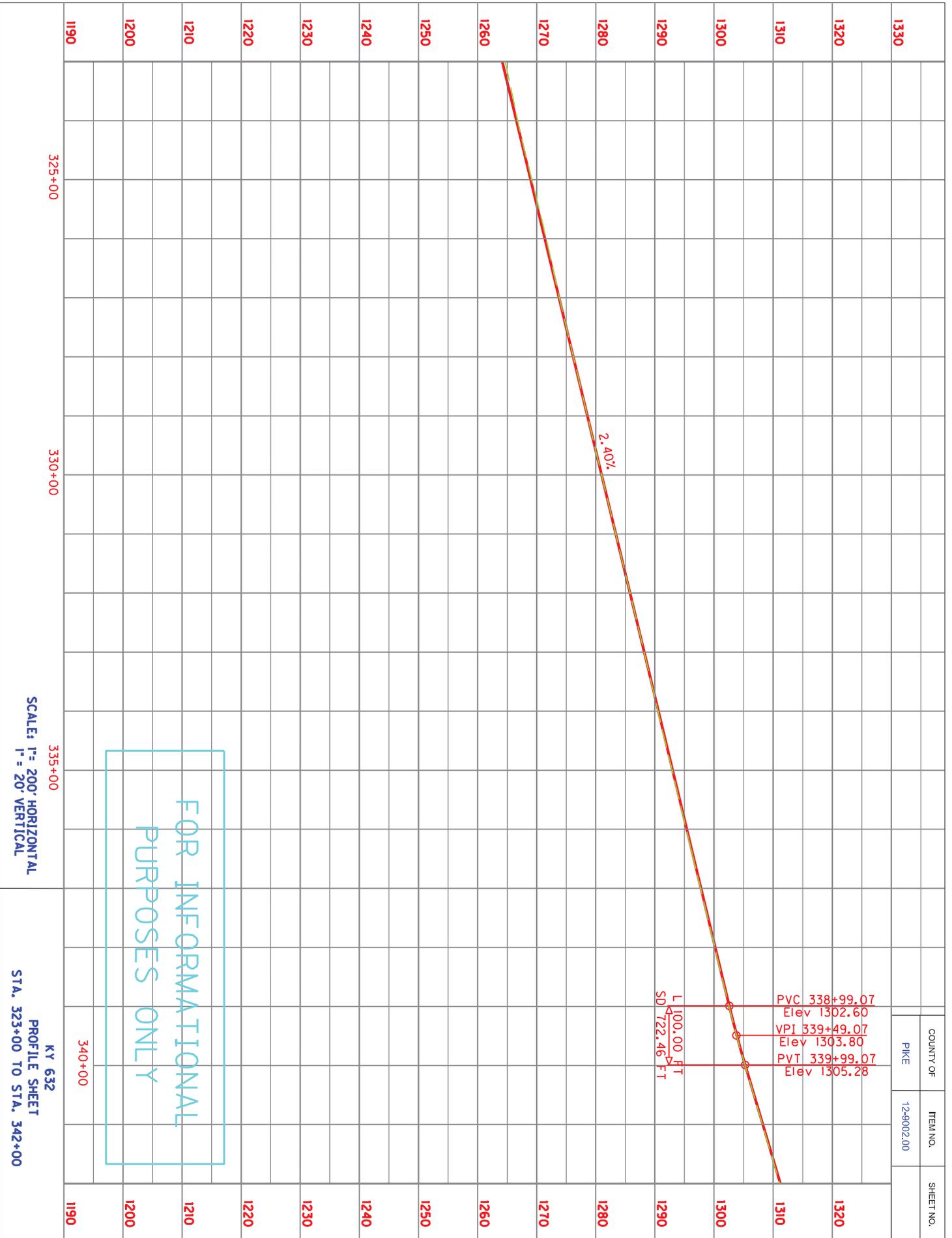
PC 341+87.11

MATCH LINE STA. 342+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
 PLAN SHEET
 STA. 323+00 TO STA. 342+00



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=200'

KY 632
PLAN SHEET
STA. 342+00 TO STA. 361+00

PI 343+85.99
Delta = 4°33'20.08"
T = 198.88'
L = 397.55'
R = 5000.00'
E = 3.95'

PI 349+79.64
Delta = 18°09'19.22"
T = 191.73'
L = 380.24'
R = 1200.00'
E = 15.22'

PI 355+01.00
Delta = 3°46'06.11"
T = 164.49'
L = 328.85'
R = 5000.00'
E = 2.70'

345+00

350+00

355+00

360+00

MATCH LINE STA. 342+00

MATCH LINE STA. 361+00

199 DIXIE ROAD

SUNBELT PROPERTY

6.5

6.6

6.7

6.8

PT 345+84.66

PT 351+68.15

PT 356+65.36

PC 347+87.91

PC 353+36.51

PI 359+78.77

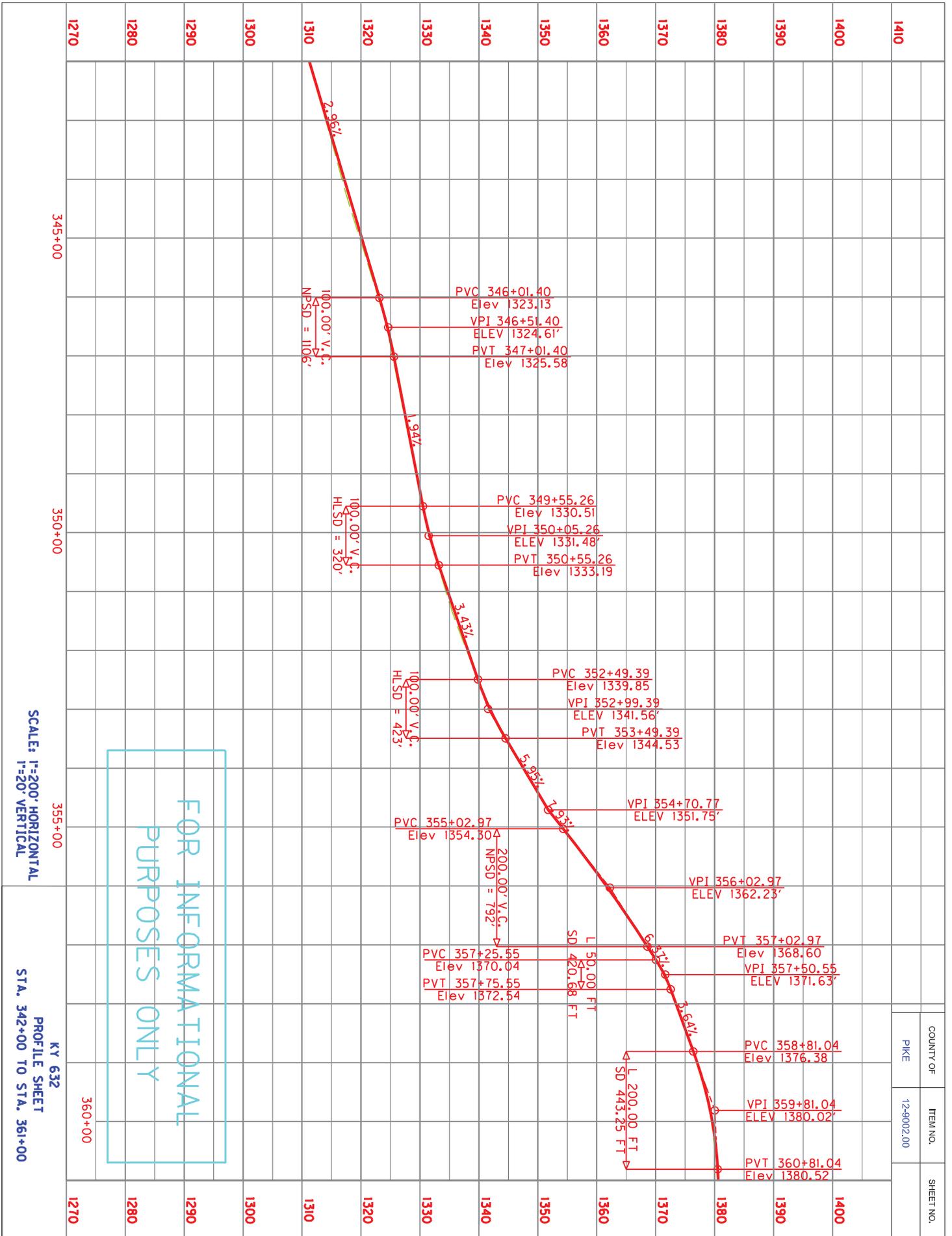
Sta. 3441E

Sta. 3430E

Sta. 5724E

Sta. 2947E







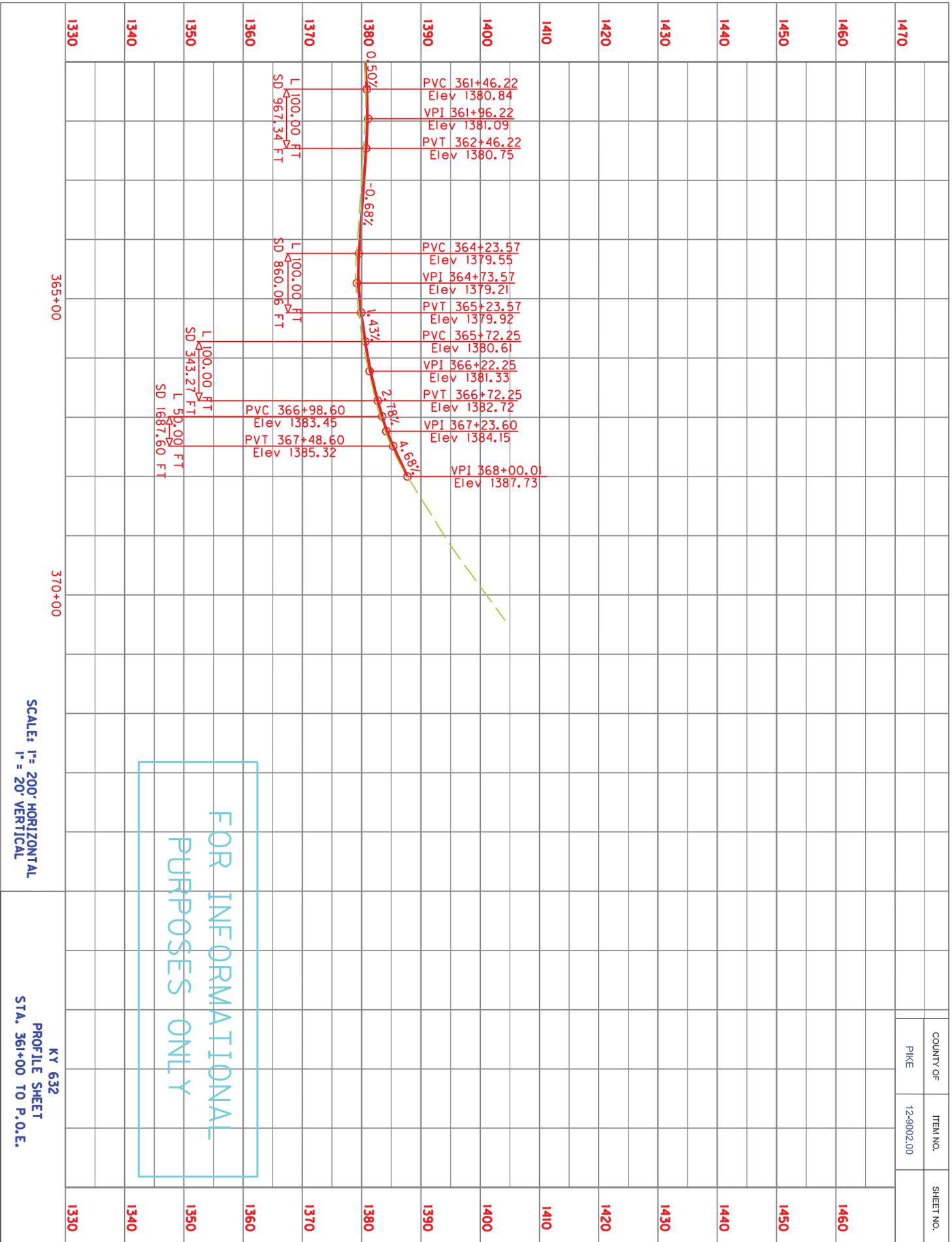
STA. 365+49.20 @ 4°34'56.28" RT SKEW
 (SEE PIPE SECTION)

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=200'

KY 632
 PLAN SHEET
 STA. 361+00 TO P.O.E.



FOR INFORMATIONAL
PURPOSES ONLY

SCALE: 1" = 200' HORIZONTAL
1" = 20' VERTICAL

KY 632
PROFILE SHEET
STA. 361+00 TO P.O.E.

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

MEMORANDUM

(R-017-2018)

TO: Kevin Sandefur, PE
Project Management Coordinator
Division of Highway Design

FROM: Michael Carpenter, PE
Geotechnical Branch Manager
Division of Structural Design

BY: J.C. Wilhoite, PE
Geotechnical Branch

DATE: January 9, 2019

SUBJECT: Pike County
KY 632
Station 150+15.03 to 160+25.52 (Shifted Curve)
Station 276+93.81 to 285+00 (Curve with Steel)
Item # 12-9002.00
Mars # 9169401D
Project # FD52 098 0632 D
Geotechnical Engineering Roadway Report

Location and Description

An abbreviated geotechnical engineering report has been completed for the subject project. Drilling, sampling and laboratory testing was performed by the Geotechnical Branch. The purpose of this report is to identify potential geotechnical concerns based on the subsurface information obtained, a review of the project plans, the drilling, and prior experience with the project area. The project involves performing low cost safety improvements on KY 632 from KY 194 to 0.037 miles east of Blackberry Fork. This report addresses shifting a curve into an embankment of fill and utilizing rail steel to stabilize the roadway near a creek. Reduced size geotechnical symbols, notes, profile, and cut stability sheets are attached. The CADD input, in DGN format, is being e-mailed to the district for incorporation into the roadway plans.

Topography

The project is located in southern Kentucky within the Cumberland Plateau (Eastern Kentucky Coal Field) physiographic region. The primary features of this region are the highly dissected hills and v-shaped valleys covered in forests.

R-017-2018
Item # 12-9002.00**January 9, 2019**
Page 2 of 5**Geology**

The project is located within the Lick Creek Geologic Quadrangle (#716). The geologic mapping indicates the upper geologic formation at this site is predominately Alluvium as well as encountering the Pikeville Formation. Alluvium consists of silt, clay, sand and gravel. The Pikeville formation consists of sandstone, siltstone, shale, and coal.

Bedrock was encountered during drilling operations. However, the depths at which it was encountered indicate no bedrock will be encountered in the proposed cuts for these sections. The attached Soil Profile and Cut Stability Sheets provide information obtained during the drilling operations.

Drilling and Sampling

Drilling operations for this project were performed in September of 2018. The roadway drilling operations consisted of 1 rock core boring, 7 soundings, 3 disturbed profile borings, and 1 stability boring. Overburden depths ranged from 8 to 25 feet.

Rock soundings were performed from approximate station 279+00 to 285+00 where rail steel is proposed to retain the roadway embankment. The following table and the attached Soil Profile Sheet show the sounding results:

<u>Station</u>	<u>Offset</u>	<u>Depth to Refusal</u>	<u>Surface Elevation</u>	<u>Refusal Elevation</u>
278+99.7	9.1' Right	9.2'	1175.2'	1166.0'
279+99.5	8.3' Right	10.0'	1176.59'	1166.6'
280+99.6	8.5' Right	10.1'	1178.13'	1168.0'
281+99.5	7.3' Right	10.5'	1179.82'	1169.3'
282+99.1	9.7' Right	18.0'	1182.04'	1164.0'
283+99.2	8.9' Right	25.0'	1184.13'	1161.6'
284+99.3	7.9' Right	20.0'	1185.7'	1165.7'

Laboratory Testing

The soil testing showed the most common soil types for the project to be sands with a silt/clay mix (SC-SM in the Unified Soil Classification System) and silty gravels (GM). The material sampled in the cut area as shown on the Soil Profile sheet for station 143+08 to 160+30 and the Cut Stability sheet for section 156+00 is suitable for use in construction.

California Bearing Ratio (CBR) testing was performed on the bulk sample obtained from soils from the proposed cut. The result of the testing was a CBR of 10. Given the variability of fill material, we recommend using a CBR of 5 for pavement design.

R-017-2018
Item # 12-9002.00

January 9, 2019
Page 3 of 5

Engineering Analysis

Stability analyses were not required for this project based on the slope heights and configurations. Unless otherwise indicated, we recommend all cut and embankment slopes be constructed at a steepness of 2H:1V or flatter and should be constructed according to the current edition of the Standard Specifications for Road and Bridge Construction.

Soil Stabilization

Subgrade problems may occur in areas where the existing pavement will be removed or where the roadway template is in a shallow fill or in a cut condition. Therefore, a two-foot working platform consisting of Kentucky Coarse Aggregate No. 2, 3, or 23 wrapped with Geotextile Fabric may be required for these areas. The thickness of the working platform may need to be greater than two feet in areas as determined by the Engineer on construction and may depend on seasonal fluctuations in the water table. The working platform shall daylight horizontally to the edge of embankment in fills and to the ditchline in cuts, to ensure positive drainage. For quantity estimation purposes only, a 2-foot working platform for 100 linear feet of roadway may be assumed.

The embankment foundation construction may require a working platform where soft and/or saturated soils are encountered. The extent of these problems will depend on time of construction and seasonal water table fluctuations. The recommendations below provide for the use of Kentucky Coarse Aggregate No. 2, 3, or 23 wrapped with Geotextile Fabric for stabilization of any such wet areas encountered during construction. For quantity estimation purposes only, a 2-foot embankment working platform for 60 linear feet of roadway may be assumed.

If drilled in rails or beams with lagging are used, we recommend using Kentucky Coarse Aggregate No. 2, 3, or 23 underlain with Geotextile Fabric as backfill. Maintain positive drainage behind the lagging. Place Geotextile Fabric Type IV, in accordance with Section 214 & 843 of the Standard Specifications for Road and Bridge Construction, current edition, between the aggregate and soil interface. For quantity estimation purposes only, assume this treatment for 750 linear feet of roadway.

GEOTECHNICAL RECOMMENDATIONS:

- 1.) In accordance with Section 206 of the current Standard Specifications, the moisture content of embankment material shall not vary from the optimum moisture content as determined by the current version of KM 64-511 by more than +2 percent or less than -2 percent. This moisture content requirement shall have equal weight with the density requirement when determining the acceptability of embankment construction. Refer to the Family of Curves for moisture/density correlation.
- 2.) All soils, whether from roadway or borrow, may require manipulation to obtain proper moisture content prior to compaction. Direct payment shall not be permitted for rehandling, hauling, stockpiling, and/or manipulating soils.

R-017-2018
Item # 12-9002.00

January 9, 2019
Page 4 of 5

- 3.) Excavation of surface ditches and channel changes adjacent to embankment areas shall be performed prior to the placement of the adjacent embankments. The material excavated for the channel changes and surface ditches is suitable for embankment construction if dried to proper moisture content in accordance with Section 206 of the current Standard Specifications for Road and Bridge Construction.
- 4.) The Contractor is responsible for conducting any operations necessary to excavate the cut areas to the required typical section. These operations shall be incidental to Roadway Excavation or Embankment-in-Place and no additional compensation shall be made for this work.
- 5.) Some of the soil horizons and slopes on the project are subject to erosion. Necessary procedures in accordance with Sections 212 and 213 of the current Standard Specifications for Road and Bridge Construction shall be followed on construction.
- 6.) Removal of existing structures and other obstructions shall be completed in accordance with Section 203 of the current Standard Specifications for Road and Bridge Construction.
- 7.) Clearing and grubbing of roadway areas shall be completed in accordance with the requirements of Section 202 of the current Standard Specifications for Road and Bridge Construction before embankment placement
- 8.) All water wells within the limits of construction, whether shown on the plans or not, shall be treated in accordance with the current edition of Section 708 of the Standard Specifications for Road and Bridge Construction.
- 9.) Borrow material, if required for subgrade, shall meet the minimum CBR value of 5.
- 10.) The existing subgrade may be wet and soft in areas where the roadway template is in a shallow cut or fill, or where existing pavement is being removed. Therefore, a minimum 2-foot working platform may be required in these areas consisting of Kentucky Coarse Aggregate No. 2's, 3's or 23's in accordance with Section 805 of the current Standard Specifications. The working platform shall be wrapped with Geotextile Fabric in accordance with Sections 214 & 843 of the current Standard Specifications. Type IV Fabric shall be used for this application contrary to the standard specifications. The working platform shall daylight horizontally to the edge of embankment in fills and to the ditchline in cuts to ensure positive drainage. The actual locations and thickness shall be determined by the Engineer during construction and may depend on seasonal fluctuations in the water table.
- 11.) In order to provide a working platform for embankment construction, Kentucky Coarse Aggregate No. 2's, 3's or 23's in accordance with the current edition of Section 805 of the Standard Specifications for Road and Bridge Construction shall be placed over all soft and/or saturated areas that may be detected during construction, as directed by the Engineer. The required thickness is estimated to be 2 foot, but the actual locations and thickness shall be determined by the Engineer during construction and may depend on seasonal fluctuations in

R-017-2018
Item # 12-9002.00

January 9, 2019
Page 5 of 5

the water table. This material shall be wrapped with Geotextile Fabric in accordance with Sections 214 and 843 of the Standard Specifications for Road and Bridge Construction, current edition. Type IV Fabric shall be used for this application contrary to the standard specifications.

- 12.) Where rail/beam and lagging retaining structures are installed to widen the roadway shoulder, use Kentucky Coarse aggregate No. 2's, 3's or 23's in accordance with the current edition of Section 805 of the Standard Specifications for Road and Bridge Construction as backfill material. This material shall be underlain with Geotextile Fabric in accordance with Sections 214 and 843 of the Standard Specifications for Road and Bridge Construction, current edition. Type IV Fabric shall be used for this application contrary to the standard specifications.
- 13.) Shale (above or below the RDZ, durable or non-durable) cannot be placed in the top two feet of the subgrade.
- 14.) In areas where pavement is not to be overlaid, existing bituminous concrete located at a distance less than three feet below the proposed subgrade elevation within the limits of new roadway embankments, shall be removed entirely. This shall be performed in compliance with Section 206 of the Standard Specifications for Road and Bridge Construction.

DESIGN RECOMMENDATIONS:

- 1.) The project should be designed for a two foot subgrade with a CBR Design value of 5.
- 2.) An average soil shrinkage value of two (2) percent is estimated for this project. This value should be applied to the formula for calculating the Apparent Shrinkage as outlined in the Design Manual.

cc: Division of Design (Plan Processing Section)
TEBM for Pavement Design
Division of Construction
TEBM for Project Delivery & Preservation (District)
TEBM for Project Development (District)
Project Manager (District)

GEOTECHNICAL SYMBOLS

ASHTO Classification of Soils and Soil-Aggregate Mixtures

General Classification	Gravel Materials (35% or less passing 0.075 mm)							Silt-Clay Materials (More than 35% passing 0.075 mm)						
	A-1		A-3	A-2			A-4	A-5	A-6	A-7				
Group Classification	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7			A-7-5	A-7-6			
Sieve Analysis, Percent Passing	50 max 30 max 15 max	50 max 50 max 25 max	5 min 10 max	5 min 10 max	5 min 10 max	5 min 10 max	4 min 10 max	4 min 10 max						
Characteristics of Fraction Passing 0.425 mm (No. 40) Liquid Limit Plasticity Index	---	---	N.P.	---	---	---	---	---	---	---	---	---	---	

- AI** Activity Index
LI Liquidity Index
S+C Silt + Clay (% finer than No.200 Sieve)
 Rockline Soundings
 Disturbed Sample Boring
 Undisturbed Sample Boring & Rock Core
 Rock Core
 Slope Inclometer Installation
 typical applications: Observation Well
 Approximate Footing Elevation
 Water Elevation
OW (Date)

Unified Soil Classifications

MAJOR DIVISIONS	SYMBOL	NAME
COARSE GRAINED SOILS	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.
	GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
	GM	Silty gravels, gravel-sand-silt mixtures.
	GC	Clayey gravels, gravel-sand-clay mixtures.
	SW	Well-graded sands or gravelly sands, little or no fines.
	SP	Poorly graded sands or gravelly sands, little or no fines.
	SM	Silty sands, sand-silt mixtures.
FINE GRAINED SOILS	SC	Clayey sands, sand-clay mixtures.
	ML	Inorganic silts and very fine sands, rock flour, silt or clayey fine sands or clayey silts with slight plasticity.
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
	ML-CL	Silty clay-silty clay, with sand and or gravel, sandy silty clay, sandy silty clay with gravel, gravelly silty clay, gravelly silty clay with sand
	CH	Inorganic clays of high plasticity, fat clays.

Unified Soil Classifications - Continued

MAJOR DIVISIONS	SYMBOL	NAME
COARSE GRAINED SOILS	GP-GC	Poorly graded gravel with clay (or silty clay), or silty clay & sand
	GP-GM	Poorly graded gravel with silt, sand and poorly graded gravel with clay (or silty clay), well graded gravel with clay and sand (or silty clay and sand)
	GM-GC	Well graded gravel with silt, silty clay and gravel
	GM-GM	Well graded gravel with silt, silty clayey gravel with sand
	GC-GM	Silty clayey gravel, silty clayey gravel with sand
	SW-SC	Well graded sand with clay (or silty clay), well graded sand with clay and gravel (or silty clay & gravel)
	SP-SC	Poorly graded sand with clay (or silty clay), poorly graded sand with clay and gravel (or silty clay and gravel)
	SP-SM	Poorly graded sand with silt, poorly graded sand with silt and gravel
	SP-SM	Silty clayey sand, silty clayey sand with gravel
	SC-SM	Well graded sand with silt, well graded sand with silt and gravel
UNCLASSIFIED MATERIAL	OH	Organic High Plasticity
	OL	Organic Low Plasticity

COUNTRY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

- VS** (psf) Field Vane Shear Strength
 Thin-walled Tube Sample
 Standard Penetration Test Sample
N Penetration Resistance
OU (psf) Unconfined Compressive Strength
UU (psf) Unconsolidated Undrained Triaxial Strength
wz Moisture Content
KY ROD Rock Quality Designation (Kentucky Method)
STD ROD Rock Quality Designation (Standard Method)
SDI(S) Stake Durability Index (for Stake Test)
REC Core Recovery
 ϕ Angle of Internal Friction (Total Stress)
 ϕ' Angle of Internal Friction (Effective Stress)
c (psf) Cohesion (Total Stress)
 c' (psf) Cohesion (Effective Stress)
 δ (pcf) Total Unit Weight
RDZ Rock Disintegration Zone
OB Overburden Bench
IB Intermediate Bench
R Refusal
NR Refusal Not Encountered
- LIMESTONE**
 LIMESTONE
SANDSTONE
 SANDSTONE
DURABLE SHALE (SDI ≥ 95)
 DURABLE SHALE
NONDURABLE SHALE (SDI < 95)
 NONDURABLE SHALE
GRANULAR EMBANKMENT
 GRANULAR EMBANKMENT
STRUCTURE GRANULAR BACKFILL
 STRUCTURE GRANULAR BACKFILL
SLOPE PROTECTION
 SLOPE PROTECTION
- COAL**
 COAL
TALUS, MINE WASTE, FILL MATERIAL, BOULDERS, & ETC.
 TALUS, MINE WASTE, FILL MATERIAL, BOULDERS, & ETC.
DOLOMITE
 DOLOMITE
LIMESTONE (ARGILLACEOUS)
 LIMESTONE (ARGILLACEOUS)

GEOTECHNICAL NOTES

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

1.) In accordance with Section 206 of the current Standard Specifications, the moisture content of embankment material shall not vary from the optimum moisture content as determined by the current version of KM 64-511 by more than 2 percent or less than -2 percent. This moisture content requirement shall have equal weight with the density requirement when determining the acceptability of embankment construction. Refer to the Family of Curves for moisture/density correlation.

2.) All soils, whether from roadway or borrow, may require manipulation to obtain proper moisture content prior to compaction. Direct payment shall not be permitted for rehandling, hauling, stockpiling, and/or manipulating soils.

3.) Excavation of surface ditches and channel changes adjacent to embankment areas shall be performed prior to the placement of the adjacent embankments. The material excavated for the channel changes and surface ditches is suitable for embankment construction if dried to proper moisture content in accordance with Section 206 of the current Standard Specifications for Road and Bridge Construction.

4.) The Contractor is responsible for conducting any operations necessary to excavate the cut areas to the required typical section. These operations shall be incidental to Roadway Excavation or Embankment-in-Place and no additional compensation shall be made for this work.

5.) Some of the soil horizons and slopes on the project are subject to erosion. Necessary procedures in accordance with Sections 212 and 213 of the current Standard Specifications for Road and Bridge Construction shall be followed on construction.

6.) Removal of existing structures and other obstructions for Road and Bridge Construction, Section 203 of the current Standard Specifications for Road and Bridge Construction.

7.) Clearing and grubbing of roadway areas shall be completed in accordance with the requirements of Section 202 of the current Standard Specifications for Road and Bridge Construction before embankment placement.

8.) All water walls within the limits of construction, whether shown on the plans or not, shall be treated in accordance with the current edition of Section 708 of the Standard Specifications for Road and Bridge Construction.

9.) Borrow material, if required for subgrade, shall meet the minimum CBR value of 5.

10.) The existing subgrade may be wet and soft in areas where the roadway template is in a shallow cut or fill, or where existing pavement is being removed. Therefore, a minimum 2-foot working platform may be required in these areas consisting of Kentucky Coarse Aggregate No. 2's, 3's or 23's in accordance with Section 805 of the current Standard Specifications. The working platform shall be wrapped with Geotextile Fabric in accordance with Sections 214 & 843 of the current Standard Specifications. Type IV Fabric shall be used for this application contrary to the standard specifications. The working platform shall daylight horizontally to the edge of embankment in fills and to the ditchline in cuts to ensure positive drainage. The actual locations and thickness shall be determined by the Engineer during construction and may depend on seasonal fluctuations in the water table.

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12.) Where rail/beam and logging retaining structures are installed to widen the roadway shoulder, use Kentucky Coarse aggregate No. 2's, 3's or 23's in accordance with the current edition of Section 805 of the Standard Specifications for Road and Bridge Construction as backfill material. This material shall be underlain with Geotextile Fabric in accordance with Sections 214 and 843 of the Standard Specifications for Road and Bridge Construction, current edition. Type IV Fabric shall be used for this application contrary to the standard specifications.

13.) Stone (above or below the RDL, durable or non-durable) cannot be placed in the top two feet of the subgrade.

14.) In areas where pavement is not to be overlaid, existing bituminous concrete located at a distance less than three feet below the proposed subgrade elevation within the limits of new roadway embankments, shall be removed entirely. This shall be performed in compliance with Section 206 of the Standard Specifications for Road and Bridge Construction.

DESIGNED BY:	
DATE SUBMITTED:	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF

PIKE

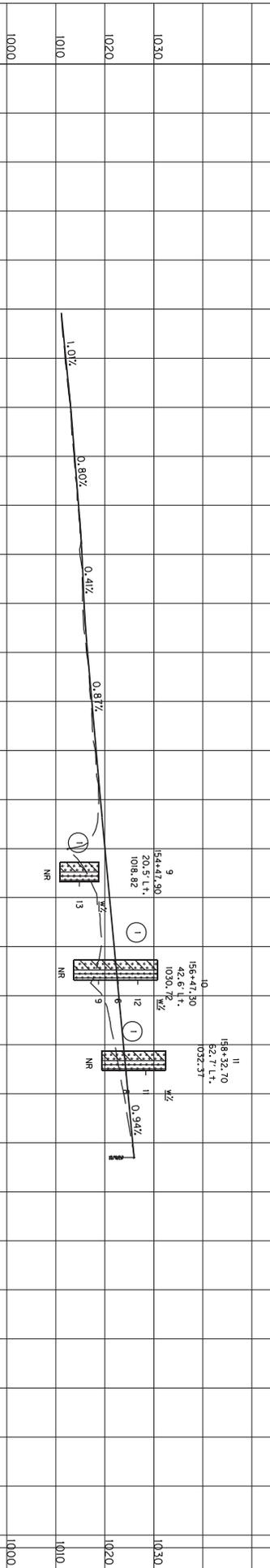
PROJECT NUMBERS:	
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GEOTECHNICAL NOTES

Field Drilling and Sampling were performed in September 2018. Detailed data and interpretation of subsurface conditions encountered in individual borings are shown on the soil profile. Soil and rock strata descriptions and indicated boundaries are based on engineering interpretation of available borings prepared by the contractor. The contractor is responsible for the accuracy of the actual location of subsurface conditions between borings and samples.

The observed water levels on or near subsurface conditions are shown on the soil profile. The contractor is responsible for the accuracy of the actual location of subsurface conditions. The contractor is responsible for the accuracy of the actual location of subsurface conditions. The contractor is responsible for the accuracy of the actual location of subsurface conditions.

NOTE: - Without regard to the materials encountered, all roadway and geologic excavation shall be underlaid, underpinned, underbraced, underdressed, and underlain with a distinct, understood, and not otherwise to rock, earth, or any other material on the plans or cross sections for the Department's information and to not to be taken as an indication of classified excavation or the quantity of either rock, earth or any other material involved. The Department does not give any guarantee as to the accuracy of the data or the conditions to be encountered. The Department does not give any guarantee as to the accuracy of the data or the conditions to be encountered. The Department does not give any guarantee as to the accuracy of the data or the conditions to be encountered.



SAMPLE NO.	STATION	DEPTH	COMPOSITION	U ₂ TITL	S ₂ TITL	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	ACTIVITY INDEX	SPECIFIC GRAVITY	MOISTURE CLASSIFICATION	INDEXED CLASSIFICATION	QUALITY OF TESTS	DATE	BY
1	156+47.3	42.6' L.F.	0.0-17.0	16	22	25	19	6	0.38	2.74	A-4(U)	SC-SM	10	10	10

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

DESIGNED BY: _____
DATE SUBMITTED: _____

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF
PIKE

PROJECT: _____
NUMBERS: _____
SCALE: H = 300' HORIZONTAL
V = 30' VERTICAL
SOIL PROFILE, KY 632
STA. 143+08 TO 160+30

COORDINATE DATA SUBMISSION FORM
KYTC DIVISION OF STRUCTURAL DESIGN -- GEOTECHNICAL BRANCH

County PIKE COUNTY Date 10/18/2018

Road Number KY 632

Survey Crew / Consultant DISTRICT 12

Contact Person CHRIS JAMES

Item # 12-9002.00

Mars # 9169401D

Project # 12FO FD52 098 0632 000-007 D

(circle one)

Elevation Datum NAVD88 Assumed

Notes:

NAVD88

As-Drilled

HOLE NUMBER	LATITUDE <small>(Decimal Degrees)</small>	LONGITUDE <small>(Decimal Degrees)</small>	HOLE NUMBER	STATION	OFFSET	ELEVATION (ft)
1	37.48501234°N	82.30647773°W	1	156+00.9	47.2' LT	1031.08
2	37.48708155°N	82.26883051°W	2	278+99.7	9.1' RT	1175.2
3	37.48735471°N	82.26876858°W	3	279+99.5	8.3' RT	1176.59
4	37.48762709°N	82.26872270°W	4	280+99.6	8.5' RT	1178.13
5	37.48789819°N	82.26867751°W	5	281+99.5	7.3' RT	1179.82
6	37.48816454°N	82.26860530°W	6	282+99.1	9.7' RT	1182.04
7	37.48842901°N	82.26851801°W	7	283+99.2	8.9' RT	1184.13
8	37.48869167°N	82.26842169°W	8	284+99.3	7.9' RT	1185.7
9	37.48486973°N	82.30694953°W	9	154+47.9	20.5' LT	1018.82
10	37.48504054°N	82.30633317°W	10	156+47.3	42.6' LT	1030.72
11	37.48532728°N	82.30584043°W	11	158+32.7	62.7' LT	1032.37
12	37.48508301°N	82.30648501°W	12	156+07.5	72.3' LT	1032.78



COORDINATE CONTROL POINTS

Point	Description	Description		Station
		North (Y)	East (X)	
POB	CL KY 632	3718506.5569	5919236.6379	150+15.03
PC	CL KY 632	3718512.2177	5919602.5080	150+28.25
PT	CL KY 632	3718543.7570	5919632.6670	152+64.23
PC	CL KY 632	3718539.0763	5919659.8872	152+91.85
PT	CL KY 632	3718638.1581	5920304.6444	157+59.24
PC	CL KY 632	3718678.0351	5920361.8394	158+28.98
PT	CL KY 632	3718750.8007	5920459.7685	159+50.99
POE	CL KY 632	3718797.0712	5920518.1974	160+25.52

COORDINATE CONTROL POINTS

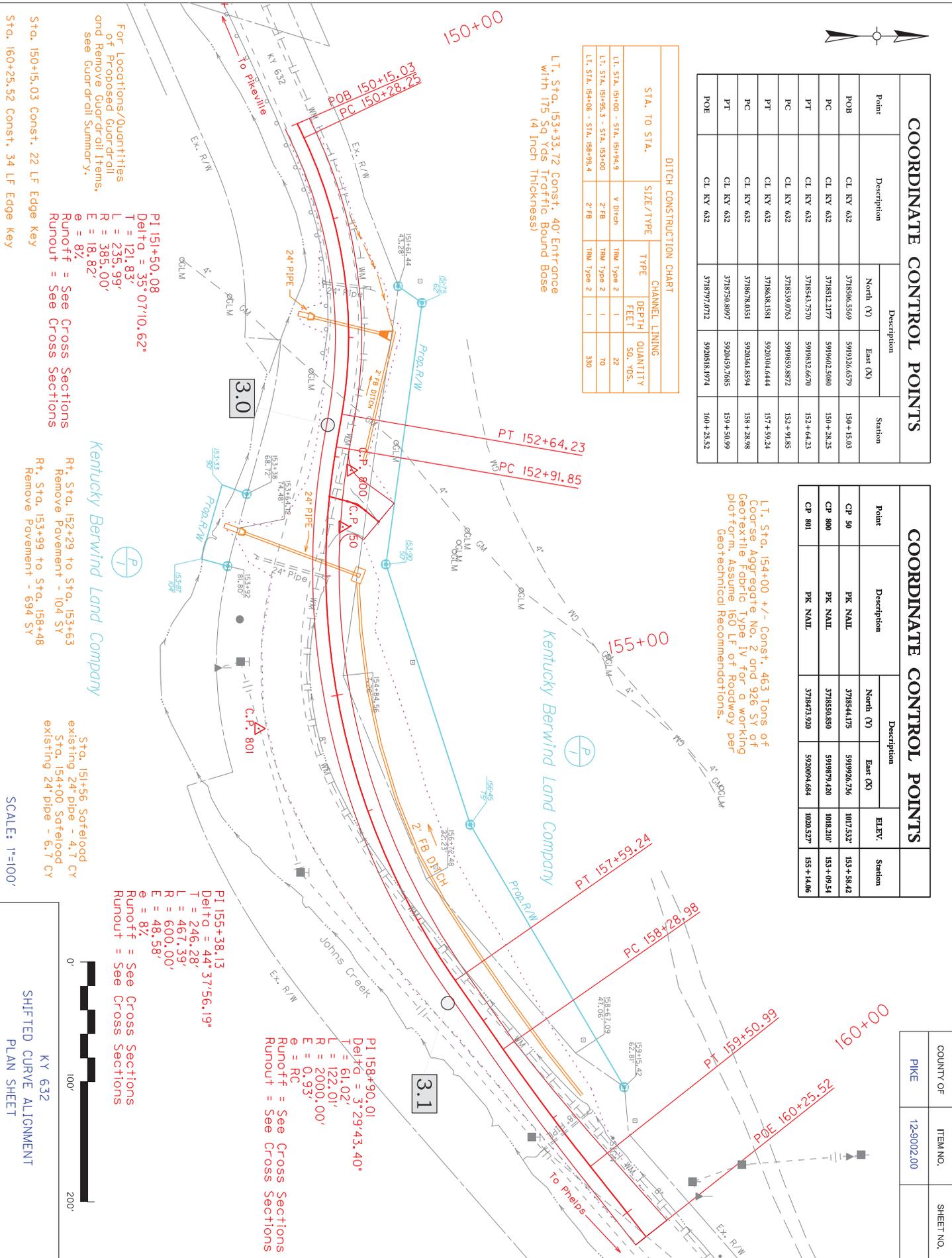
Point	Description	Description		Station
		North (Y)	East (X)	
CP 50	PK NAIL	3718544.175	5919926.736	153+58.42
CP 800	PK NAIL	3718550.850	5919979.420	153+09.54
CP 801	PK NAIL	3718472.920	5920064.684	155+14.06

L.T. Sta. 154+00 +/- Const. 463. Tone of Course, Aggregate No. 2 and 926 SY of Geotextile Fabric Type IV for a working platform. Assume 160 LF of Roadway per Geotechnical Recommendations.

DITCH CONSTRUCTION CHART

STA. TO STA.	SIZE/TYPE	TYPE	DEPTH FEET	QUANTITY SO. YDS.
L.T. STA. 151+00 - STA. 151+49.9	V Ditch	TBM Type 2	1	22
L.T. STA. 151+95.3 - STA. 153+00	2' FB	TBM Type 2	1	70
L.T. STA. 154+06 - STA. 158+93.4	2' FB	TBM Type 2	1	330

L.T. Sta. 153+33.12 Const. 40' Entrance with 175 Sq Yds Traffic Bound Base (4 Inch Thickness)



PI 151+50.08
Delta = 35° 07' 10.62"
T = 121.83'
L = 235.99'
R = 385.00'
E = 18.82'
e = 87'
Runoff = See Cross Sections
Runout = See Cross Sections

Kentucky Berwind Land Company

PI 155+38.13
Delta = 44° 37' 56.19"
T = 246.28'
L = 467.39'
R = 600.00'
E = 48.58'
e = 87'
Runoff = See Cross Sections
Runout = See Cross Sections

PI 158+90.01
Delta = 3° 29' 43.40"
T = 61.02'
L = 122.01'
R = 2000.00'
E = 0.93'
e = RC
Runoff = See Cross Sections
Runout = See Cross Sections

Sta. 150+15.03 Const. 22 LF Edge Key
Sta. 160+25.52 Const. 34 LF Edge Key

Rt. Sta. 152+29 to Sta. 153+63
Remove Pavement - 104 SY
Rt. Sta. 153+99 to Sta. 158+48
Remove Pavement - 694 SY

Sto. 151+56 Softwood
existing 24" pipe - 4.7 CY
Sto. 154+00 Softwood
existing 24" pipe - 6.7 CY

SCALE: 1"=100'

SHIFTED CURVE ALIGNMENT
PLAN SHEET



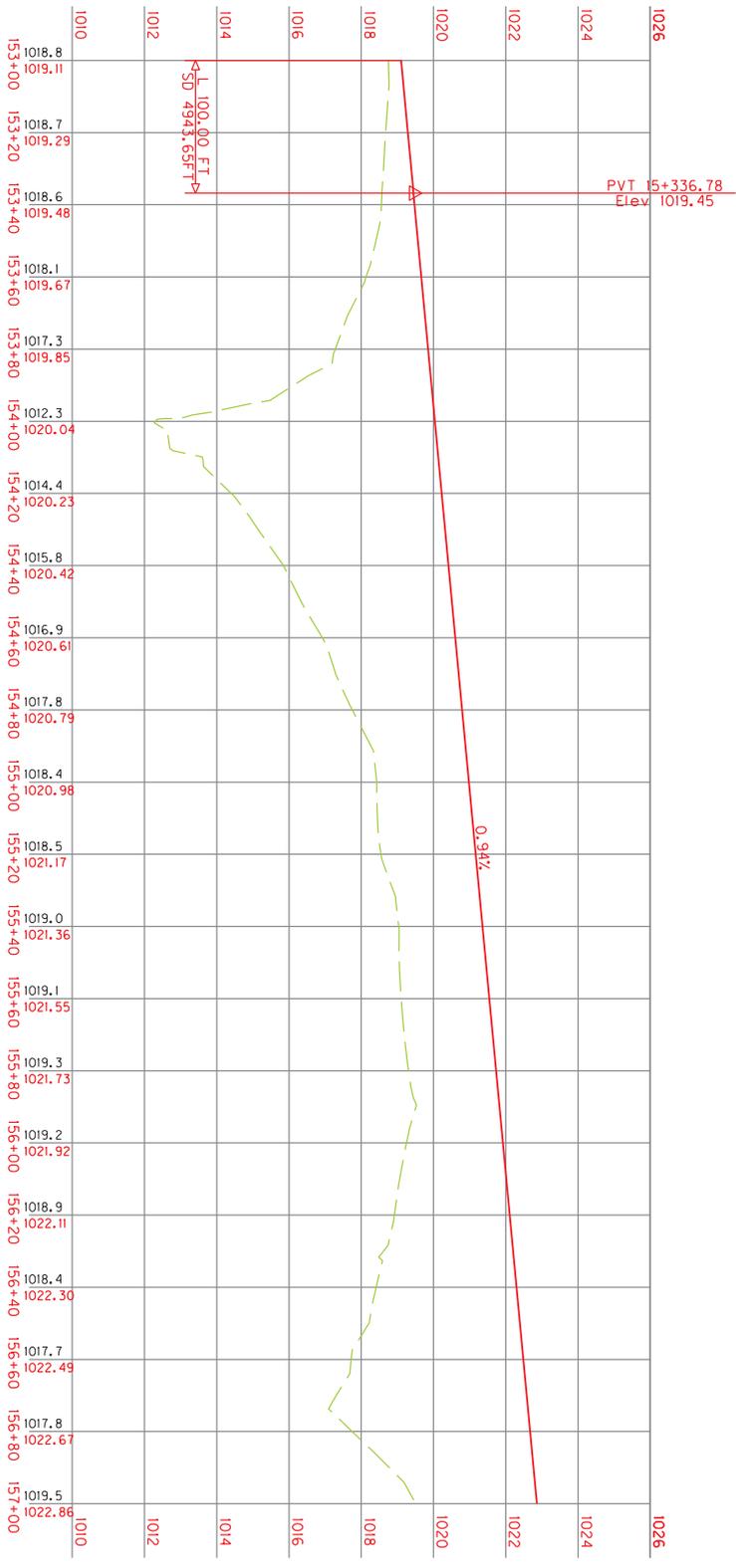


SCALE: 1"=50'

KY 632 - SHIFTED CURVE ALIGNMENT
PROFILE SHEET
P.O.B. TO STA. 153+00

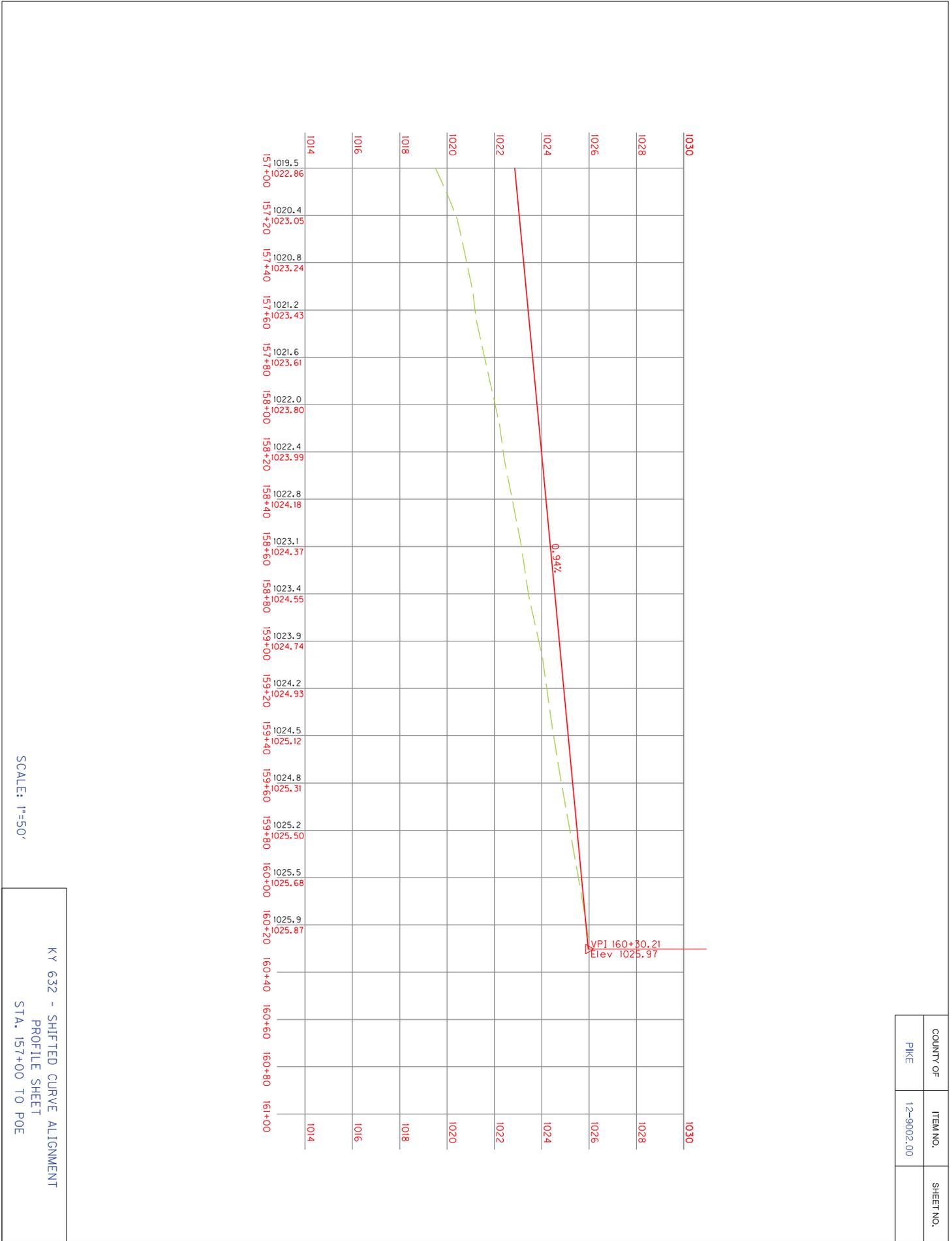
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



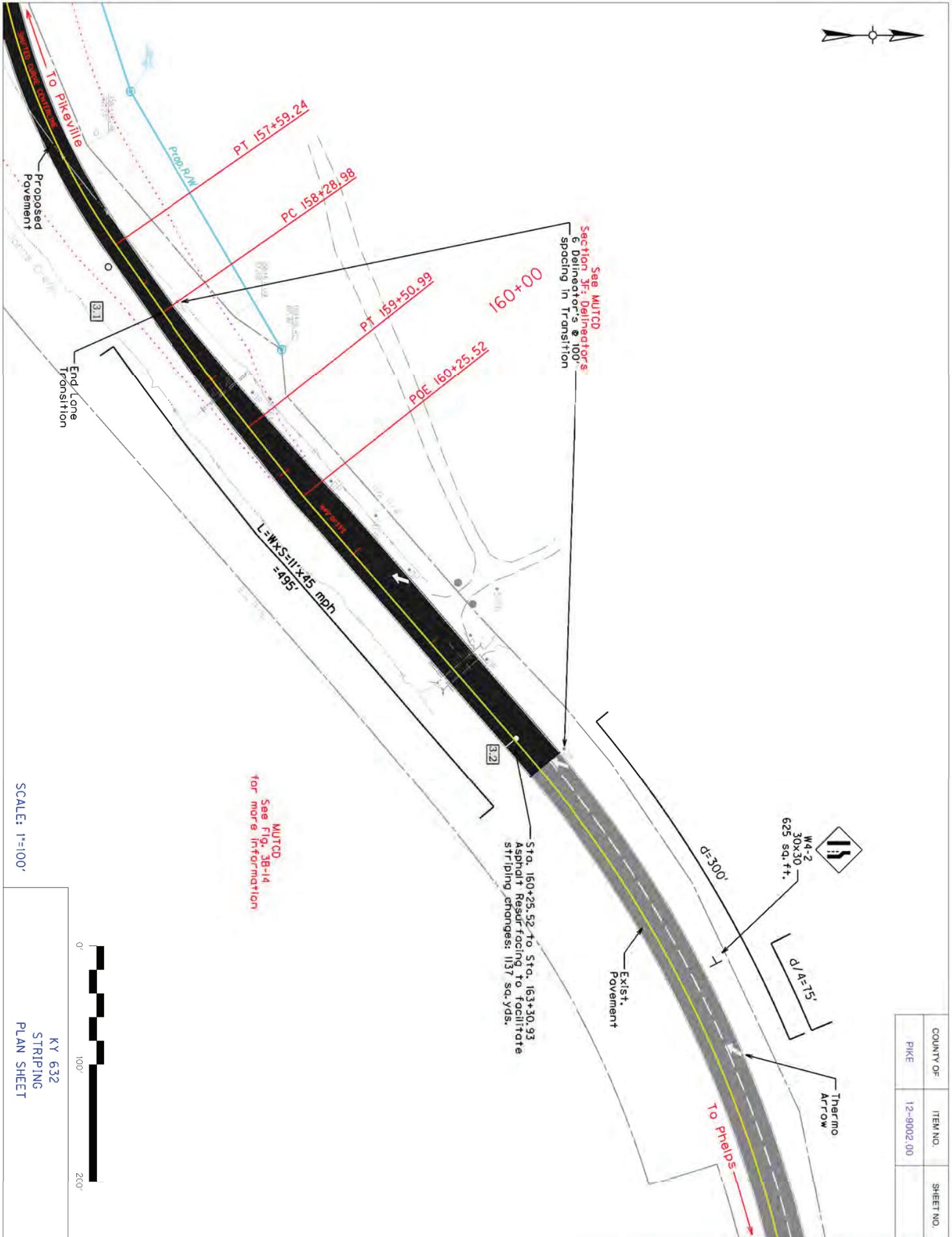
SCALE: 1"=50'

KY 632 - SHIFTED CURVE ALIGNMENT
PROFILE SHEET
STA. 153+00 TO STA. 157+00



SCALE: 1"=50'

KY 632 - SHIFTED CURVE ALIGNMENT
PROFILE SHEET
STA. 157+00 TO POE



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=100'



KY 632
STRIPING
PLAN SHEET

MUTCD
See Fig. 3B-14
for more information

STA. 160+25.52 to STA. 163+30.93
Asphalt Resurfacing to facilitate
striping changes: 1137 sq.yds.

See MUTCD
Section 317 Delineators
& Spacing in Transition

W4-2
30x30
625 sq. ft.

Thermo
Arrow

d=300'

G/A=15'

Exist.
Pavement

Proposed
Pavement

End Lane
Transition

L=495'
W=32'
S=11'
V=45 mph

160+00

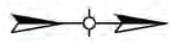
PT 159+50.99

PC 158+28.98

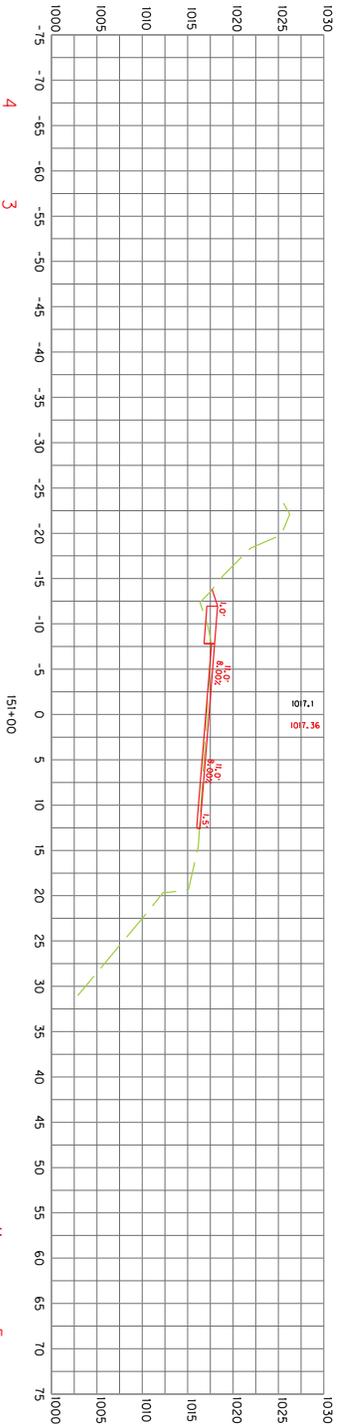
PT 157+59.24

To Pikeville

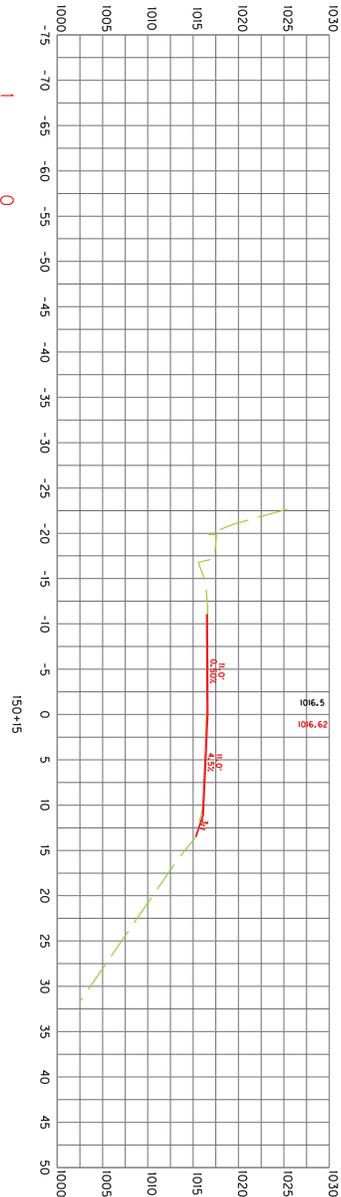
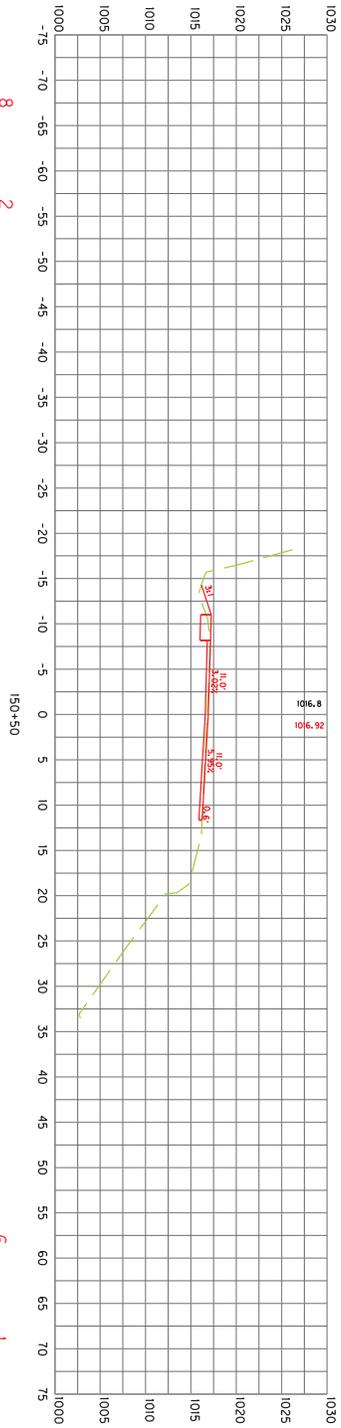
To Phelps



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COM 5
EMB 30

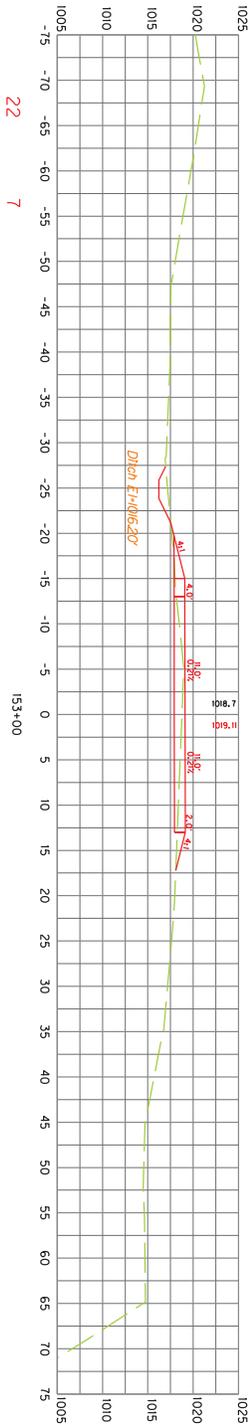
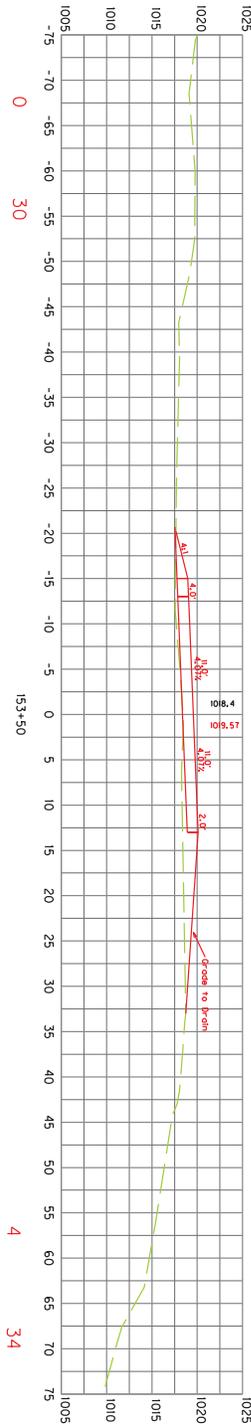
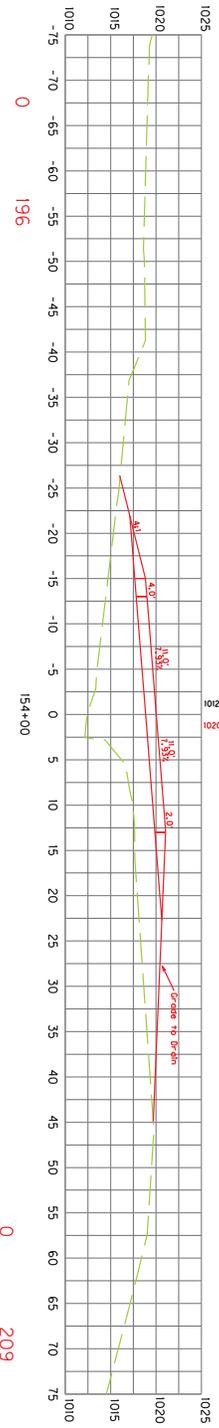
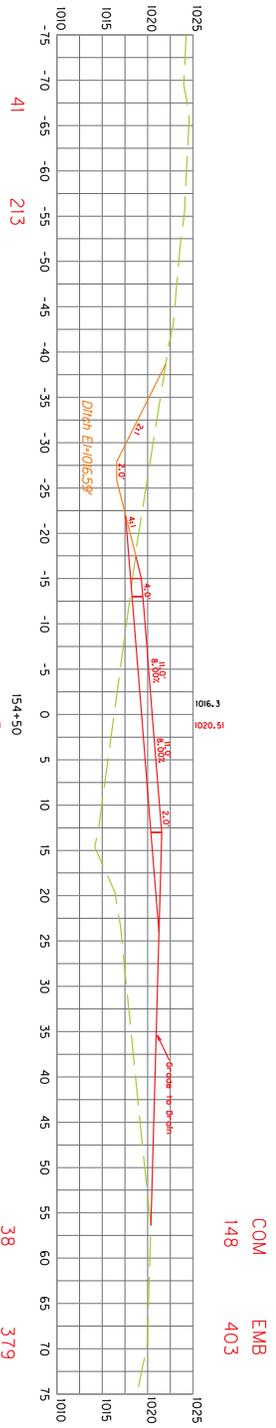


SCALE: 1"=20'

DESIGNED BY: _____
DATE SUBMITTED: _____
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS
COUNTY OF
PIKE

PROJECT: KY 632 - SHIFTED CURVE ALIGNMENT
STATION: 150+15.00 TO 151+00.00

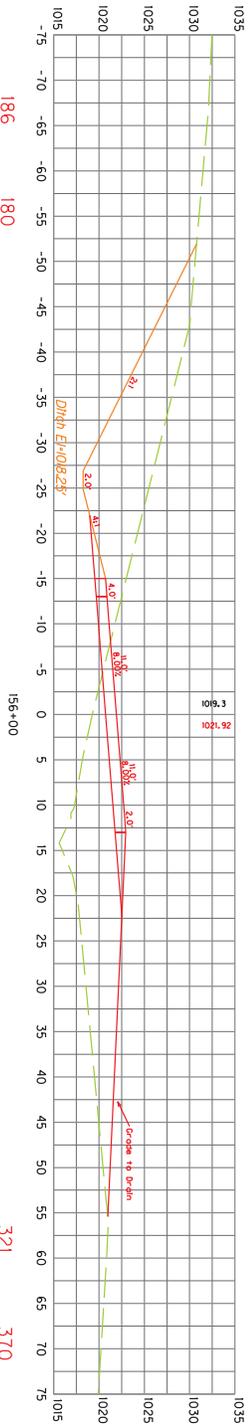
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



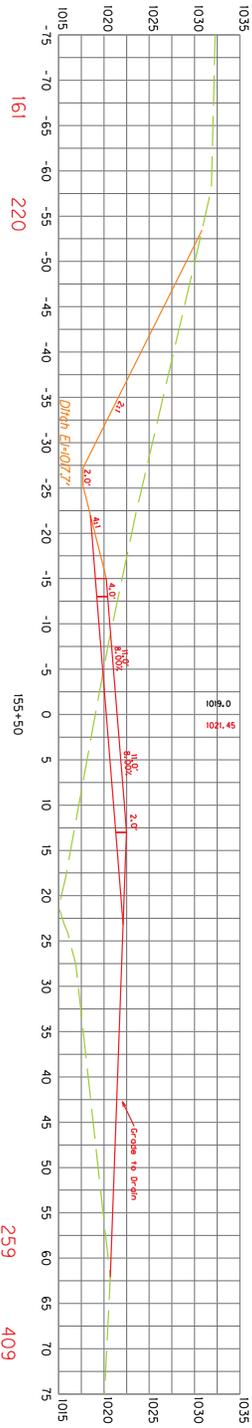
SCALE: 1"=20'

KY 632 - SHIFTED CURVE ALIGNMENT
STATION
153+00.00 TO 154+50.00

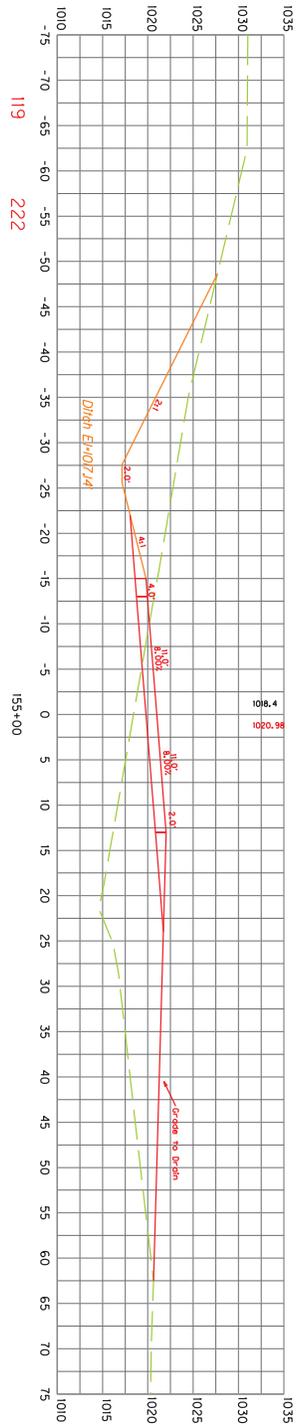
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COM 326
EMB 301



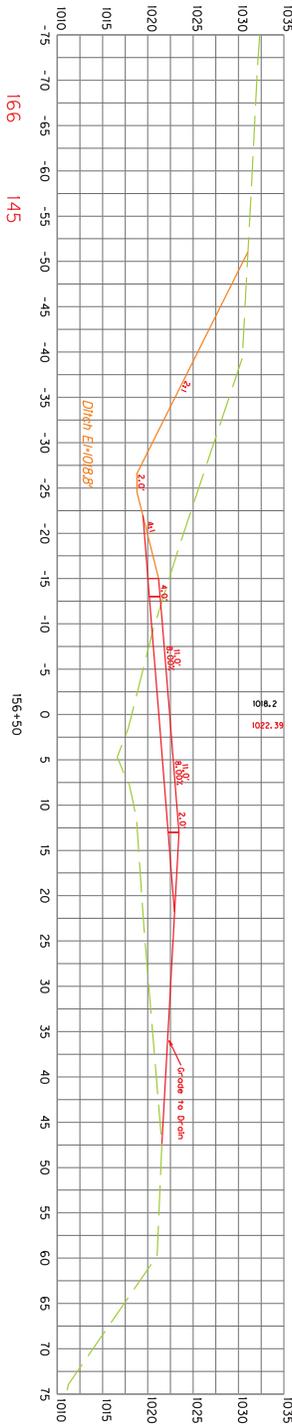
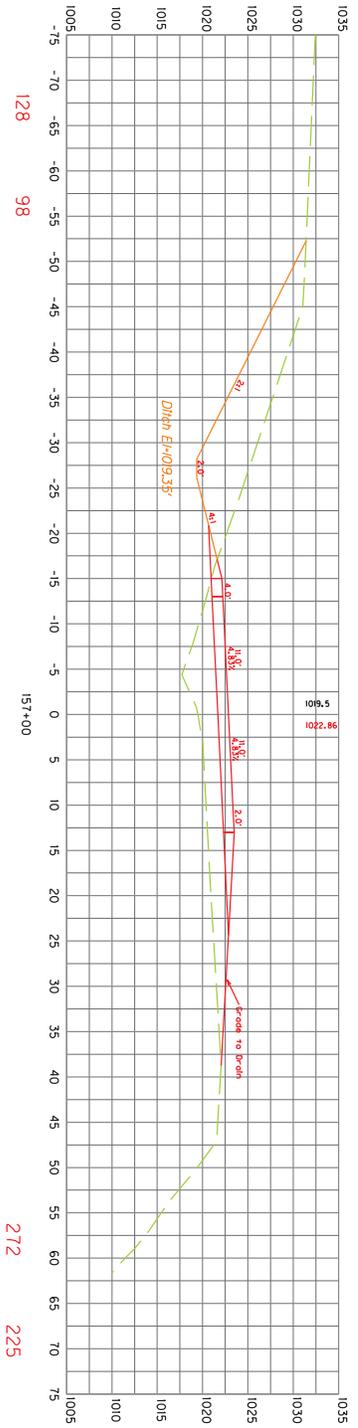
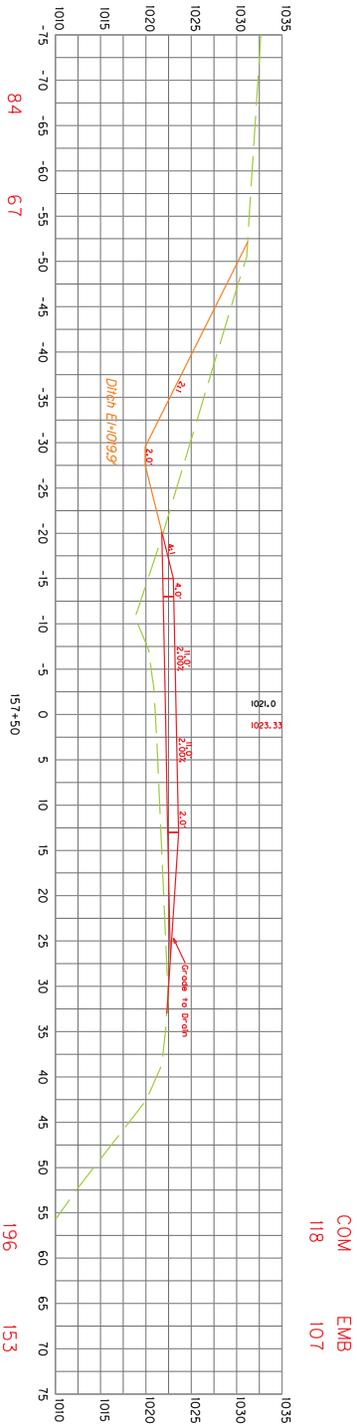
259 409



SCALE: 1"=20'

KY 632 - SHIFTED CURVE ALIGNMENT
STATION 155+00.00 TO 156+00.00

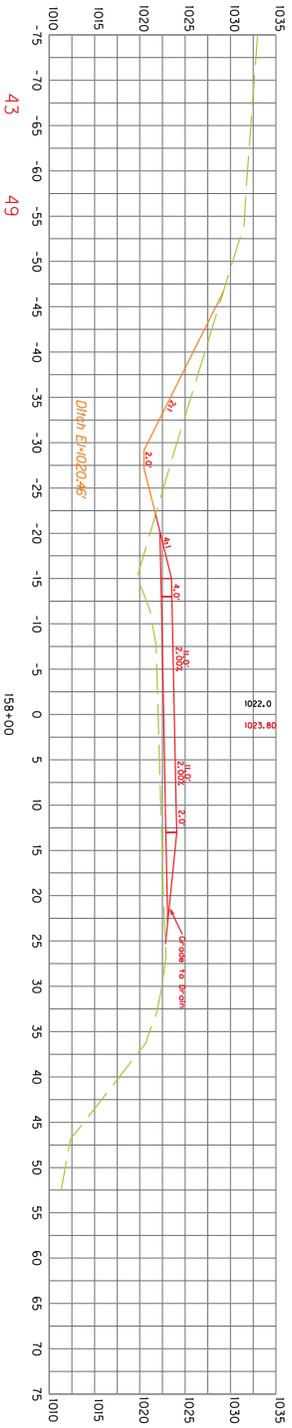
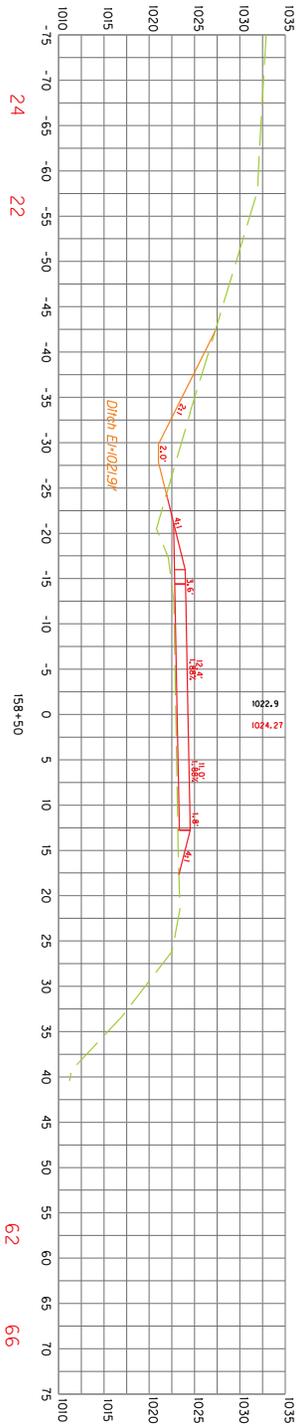
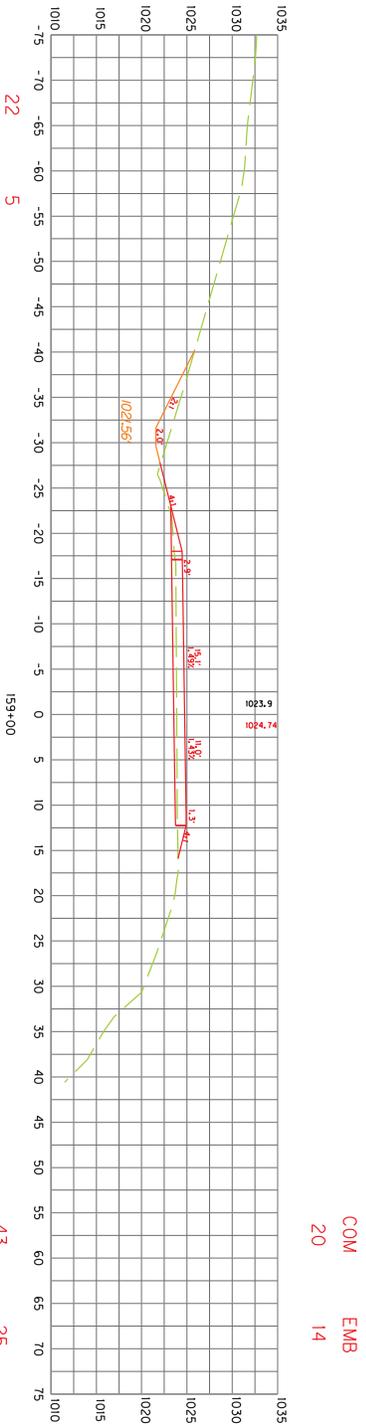
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=20'

KY 632 - SHIFTED CURVE ALIGNMENT
STATION
156+50.00 TO 157+50.00

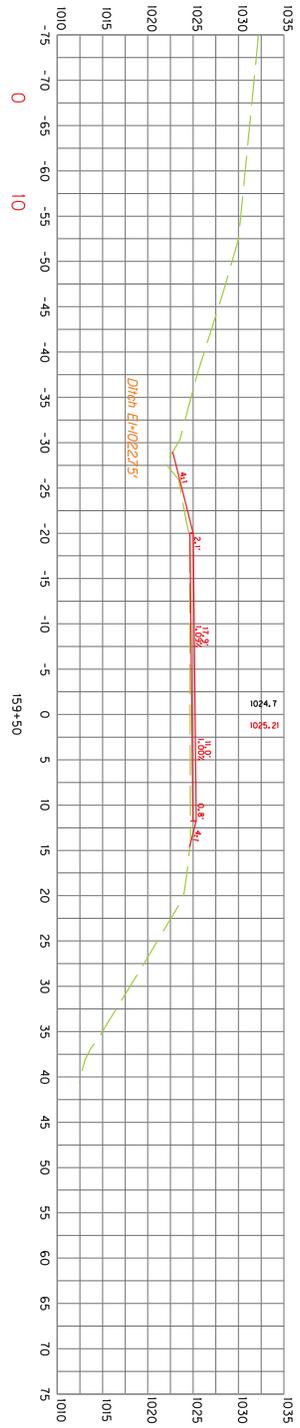
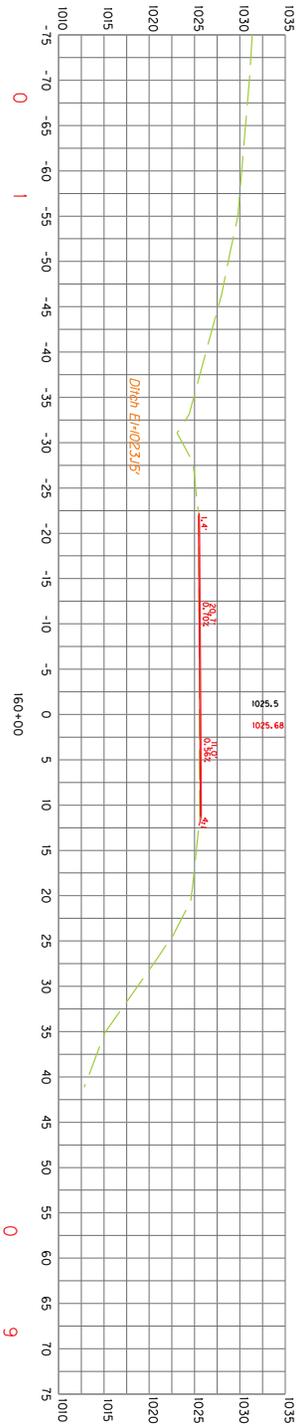
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=20'
KY 632 - SHIFTED CURVE ALIGNMENT
STATION 158+00.00 TO 159+00.00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

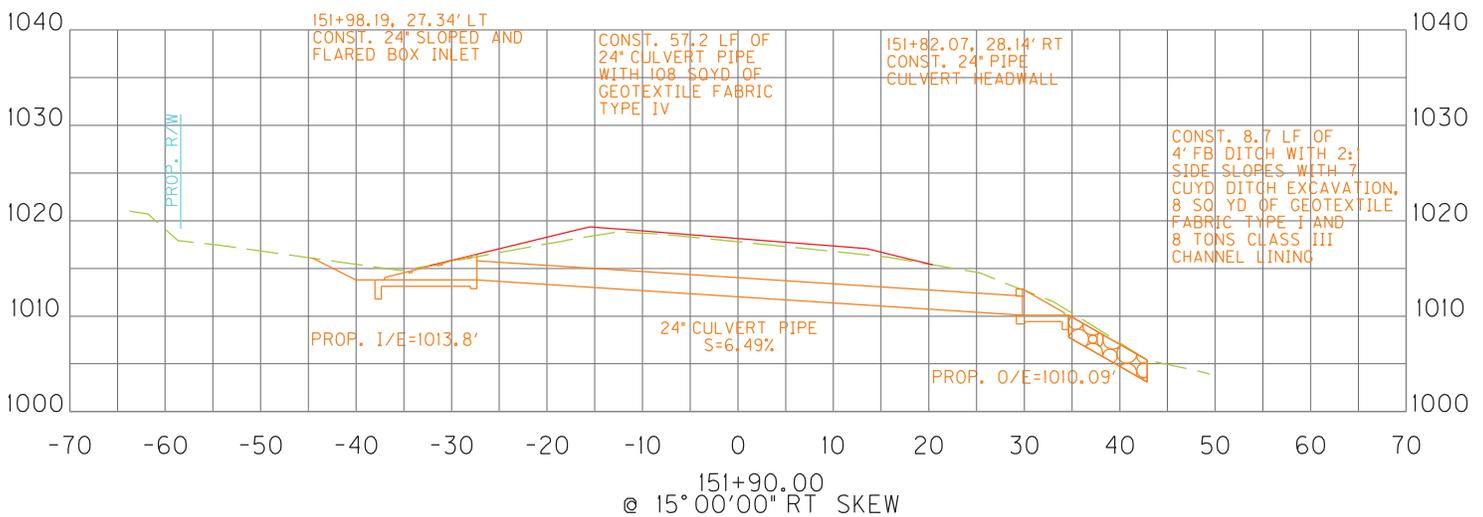
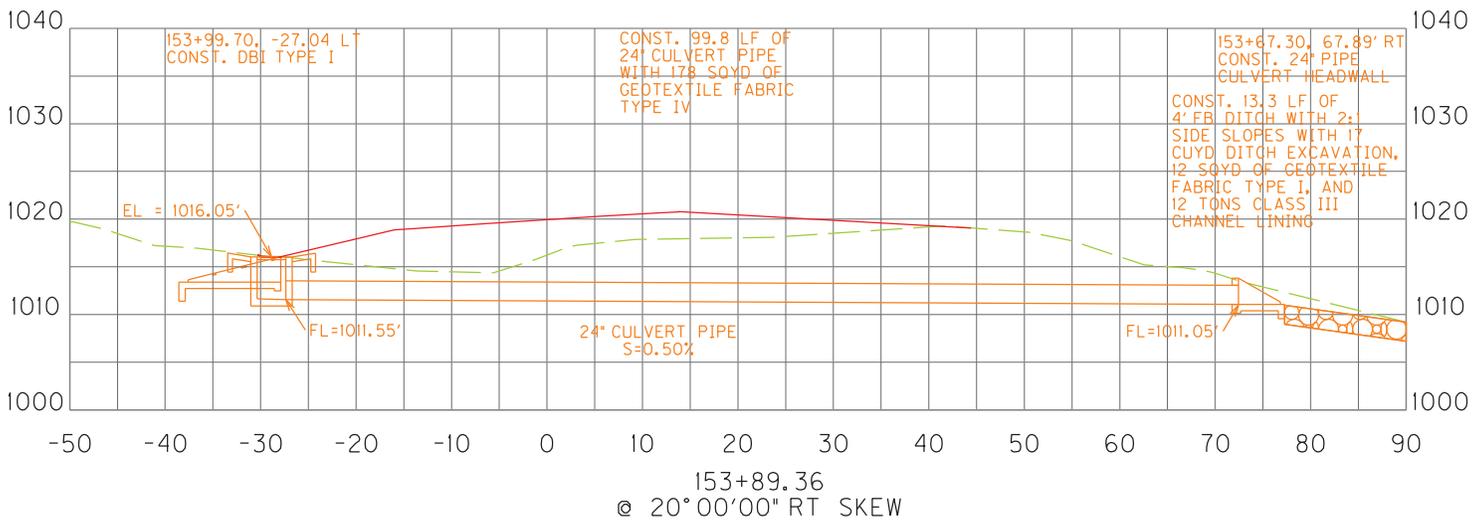
SHIFTED CURVE ALIGNMENT TOTALS
COM = 1883 CUYDS
EMB = 2871 CUYDS



SCALE: 1"=20'

KY 632 - SHIFTED CURVE ALIGNMENT
STATION
159+50.00 TO 160+00.00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632 - SHIFTED CURVE ALIGNMENT
PIPE SHEET
STA. 151+90.00 @ 15°00'00" RT SKEW
STA. 153+89.36 @ 20°00'00" RT SKEW



DO NOT DISTURB THE
EXISTING WATERLINE

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

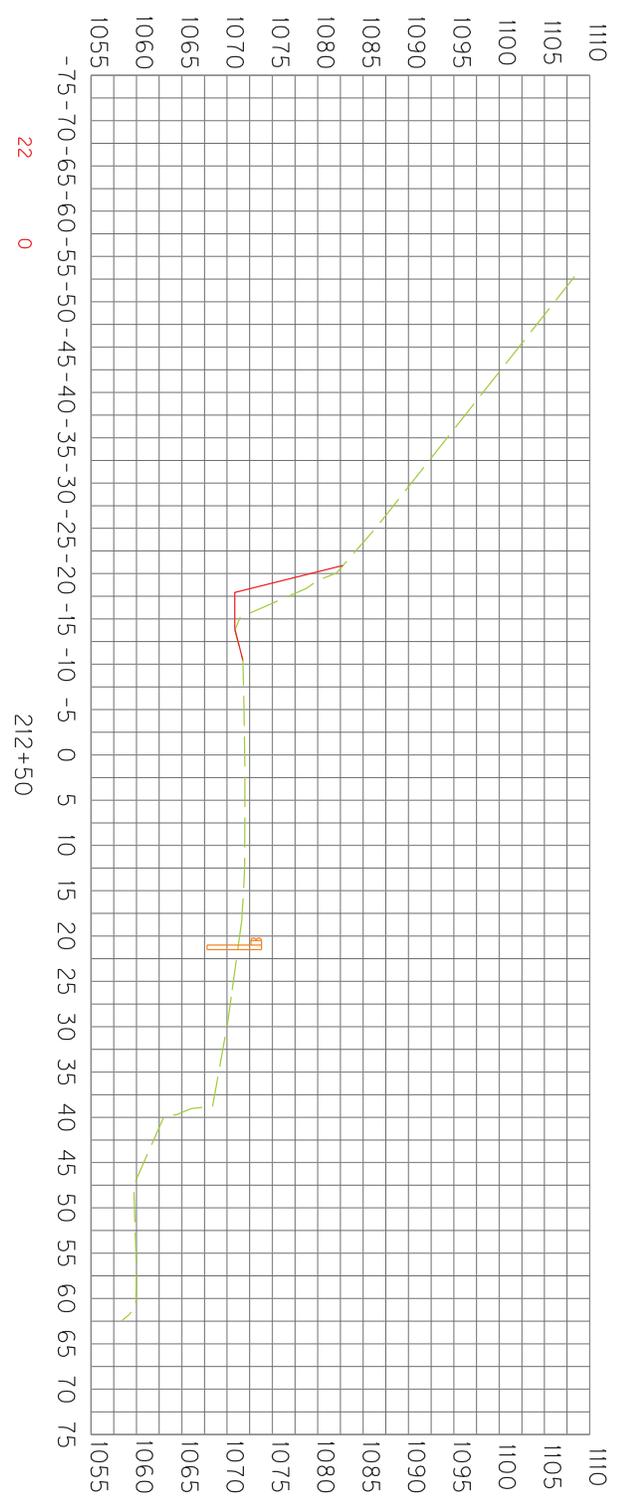
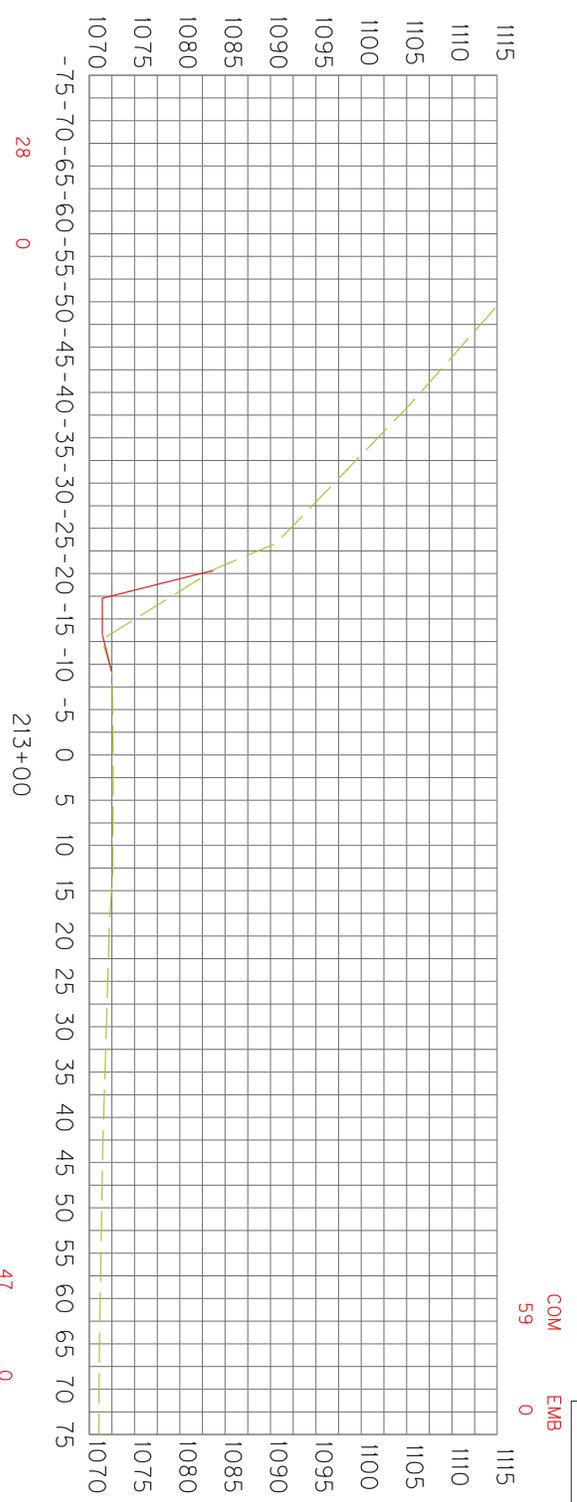
$P1\ 213+46.89$
 $\Delta = 40^\circ 10' 25.85''$
 $T = 164.56'$
 $L = 315.52'$
 $R = 450.00'$
 $E = 29.15'$

SCALE: 1"=30'

KY 632
 PLAN SHEET
 LONG FORK INTERSECTION



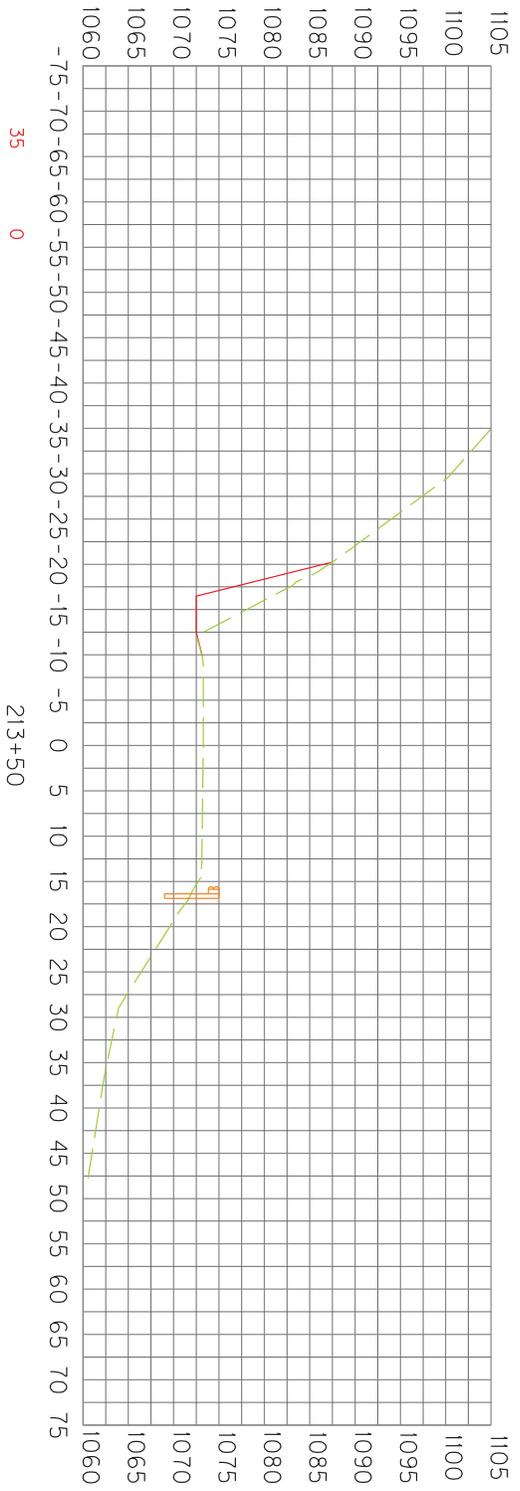
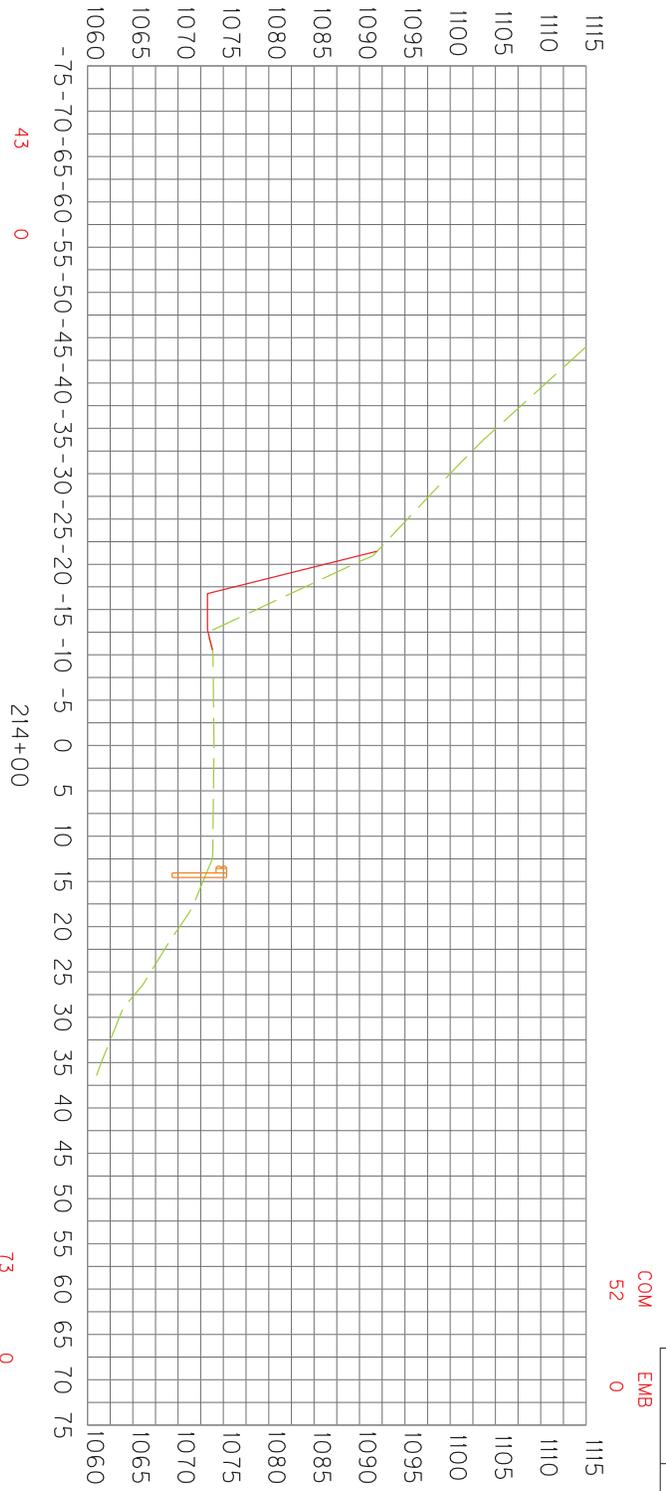
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1"=20'

KY 632 - LONG FORK CURVE
STATION
212+50 TO 213+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

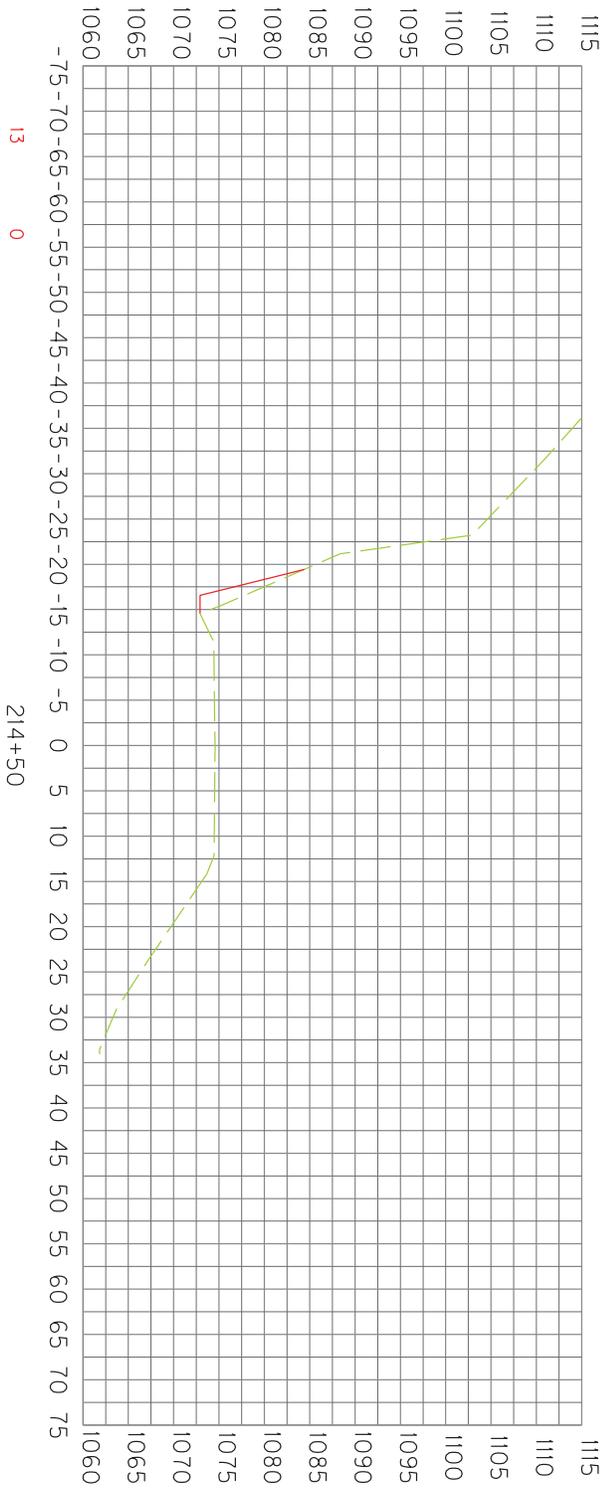


SCALE: 1"=20'

KY 632 - LONG FORK CURVE
STATION
213+50 TO 214+00

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

LONG FORK CURVE TOTALS
COM = 254 CUYDS
EMB = 0 CUYDS



SCALE: 1"=20'

KY 632 - LONG FORK CURVE
STATION
214+50



Approx. Sta. 269+09.80 to
Sta. 271+57.81 Const. 582 sq.yds.
High Friction Pavement.
Final Location to be determined by
the Engineer.

PI 270+34.55
Del+Q = 16°57'39.43"
T = 74.55'
L = 148.00'
R = 500.00'
E = 5.53'

PI 272+76.34
Del+Q = 13°12'44.62"
T = 150.56'
L = 299.78'
R = 1300.00'
E = 8.69'

N44°21'29"E

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: 1"=100'

KY 632
CURVE IMPROVEMENT AT MP 5.1

FOR LOCATIONS AND QUANTITIES OF
PROPOSED GUARDRAIL AND REMOVE
GUARDRAIL ITEMS, SEE THE GUARDRAIL
SUMMARY SHEET.

STA. 278+49 TO STA. 285+51
CONST. DRILLED STEEL AND CRIBBING
RAILROAD RAILS-DRILLED 5296 LF
CRIBBING 3762 SQ FT
EXCAVATION AND BACKFILL 82 CY
GEOTEXTILE FABRIC TY IV 538 SQ YDS

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



CONST. 4 LF OF
18" PIPE CULVERT
EXTENSION
(SEE PIPE SHEET)

CONST. 4 LF OF
36" PIPE CULVERT
EXTENSION
(SEE PIPE SHEET)

PI 283+04.33
Delta = 5.55'26.39"
T = 51.74'
L = 103.39'
R = 1000.00'
E = 1.34'

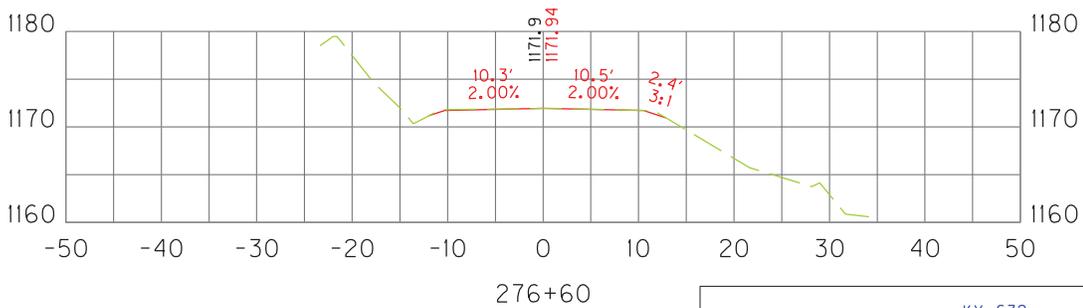
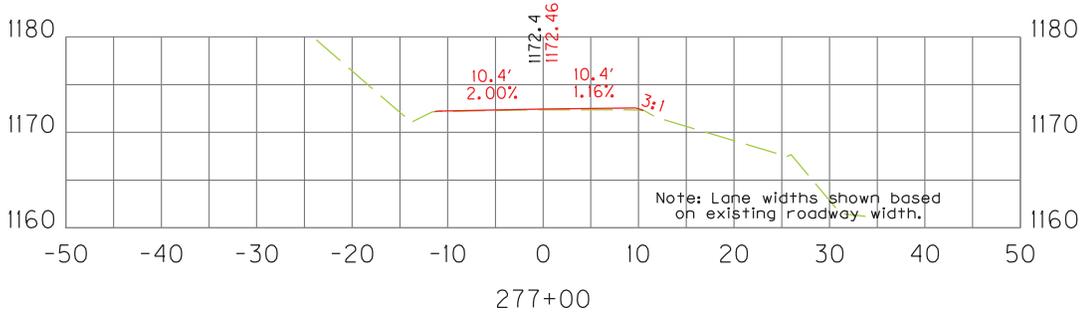
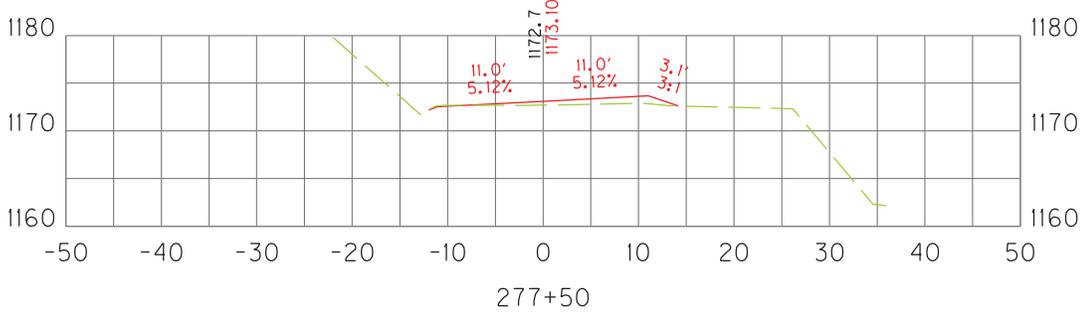
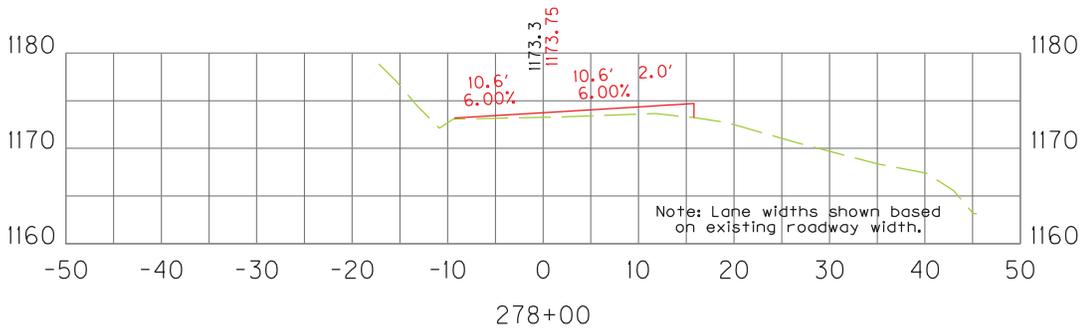
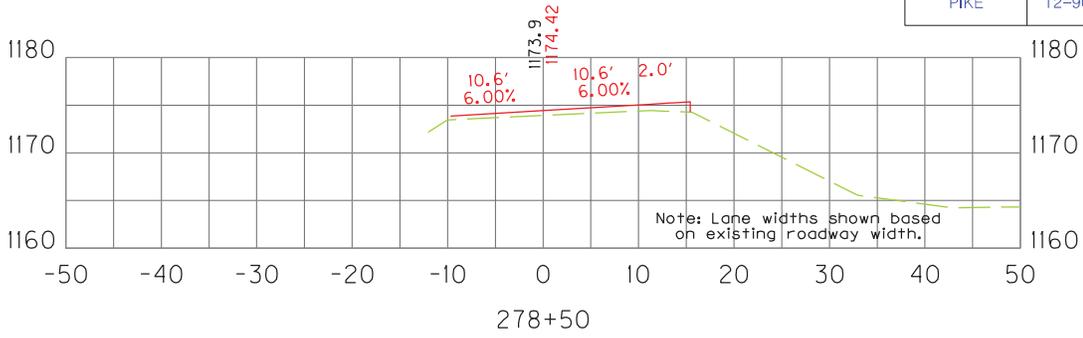
PI 278+35.31
Delta = 38.57'51.07"
T = 141.51'
L = 272.02'
R = 400.00'
E = 24.29'

SCALE: 1"=100'



EMBANKMENT FAILURE AT MP 5.3
STA. 276+60 TO STA. 286+75

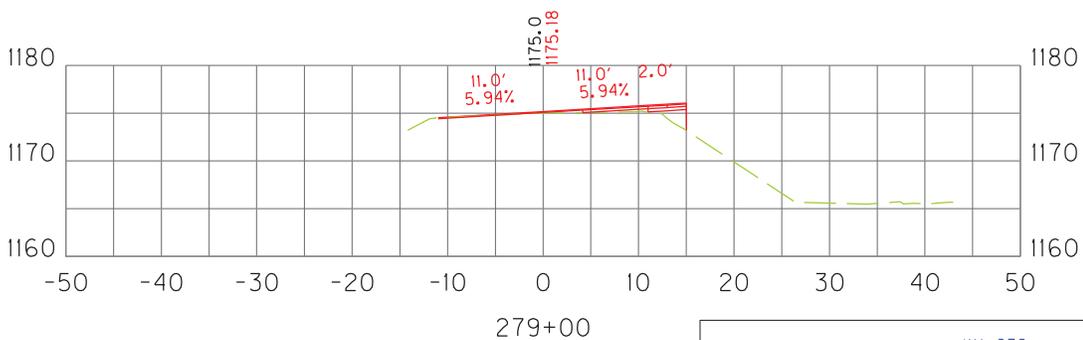
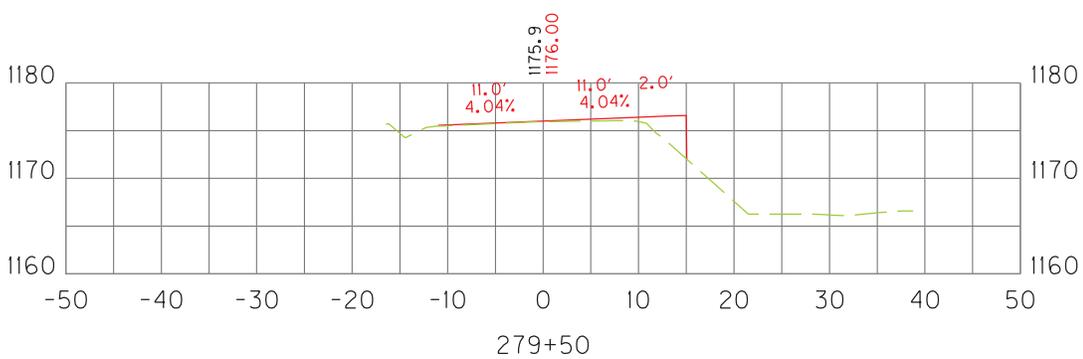
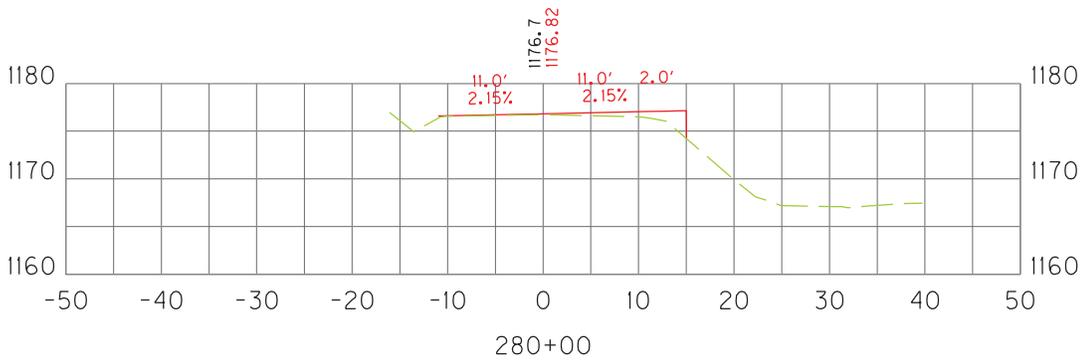
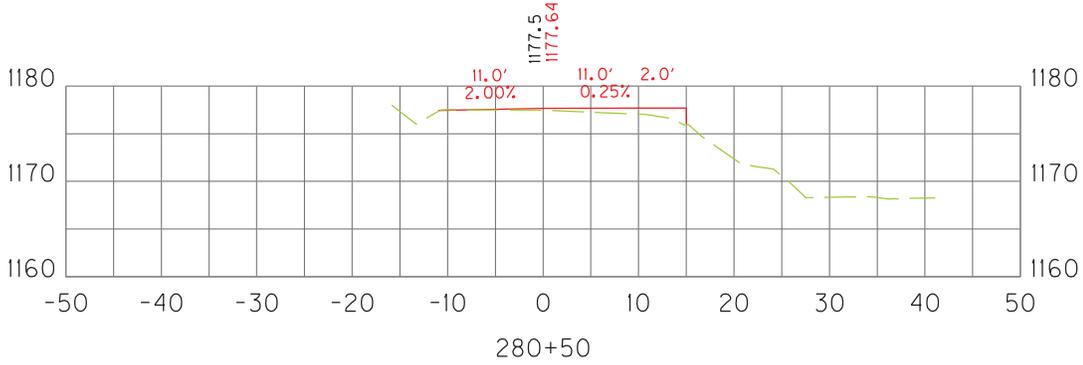
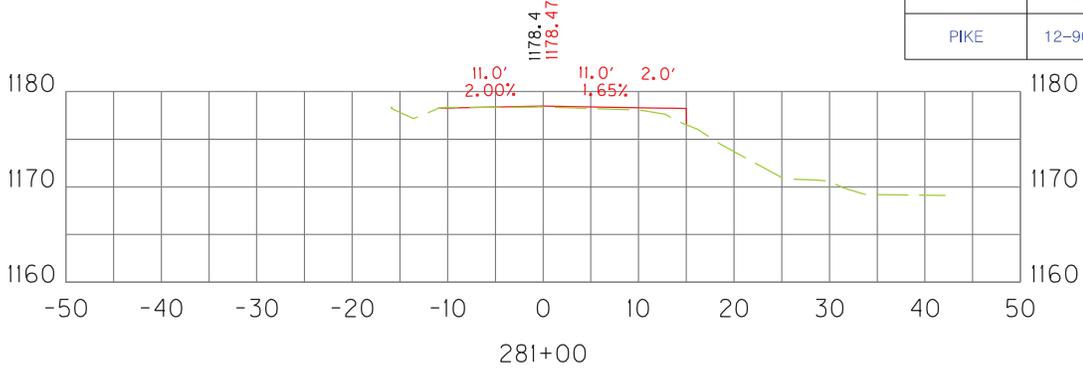
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
EMBANKMENT FAILURE AT MP 5.0
STA. 276+60 TO STA. 278+50

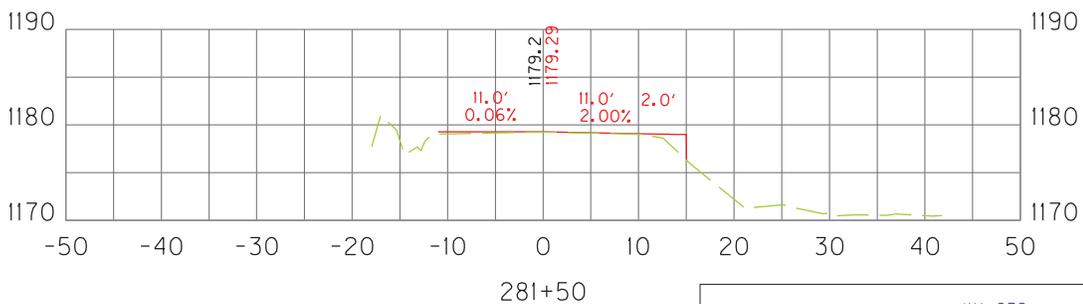
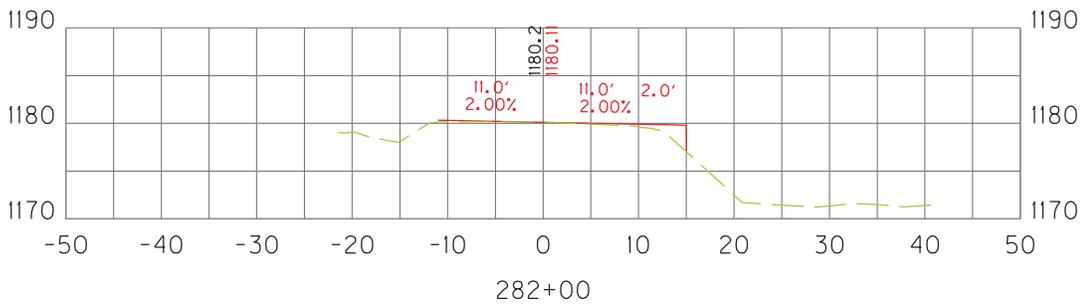
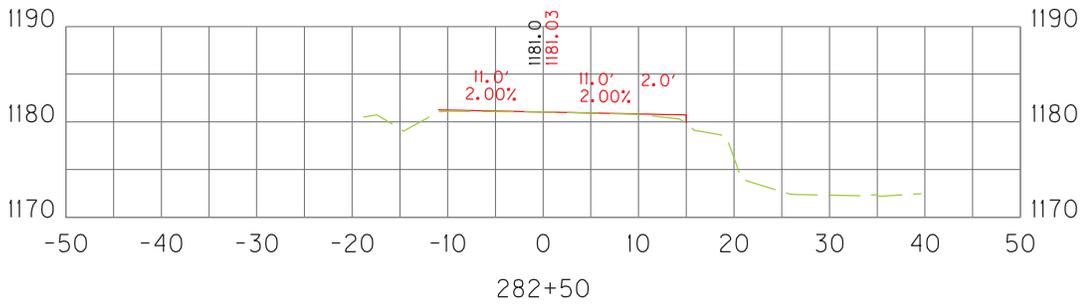
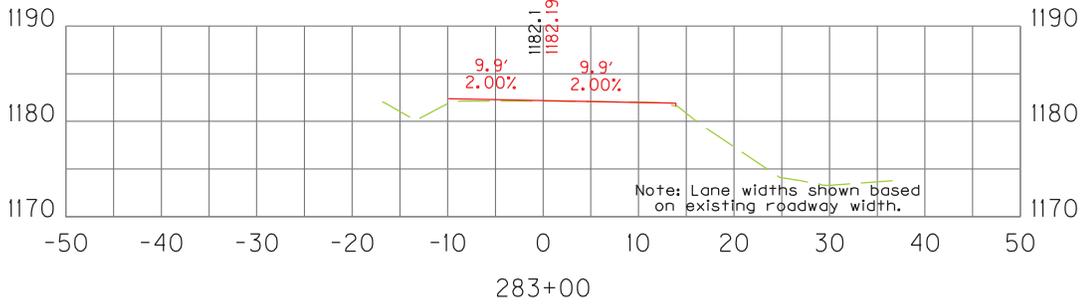
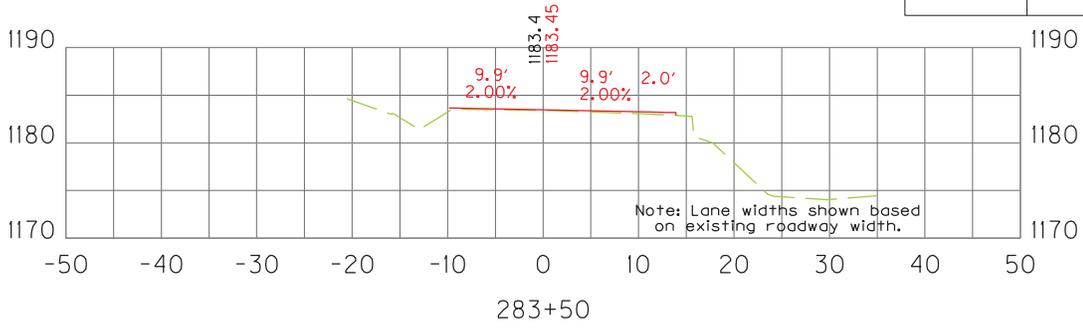
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
EMBANKMENT FAILURE AT MP 5.0
STA. 279+00 TO STA. 281+00

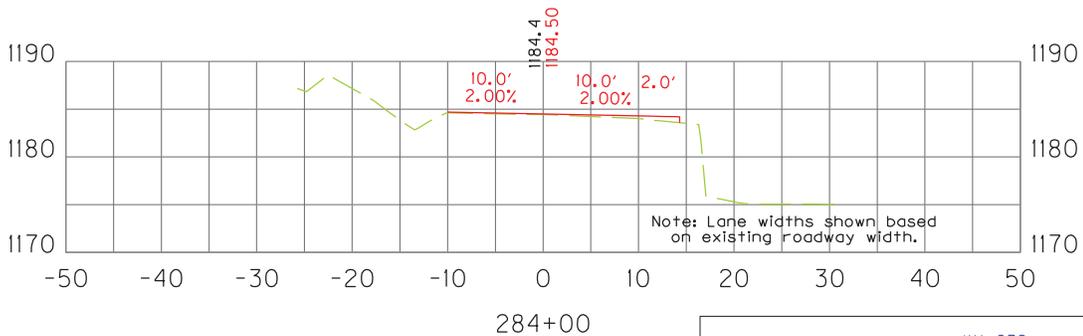
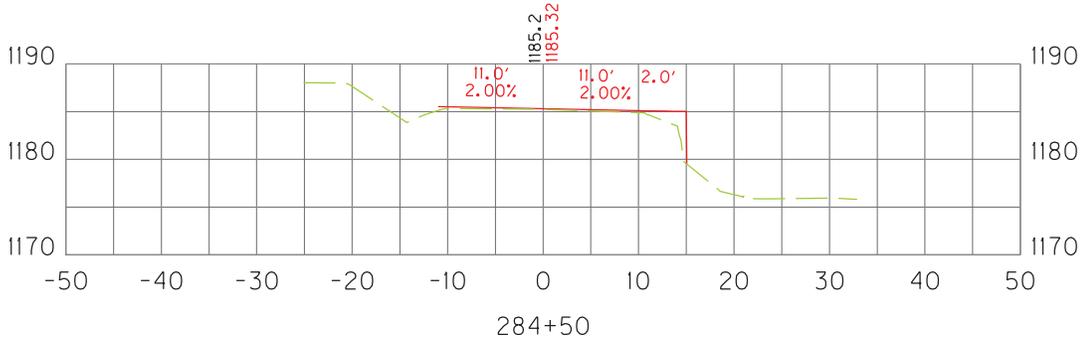
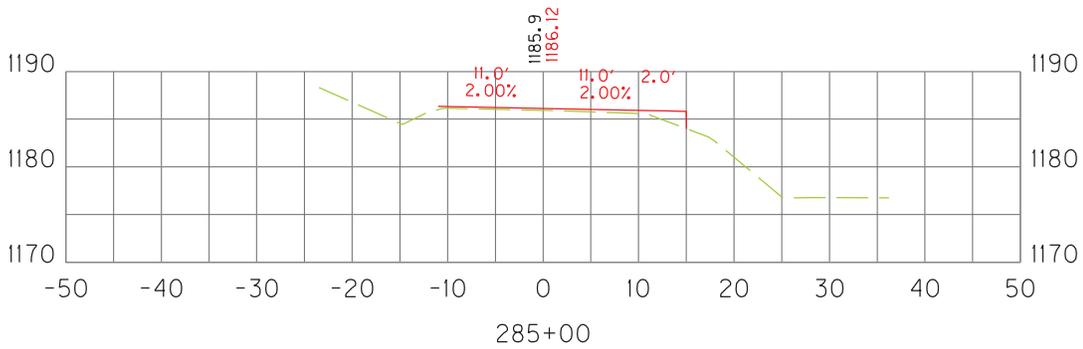
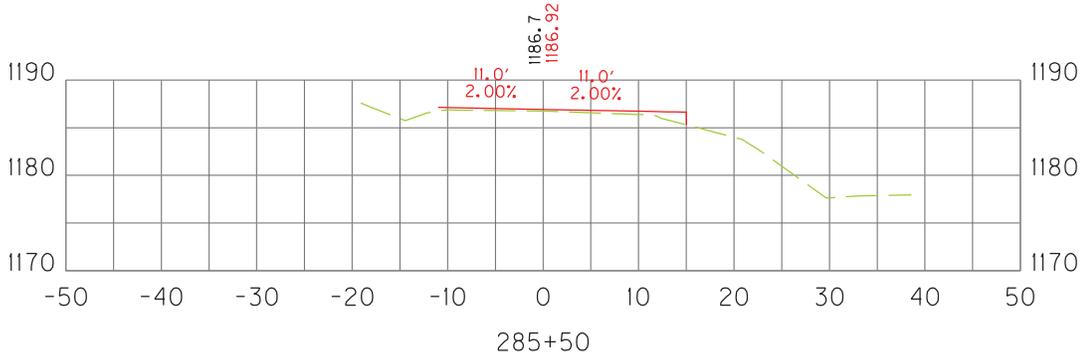
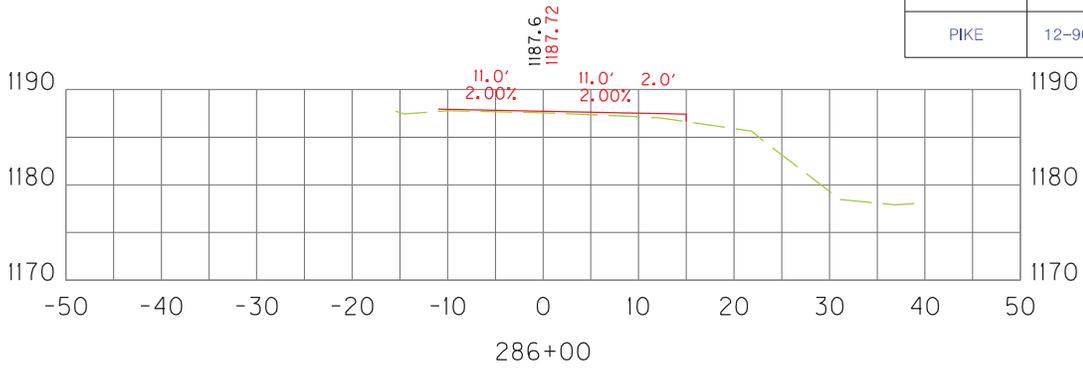
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
EMBANKMENT FAILURE AT MP 5.0
STA. 281+50 TO STA. 283+50

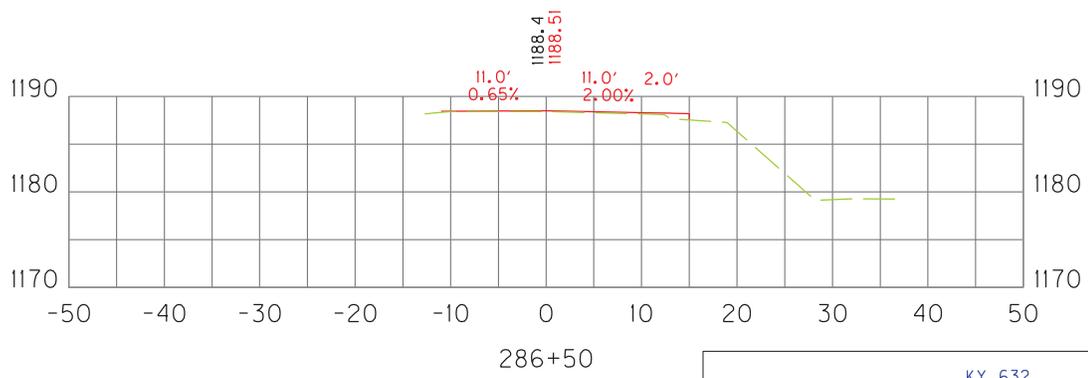
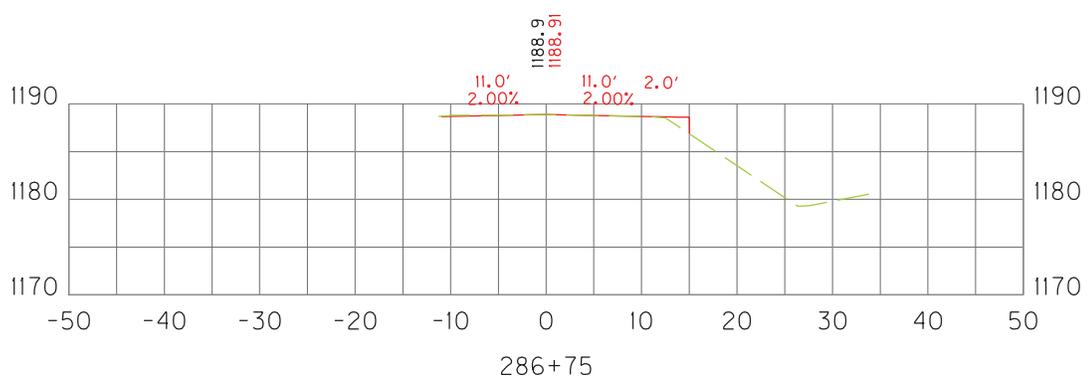
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

KY 632
EMBANKMENT FAILURE AT MP 5.0
STA. 284+00 TO STA. 286+00

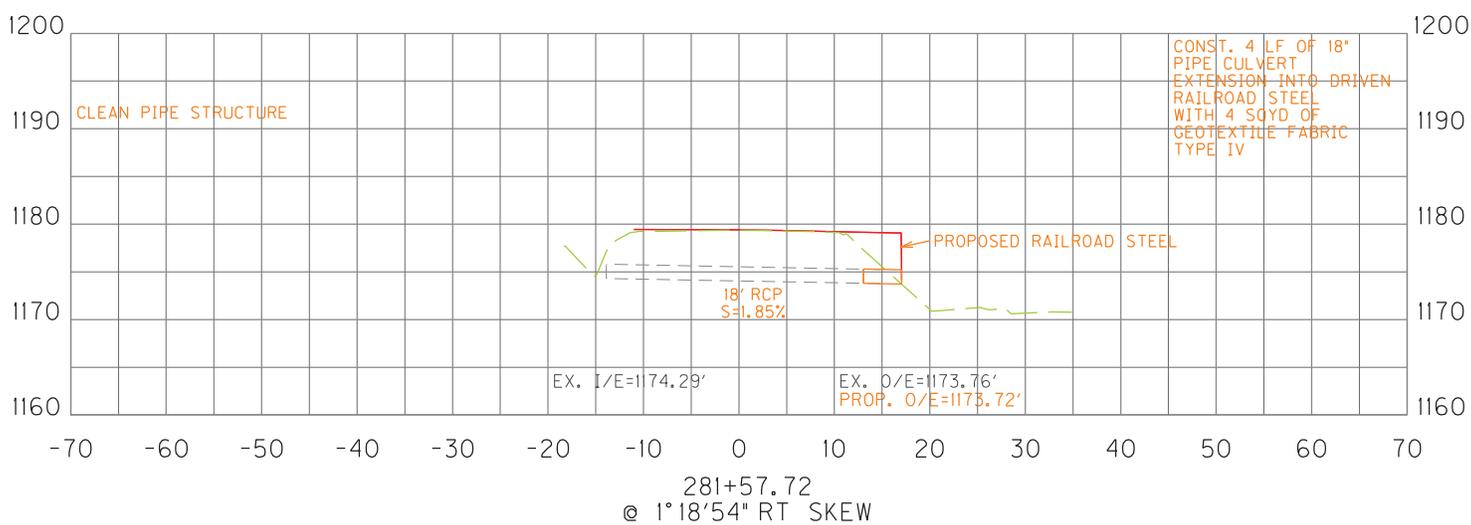
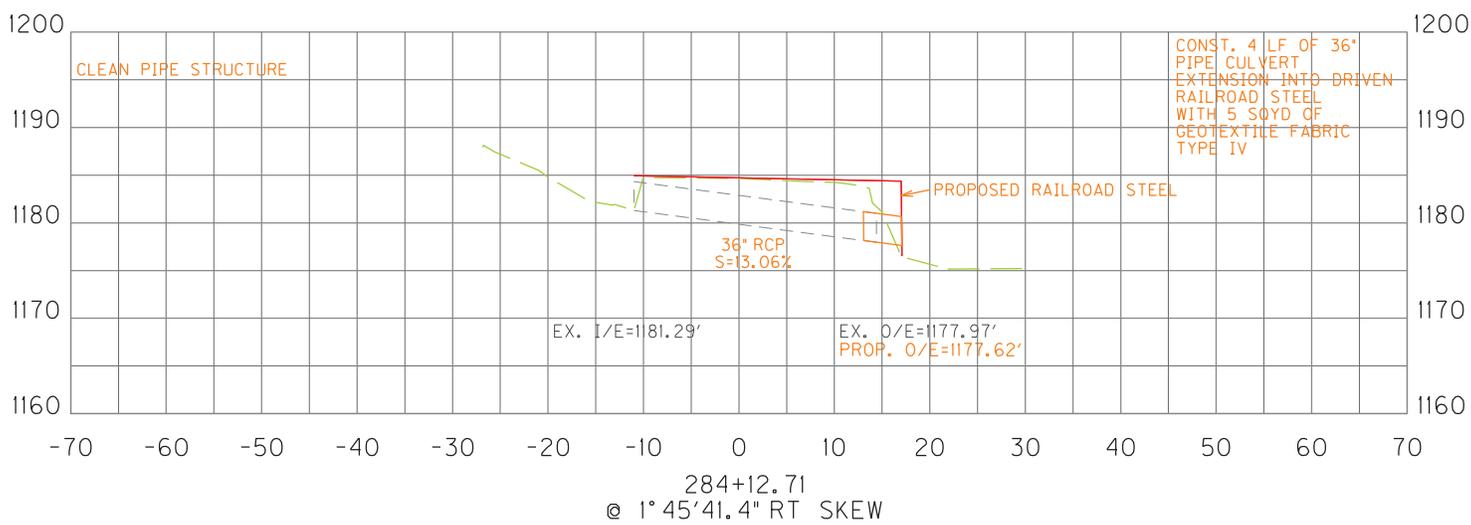
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KY 632
 EMBANKMENT FAILURE AT MP 5.0
 STA. 286+50 TO STA. 286+75

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

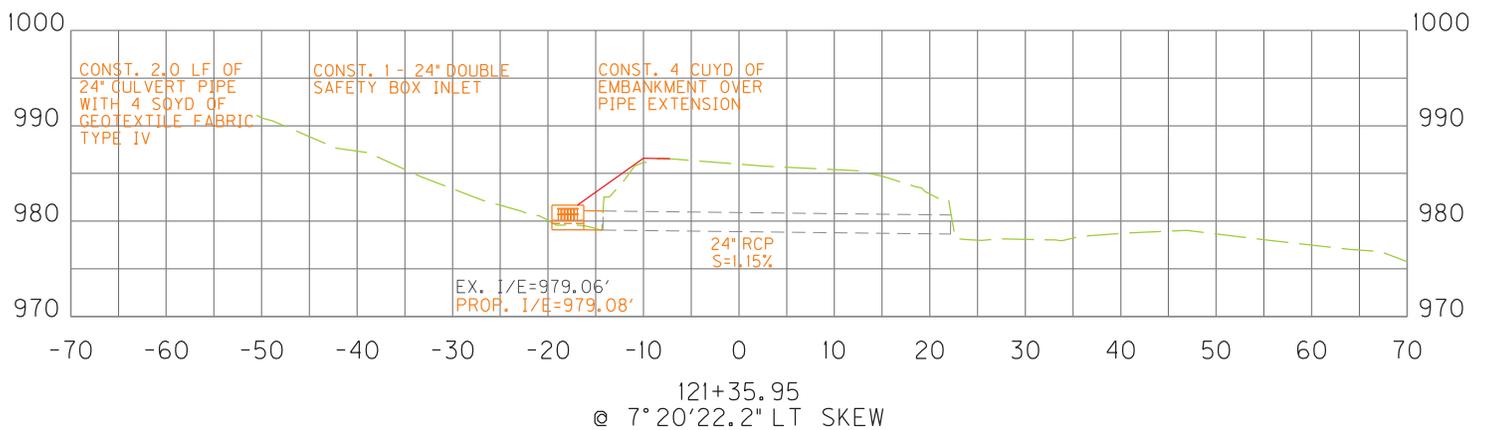
KY 632
CURVE WITH DRIVEN STEEL
PIPE SECTIONS



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

KY 632 PIPE IMPROVEMENT SHEET
NEAR MP 2.3
STA. 121+35.95, @ 7'-20" 22.2" LT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KY 632
 PIPE SHEET
 STA. 121+35.95 @ 7° 20' 22.2" LT SKEW



$\Delta\theta + Q = 26^\circ 17' 02.85''$
 $T = 151.76'$
 $L = 298.18'$
 $R = 650.00'$
 $E = 17.48'$

PROP. 6 LF
 12" ENTRANCE PIPE
 (EXTENSION THROUGH
 PROPOSED HEADWALL)
 AND CLEAN PIPE
 STRUCTURE (EXISTING 12"
 ENTRANCE PIPE)

EX. 12" CMP
ENTRANCE PIPE

PROP. 4 LF
 BGC-CUT VERT
 EXTENSION AND
 HEADWALL

EX. 4' X 8' RCBC

PROP. CLASS III
 CHANNEL LINING

3.6

EX. R/W

EX. R/W

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

SCALE: F=20

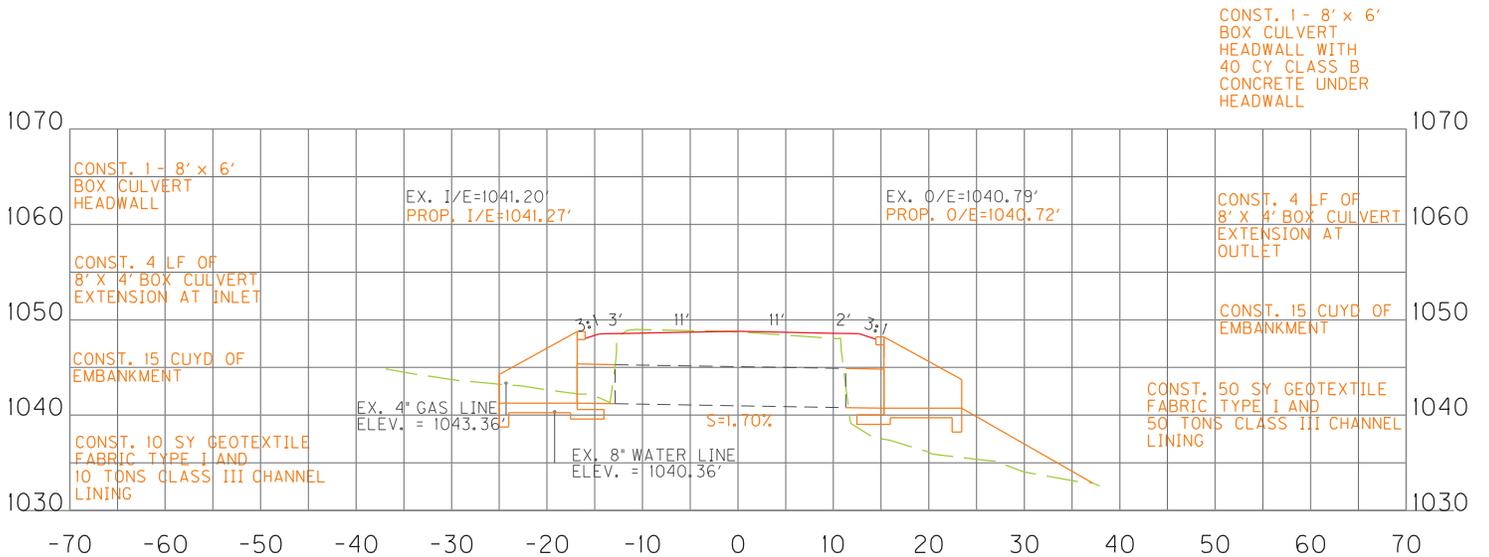
KY 632
 PLAN SHEET
 STA. 190+43.97, @ 8°40'46.56" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

INLET

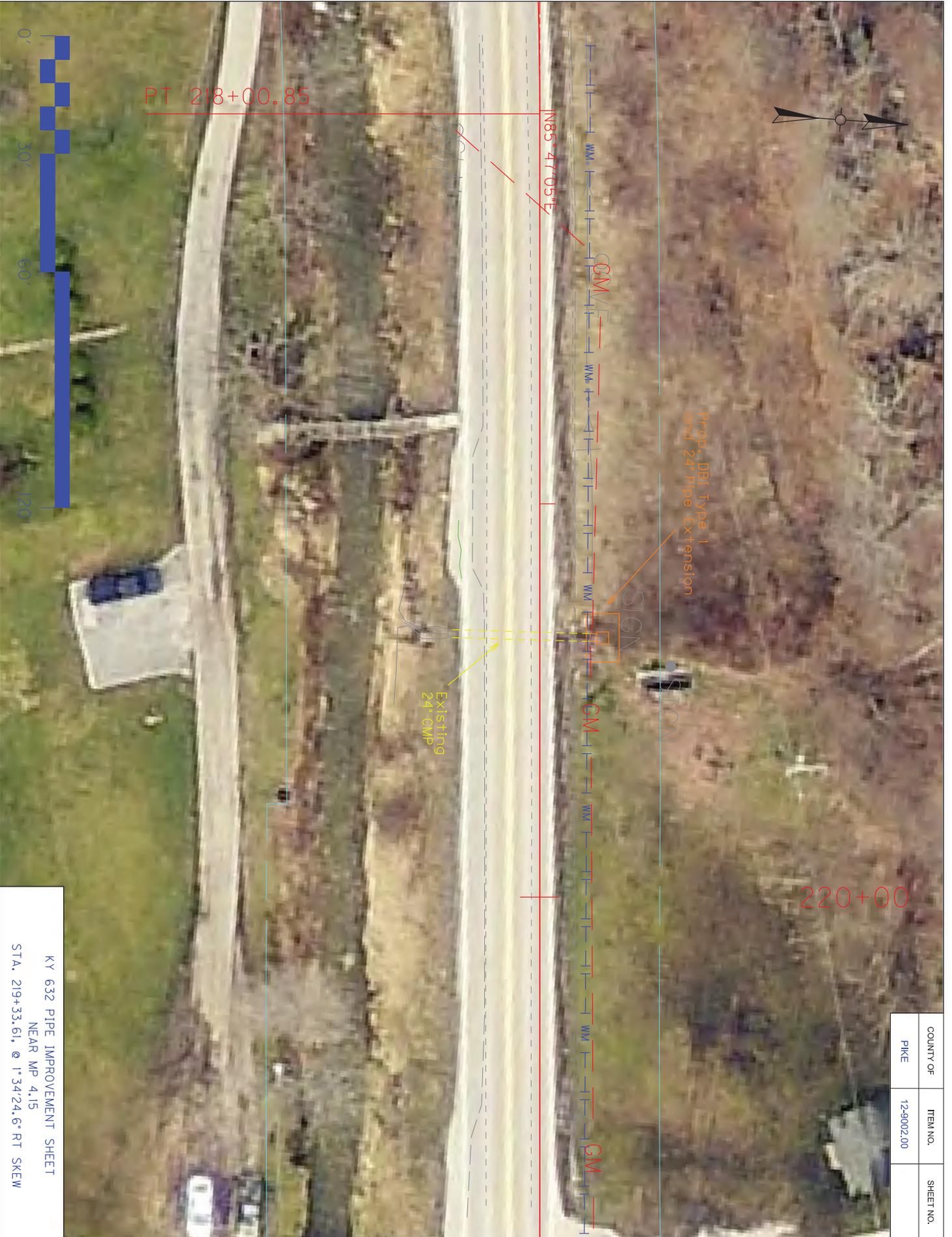


OUTLET



190+43.97
@ 8°40'46.56" RT SKEW
SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

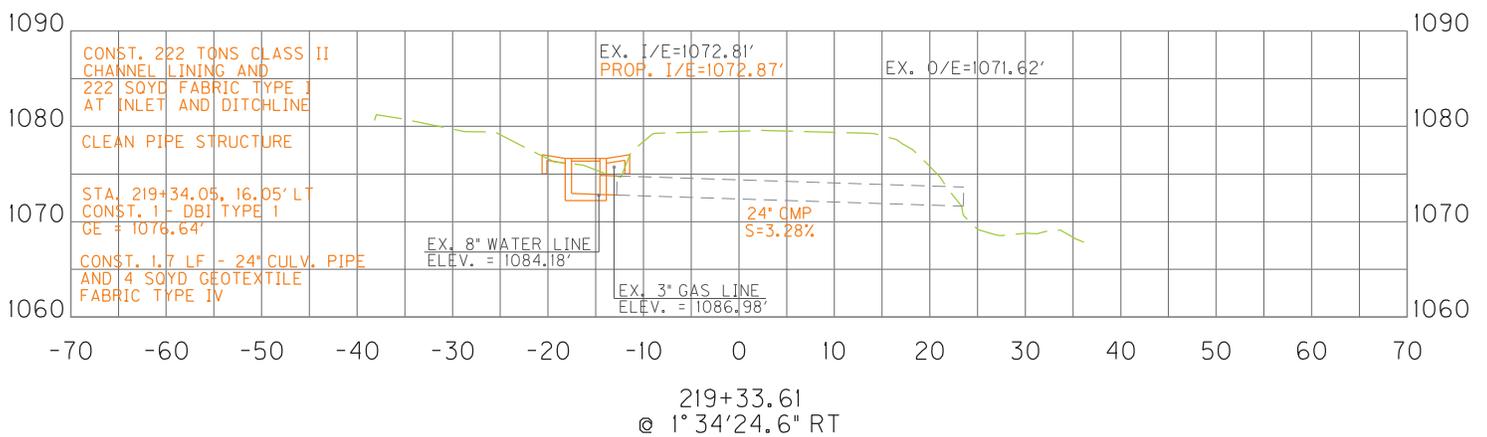
190+43.97 @ 8°40'46.56" RT SKEW
BOX CULVERT EXTENSION
KY 632



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

KY 632 PIPE IMPROVEMENT SHEET
NEAR MP 4.15
STA. 219+33.61, @ 1°34'24.6" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

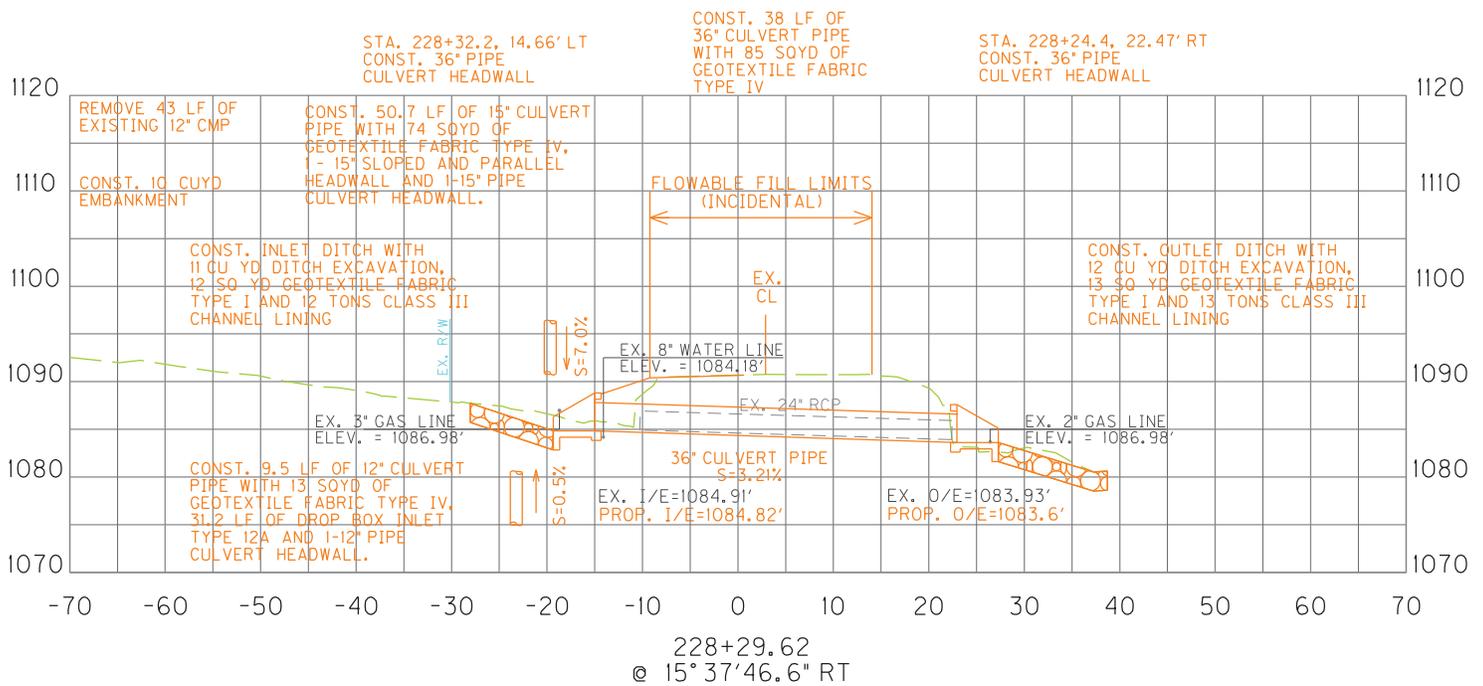
KY 632
 PIPE SHEET
 STA. 219+33.61 @ 1°34'24.6" RT SKEW



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

KY 632 PIPE IMPROVEMENT SHEET
NEAR MP 4.3
STA. 228+29.62, @ 15°37'46.6" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KY 632
 PIPE SHEET
 STA. 228+29.62 @ 15° 37' 46.6" RT SKEW



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

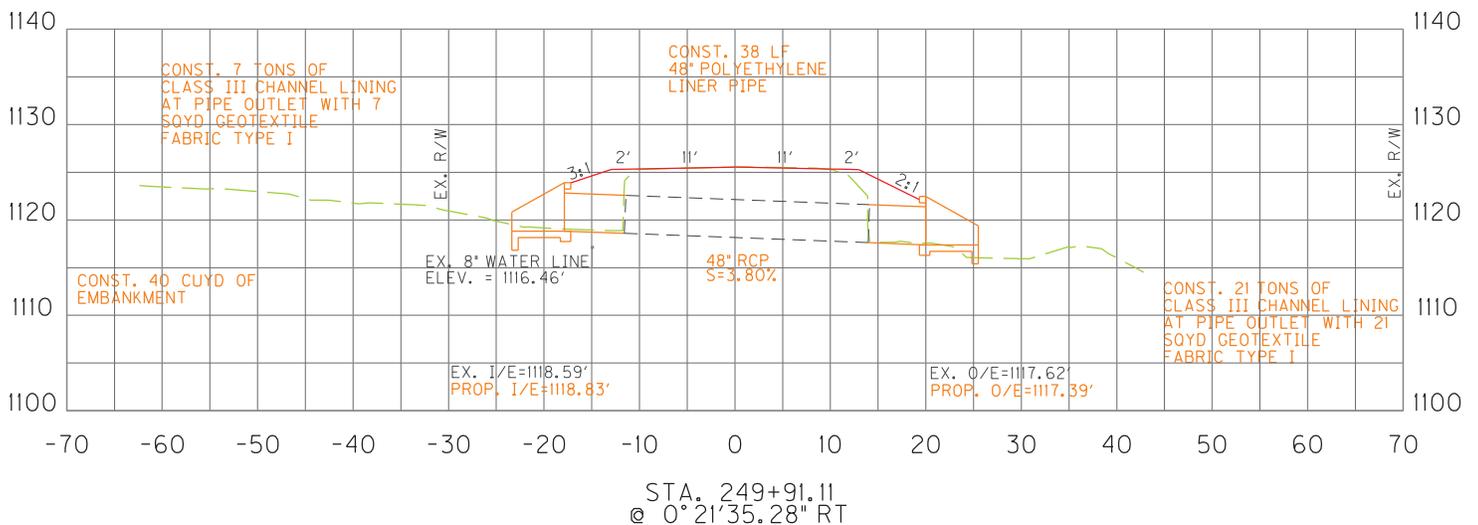
KY 632 PIPE IMPROVEMENT SHEET
 NEAR MP 4.7
 STA. 249+91.11, @ 0°21'35.28" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

INLET



OUTLET



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KY 632
 STA. 249+91.11 @ 0°21'35.28" LT SKEW
 PIPE CULVERT EXTENSION



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

ALL HEADWALLS TO HAVE PAVED APRONS

SCALE: 1"=20'

PLAN SHEET
KY 632
STA. 313+44.16, @ 28°29'26.9" RT SKEW

EX RW

PROP. CHANNEL LINING
CLASS III

PROP. BOX CULVERT
HEADWALL AND I/LF
BOX CULVERT EXTENSION

N26° 08'16" E

TO PHELPS

KY 632

TO KIMPER

EX RW

0.11M

EX Form. Easement

EXTEND PIPE THROUGH
WING WALL. SHIFT REINFORCEMENT
IF NECESSARY AND CAST CONCRETE
AROUND PIPE

PROP. BOX CULVERT
HEADWALL AND 6 LF
BOX CULVERT EXTENSION

EX. 24" CMP

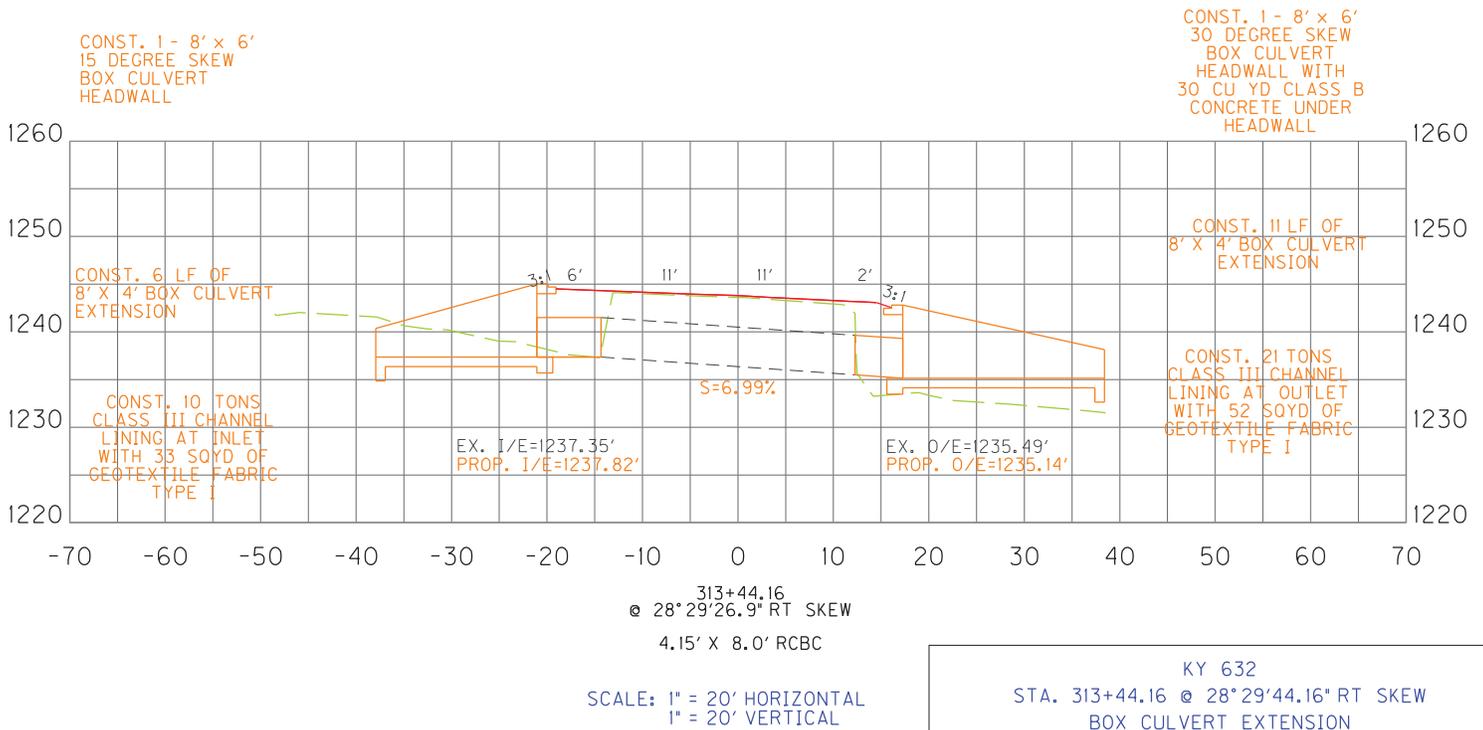
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

INLET

OUTLET

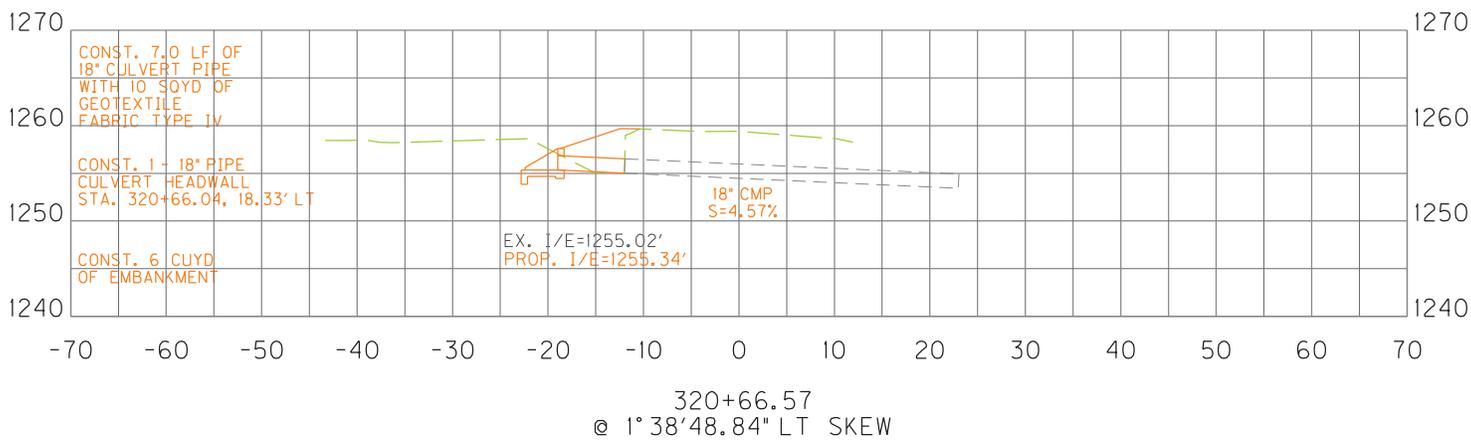


OUTLET





COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

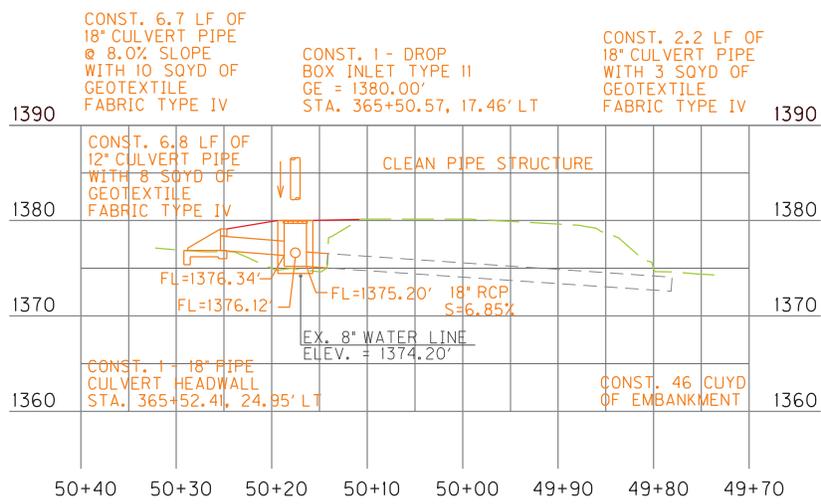
KY 632
 PIPE SHEET
 STA. 320+66.57 @ 1°38'48.84" LT SKEW



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

KY 632 Pipe Improvement Sheet
Near MP 6.9
STA. 365+49.20, @ 4°34'56.28" RT SKEW

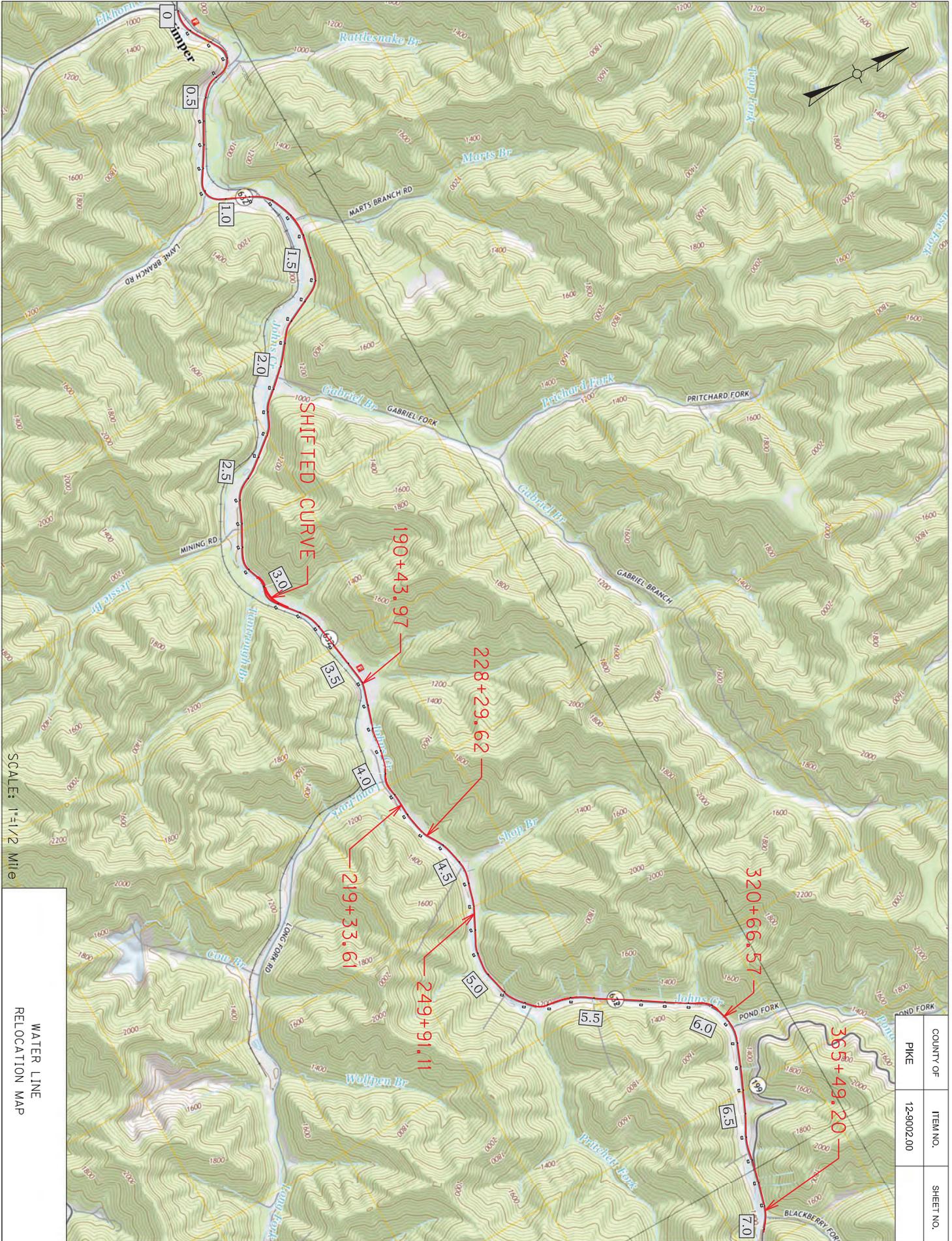
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



365+49.20
 @ 4° 34' 56.28" RT SKEW

SCALE: 1" = 20' HORIZONTAL
 1" = 20' VERTICAL

KY 632
 PIPE SHEET
 STA. 365+49.20 @ 4° 34' 56.28" RT SKEW



SCALE: 1"=1/2 Mile

WATER LINE
 RELOCATION MAP

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-3002	

WATERLINE RELOCATION SUMMARY

ITEM	DESCRIPTION	UNIT	SHIFTED CURVE	190 + 43.97	219 + 33.61	228 + 29.62	249 + 91.11	320 + 66.57	365 + 49.20	TOTAL
14037	W PIPE DUCTILE IRON 8 INCH	L.F.		147	146	201	143	146	147	930
14060	W PIPE PVC 8 INCH	L.F.	940							940
14095	W TIE-IN 8 INCH	EA	2	2	2	2	2	2	2	14
14106	W VALVE 8 INCH	EA	1	1	1	1	1	1	1	7
14144	W LINE MARKER	EA	10	2	2	2	2	2	2	22



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

KY 632
 SHIFTED CURVE ALIGNMENT
 PLAN SHEET

PI 155+39.13
 DELTA = 44° 37' 56.19"
 T = 246.98'
 L = 467.39'
 R = 600.00'
 E = 48.58'
 A = 10°

Runoff = See Cross Sections
 Runout = See Cross Sections

PI 59+90.00
 DELTA = 37° 27' 45.40"
 T = 81.00'
 L = 127.00'
 R = 200.00'
 E = 61.97'
 A = 10°

Runoff = See Cross Sections
 Runout = See Cross Sections

PI 151+50.18
 DELTA = 15° 07' 10.62"
 T = 121.13'
 L = 235.89'
 R = 385.00'
 E = 18.42'
 A = 10°

Runoff = See Cross Sections
 Runout = See Cross Sections

Install Waterline near back of existing/proposed
 ROW at a minimum depth of 42 inches.

Connect to Existing

Proposed 8" PVC Water Line

Connect to Existing

3.0

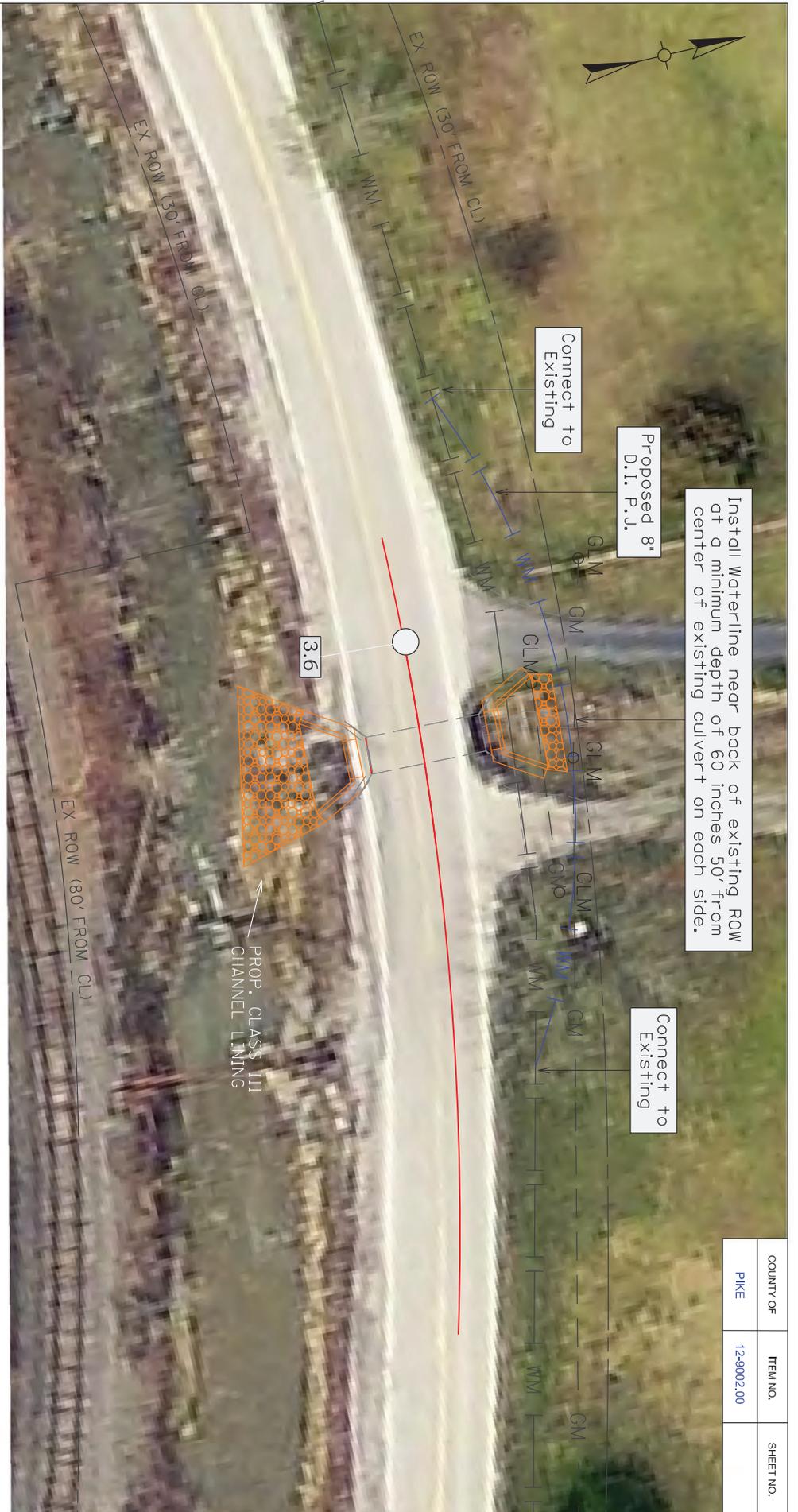
3.1

Kentucky Berwind Land Company

Kentucky Berwind Land Company



SCALE: VARIO



Install Waterline near back of existing ROW at a minimum depth of 60 inches 50' from center of existing culvert on each side.

Proposed 8" D.I. P.J.

Connect to Existing

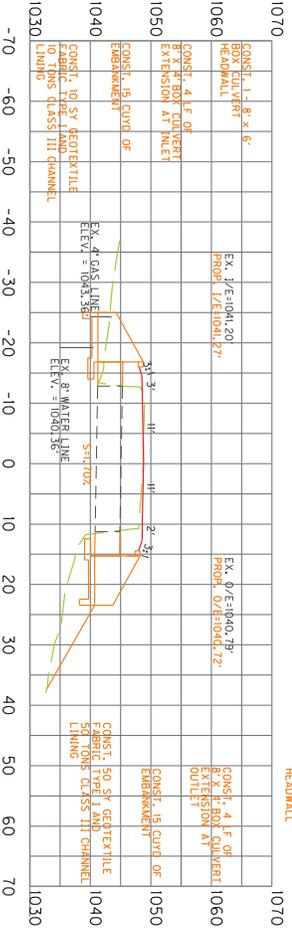
Connect to Existing

PROP. CLASS III CHANNEL LINING

3.6

SEE PIPE SECTION FOR BID ITEMS AND DETAILS

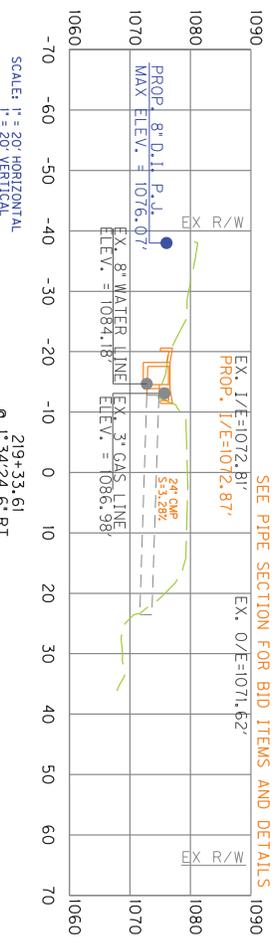
CONST. 1 - 8' x 6' BOX CULVERT WITH 4" CONCRETE UNDER HEADWALL



SCALE: 1"=30'

KY 632
PLAN SHEET
STA. 190+43.97, @ 8°40'46.56" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



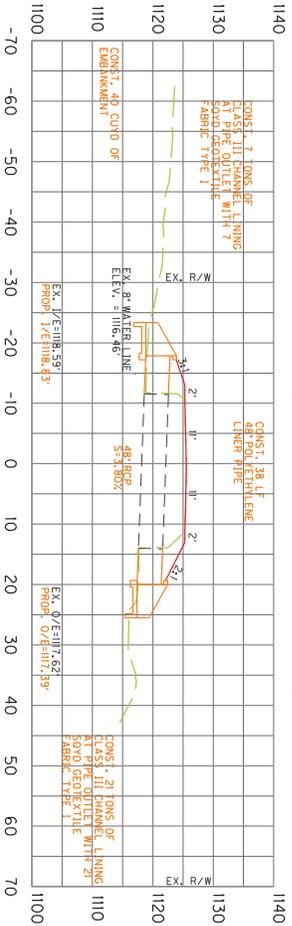
SCALE: 1"=30'

KY 632
PLAN SHEET
STA. 219+33.61, @ 1°34'24.6" RT SKEW

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



SEE PIPE SECTION FOR BID ITEMS AND DETAILS

STA. 249+91.11
@ 0°21'35.28" RT

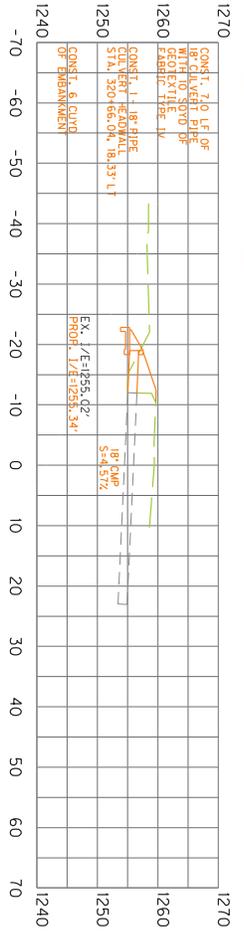
SCALE: 1"=30'

KY 632
PLAN SHEET
STA. 249+91.11, @ 0°21'35.28" RT SKEW



COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	KY 632 PLAN SHEET STA. 320+66.57, @ 1° 38' 48.84\"

SEE PIPE SECTION FOR BID ITEMS AND DETAILS



320+66.57
@ 1° 38' 48.84\"

SCALE: 1\"/>

KY 632
PLAN SHEET
STA. 320+66.57, @ 1° 38' 48.84\"



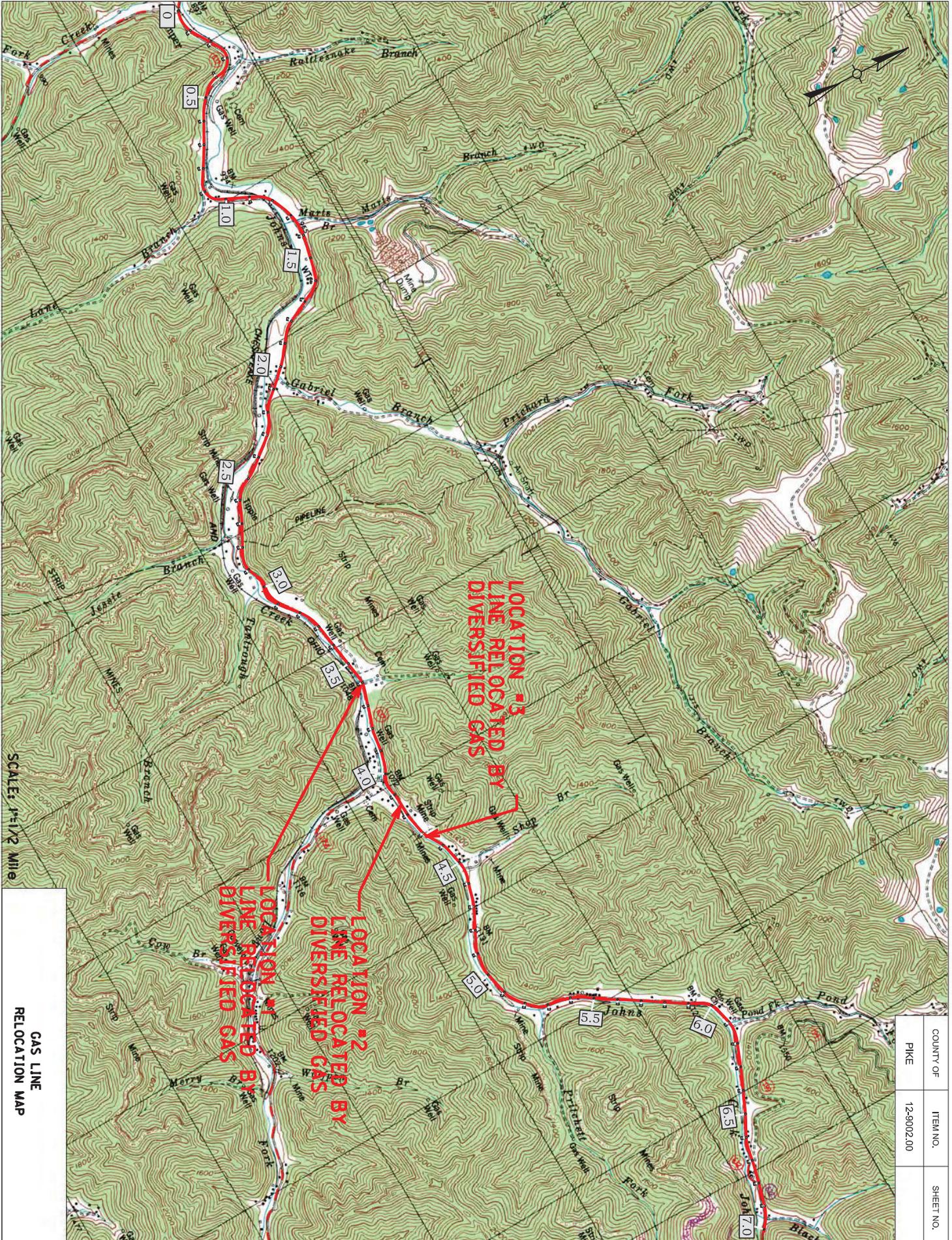
COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	

Station	Notes	Station	Notes
1390	CONST. 6.7 LF OF 8\"/>	1390	CONST. 2.2 LF OF 18\"/>
1380	CONST. 1-1-DRGP BOX INLET TYPE II FABRIC TYPE IV STA. 365+50.57 17.46' LT	1370	CONST. 46 CU YD OF EMBANKMENT
1370	CONST. 6.8 LF OF 12\"/>		
1360	CONST. 1-18-DRGP CULVERT HEADWALL STA. 365+52.41 24.95' LT		

SEE PIPE SECTION FOR BID ITEMS AND DETAILS

SCALE: 1"=30'

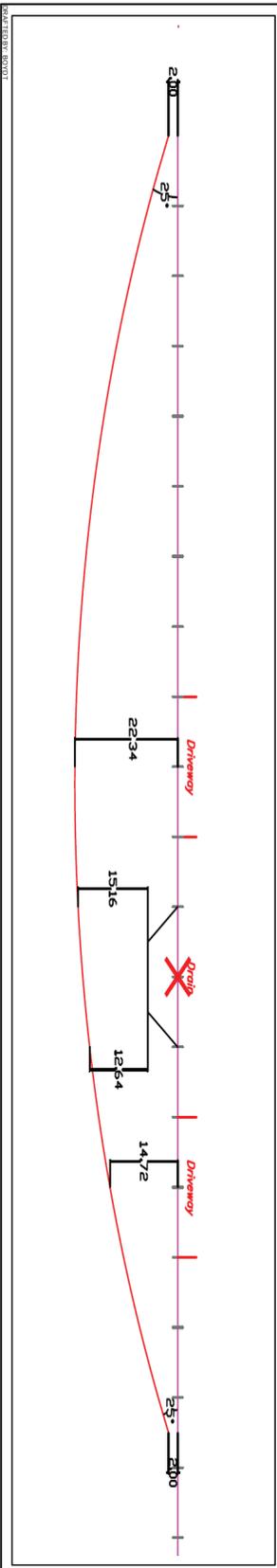
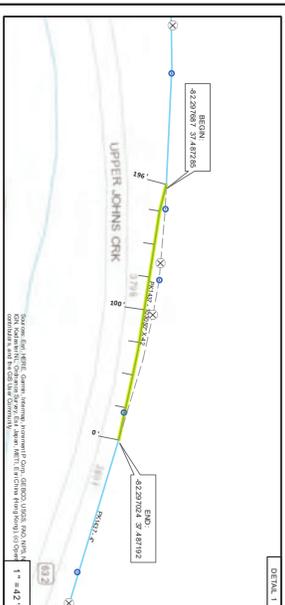
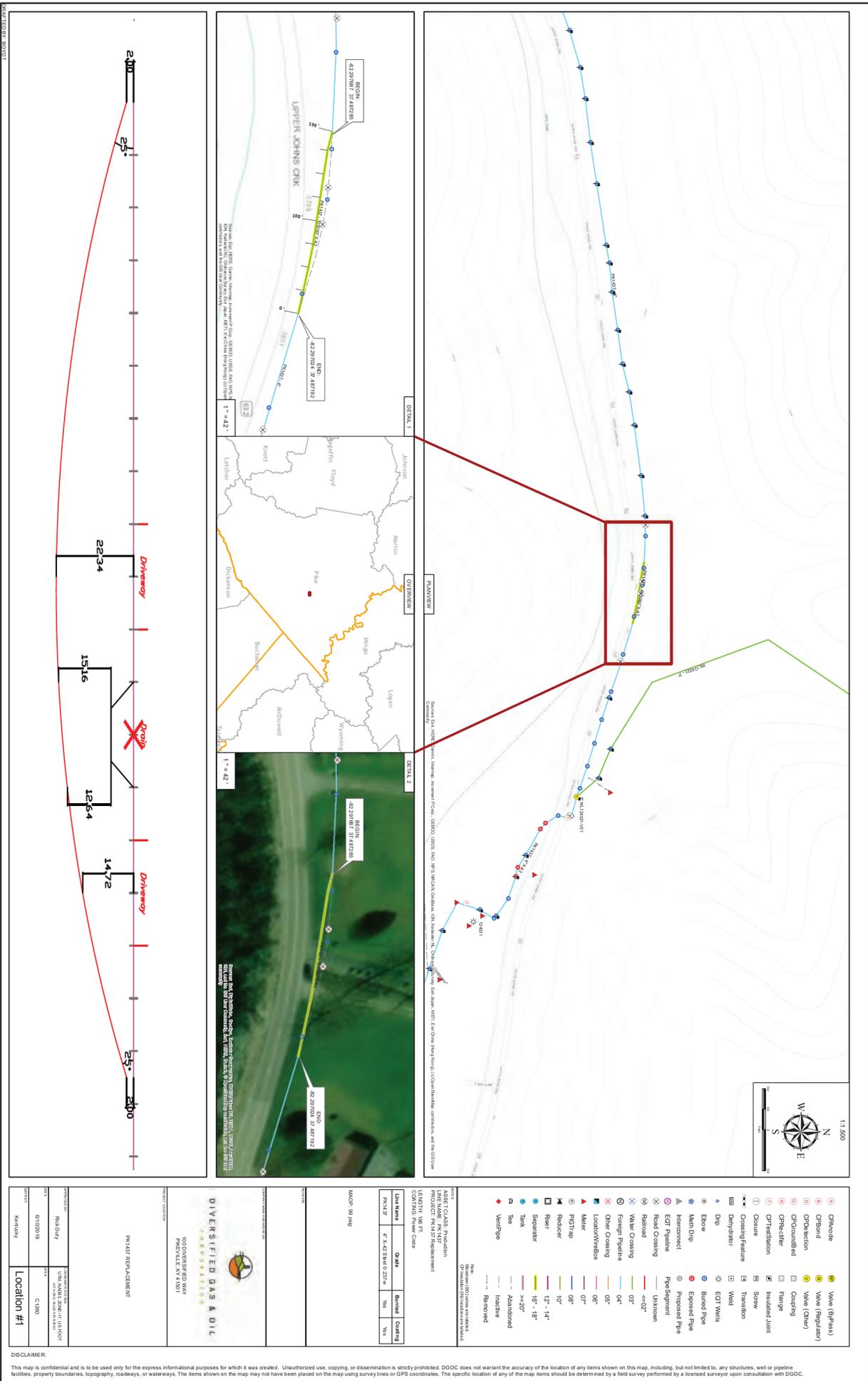
KY 632
PLAN SHEET
STA. 365+49.20, @ 4'34"56.28" RT SKEW



SCALE: 1" = 1/2 MILE

GAS LINE
RELOCATION MAP

COUNTY OF	ITEM NO.	SHEET NO.
PIKE	12-9002.00	



ASSET TABLE: Production
PROJECT: PIKE HSIP 5361

LENGTH: 106 FT
CONTING: Power Cable

Link Name	Order	Material	Covering
ENK127	4" x 42.5' x 10' 20"	Yes	Yes

MAP: 09.mxd

PROJECT LOCATION:
100 DIVERSIFIED OIL & GAS
PARKVILLE, KY 40361

PROJECT REPLACEMENT

PROPOSED: ROADWAY
DATE: 8/1/2019
CITY: C1280

LOCATION #1
Kentucky

DISCLAIMER:
This map is confidential and is to be used only for the express informational purposes for which it was created. Unauthorized use, copying, or dissemination is strictly prohibited. DGCOC does not warrant the accuracy of the location of any items shown on this map, including, but not limited to, any structures, well or pipeline facilities, property boundaries, topography, roadways, or waterways. The items shown on the map may not have been placed on the map using survey lines or GPS coordinates. The specific location of any of the map items should be determined by a field survey performed by a licensed surveyor upon consultation with DGCOC.

TYPICAL SECTION DEPICTING INSTALLATION OF RECYCLED RAILROAD RAIL PLACED IN DRILLED SOCKET FOR LANDSLIDE CORRECTION

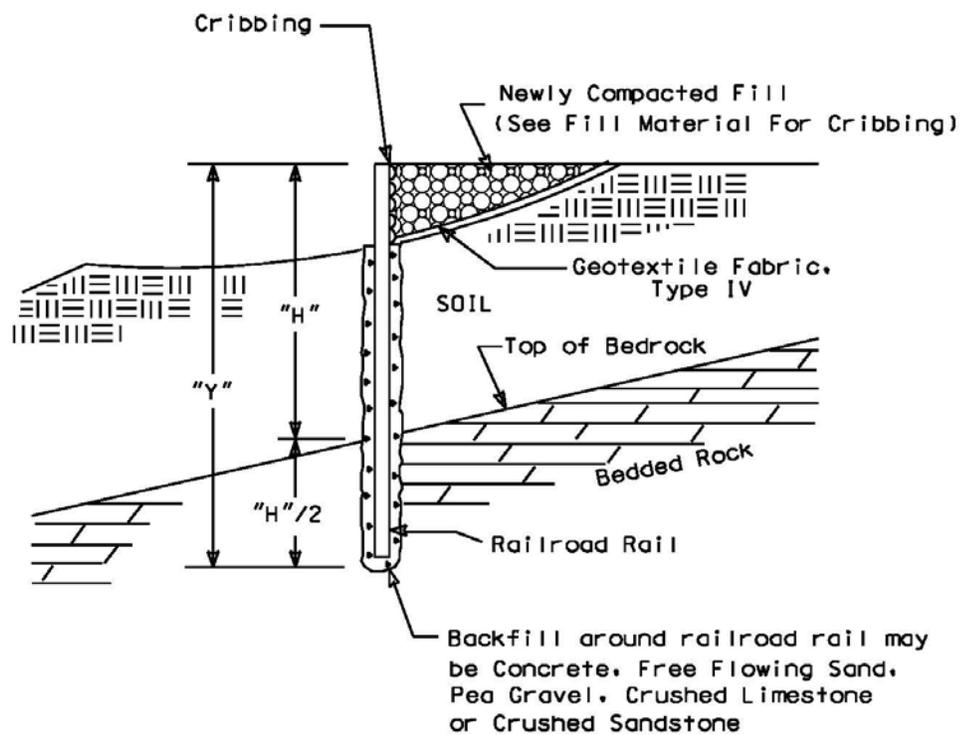
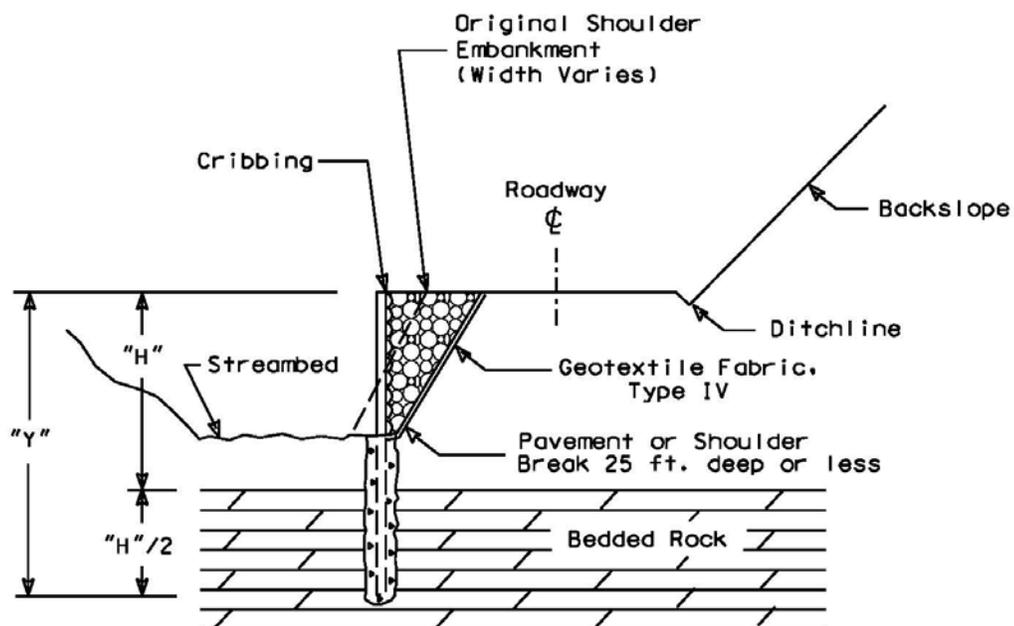


Figure 1

TYPICAL CROSS SECTION OF ROADWAY REPAIRS UTILIZING RECYCLED RAILROAD RAILS IN DRILLED SOCKETS FOR EMBANKMENT EROSION CORRECTION

NOTE:
Spacing from edge to
edge of drilled
socket : 3 ft. max.



NOTE :
"H"/2 Depth of Rail into bedded rock =
1/3 total length where rock is present.

Figure 2

ALTERNATE SCHEMES FOR INSTALLING RAILROAD RAILS IN DRILLED SOCKETS

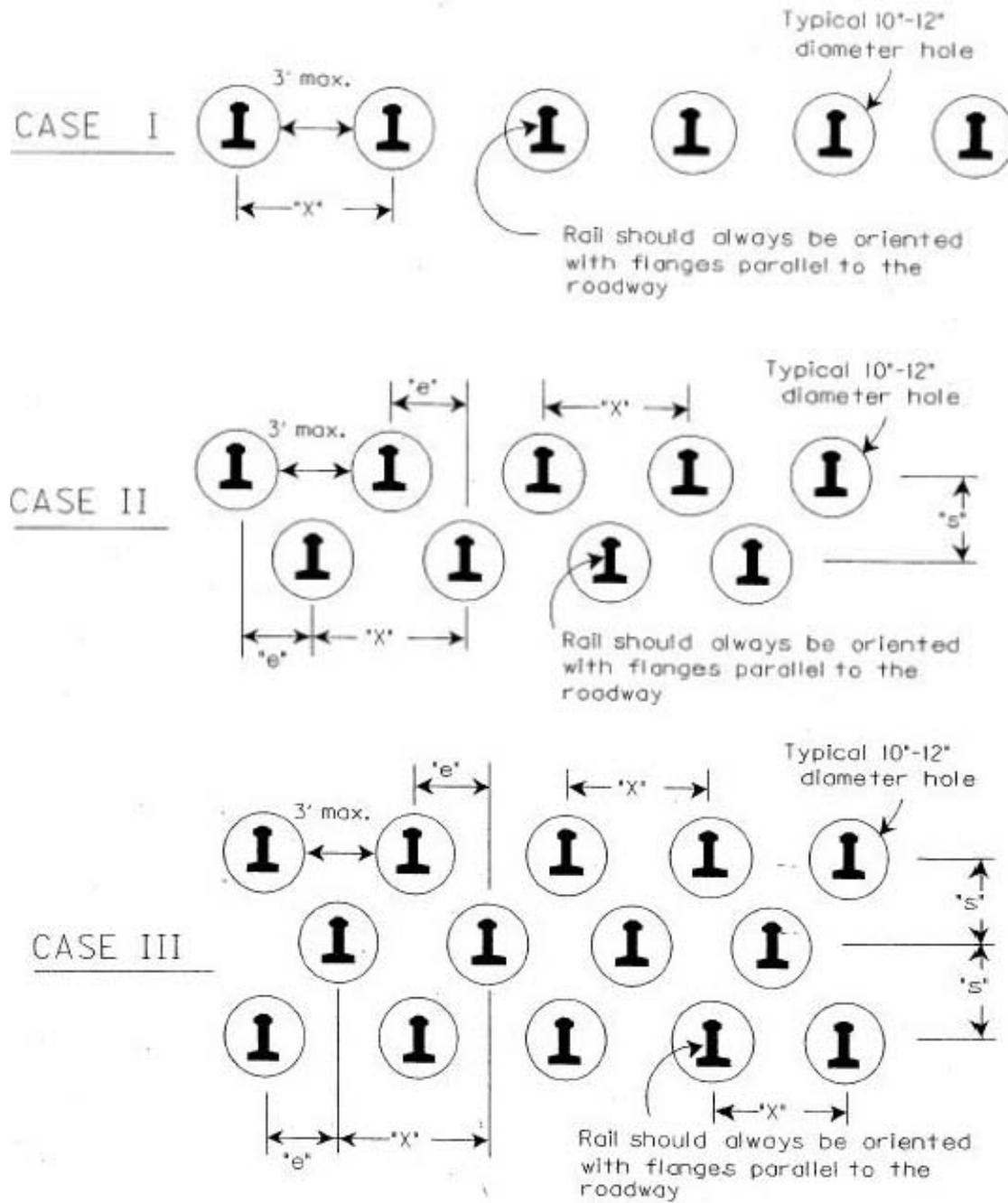


FIGURE 3

**DESIGN CHART FOR 130LBS/YD TO 133 LBS/YD RECYCLED (USED) RAILROAD RAILS
 FACTOR OF SAFETY = 1**

Soil Depth to Bedded Rock "H" (Feet)	Minimum Embedment into Bedded Rock "H/2" (Feet)	Total Length of Installed Railroad Rail "Y" (Feet)	Required Number of Rows	Maximum Spacing Between Rails "X" (Max. 48") (Inches)	Effective Spacing Between Rows of Rails "e" (Inches)
8	4	12	1	48	N/A
9	4.5	13.5	1	48	N/A
10	5	15	1	48	N/A
11	5.5	16.5	1	48	N/A
12	6	18	1	48	N/A
13	6.5	19.5	1	48	N/A
14	7	21	1	32	N/A
15	7.5	22.5	2	48	24
16	8	24	2	44	22
17	8.5	25.5	2	36	18
18	9	27	2	28	14
19	9.5	28.5	2	24	12
20	10	30	3	33	11
21	10.5	31.5	3	28.5	9.5
>21	N/A	N/A	N/A	N/A	N/A

NOTES: 1. REFER TO FIGURES 1, 2, & 3 FOR DIMENSIONS SHOWN
 2. FOR SOIL DEPTHS "H" GREATER THAN 21 FEET CONTACT THE ENGINEER.

TABLE I

IDENTIFICATION OF RAILROAD RAIL SIZES

1. Typically classified in units of lbs-per-yard.

Examples :

155 lbs/yd, 140 lbs/yd, 132 lbs/yd, 90 lbs/yd

2. Each rail has a classification stamped in web:

Example :

112 25 RE OH ILLINOIS USA 1935 IIIIII



Weight in lbs/yd

GUARDRAIL DELIVERY VERIFICATION SHEET

Contract Id: _____

Contractor: _____

Section Engineer: _____

District & County: _____

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY LEAVING PROJECT</u>	<u>QTY RECEIVED@BB YARD</u>
GUARDRAIL (Includes End treatments & crash cushions)	LF	_____	_____
STEEL POSTS	EACH	_____	_____
STEEL BLOCKS	EACH	_____	_____
WOOD OFFSET BLOCKS	EACH	_____	_____
BACK UP PLATES	EACH	_____	_____
CRASH CUSHION	EACH	_____	_____
NUTS, BOLTS, WASHERS	BAG/BCKT	_____	_____
DAMAGED RAIL TO MAINT. FACILITY	LF	_____	_____
DAMAGED POSTS TO MAINT. FACILITY	EACH	_____	_____

***Required Signatures before Leaving Project Site**

Printed Section Engineer's Representative _____ & Date _____

Signature Section Engineer's Representative _____ & Date _____

Printed Contractor's Representative _____ & Date _____

Signature Contractor's Representative _____ & Date _____

***Required Signatures after Arrival at Bailey Bridge Yard (All material on truck must be counted & the quantity received column completed before signatures)**

Printed Bailey Bridge Yard Representative _____ & Date _____

Signature Bailey Bridge Yard Representative _____ & Date _____

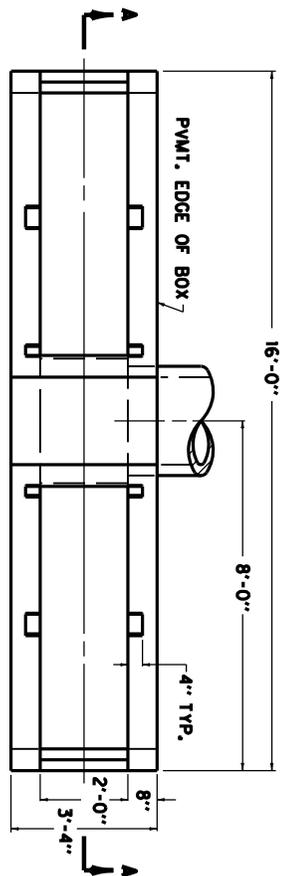
Printed Contractor's Representative _____ & Date _____

Signature Contractor's Representative _____ & Date _____

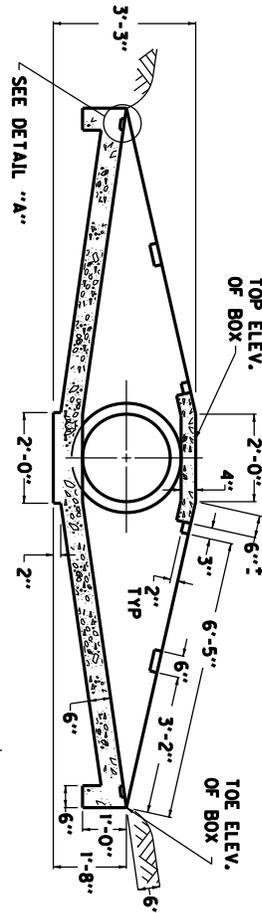
**Payment for the bid item remove guardrail will be based upon the quantities shown in the Bailey Bridge Yard received column. Payment will not be made for guardrail removal until the guardrail verification sheets are electronically submitted to the Section Engineer by the Bailey Bridge Yard Representative.

Completed Form Submitted to Section Engineer Date: _____ By: _____

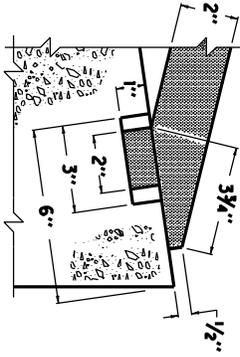
MicroStation v8.11.7.443 E-SHEET NAME: USER: Patrick.Stone DATE PLOTTED: September 24, 2013 FILE NAME: C:\USERS\PATRICK.STONE\APPDATA\LOCAL\MICROSOFT\WINDOWS\TEMPORARY INTERNET FILES\CONTENT.OUTLOOK\Y0843\NA\SAFETY_BOX.DGN



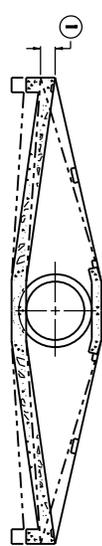
PLAN VIEW



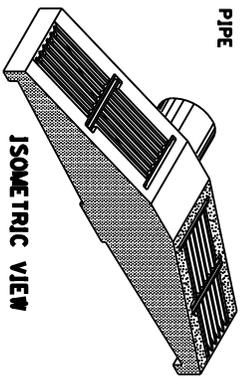
SECTION A-A



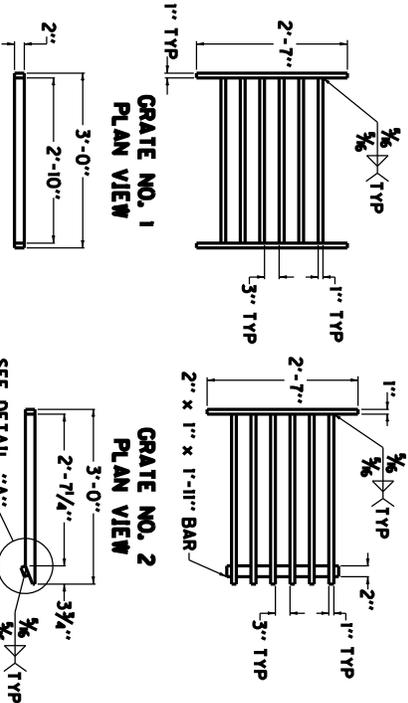
DETAIL "A-A"



SECTIONAL VIEW



ISOMETRIC VIEW



GRATE NO. 1
PLAN VIEW

GRATE NO. 2
PLAN VIEW

GRATE NO. 1
SIDE ELEVATION

GRATE NO. 2
SIDE ELEVATION

APPROXIMATE QUANTITIES			
CLASS "A"	GRATE	LBS. STRUCTURAL STEEL	TOTAL POUNDS
CONC.	NUMBER	EACH GRATE	
2.07	1	145	596
	2	153	

M/A

DBL SAFETY BOX INLET DETAIL SHEET

NOTES

- 1728 SAFETY BOX INLET-18 IN DBL SDB-5
 - 1729 SAFETY BOX INLET-24 IN DBL SDB-5
- THE UNIT BID FOR EACH STRUCTURE SHALL INCLUDE ALL CONCRETE, STRUCTURAL STEEL GRATING, EXCAVATION, LABOR AND INCIDENTALS NECESSARY FOR ITS CONSTRUCTION AS DETAILED ON THIS SHEET.
- TOE OF BOX SHALL BE RAISED OR LOWERED TO FIT EXISTING FIELD CONDITIONS.
- ANGLE BETWEEN BOX WALLS MAY VARY TO FIT EXISTING FIELD CONDITIONS.

COUNTY OF	ITEM NO.	SHEET NO.

PART II
SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2016*.

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting.
The Supplemental Specifications can be found at the following link:

<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

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

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

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

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

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

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

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

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

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

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

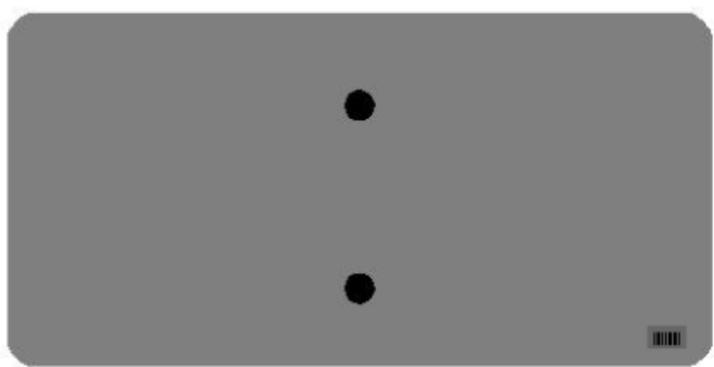
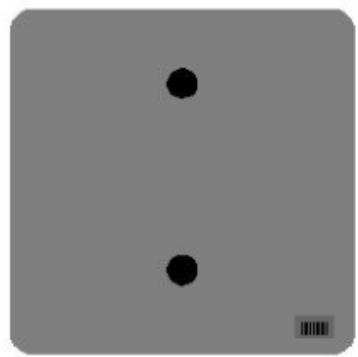
<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24631EC	Barcode Sign Inventory	Each

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

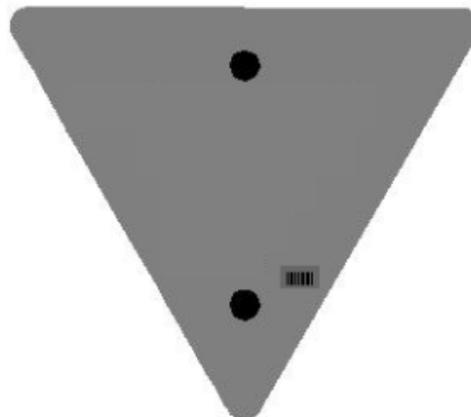
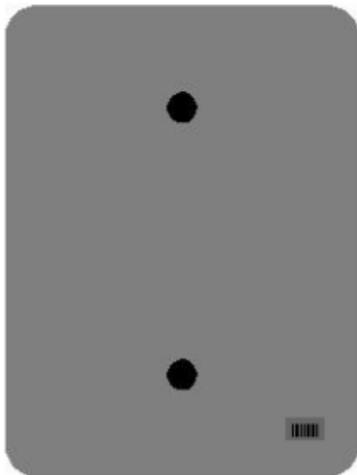
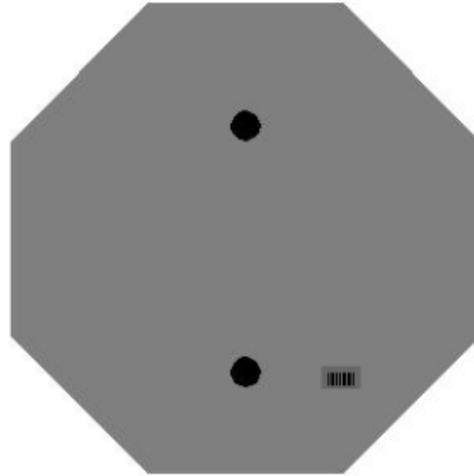
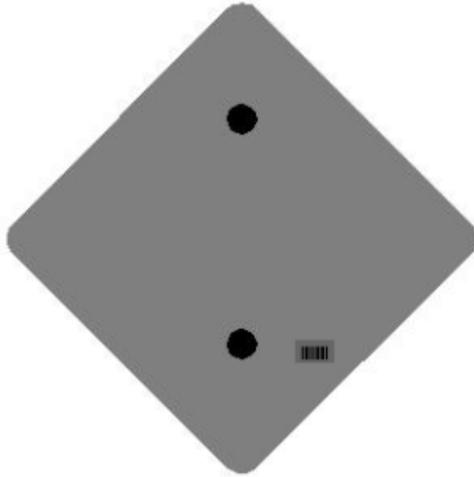
One Sign Post



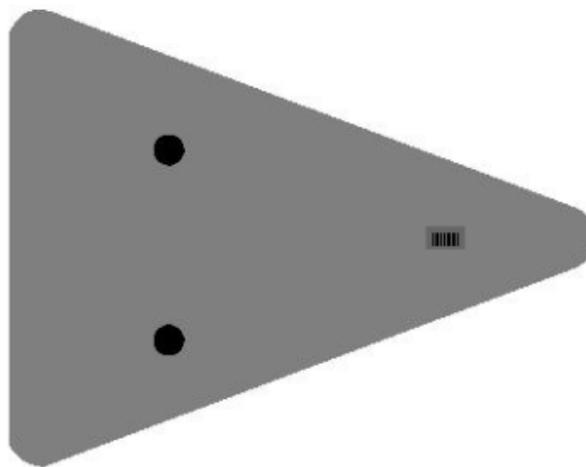
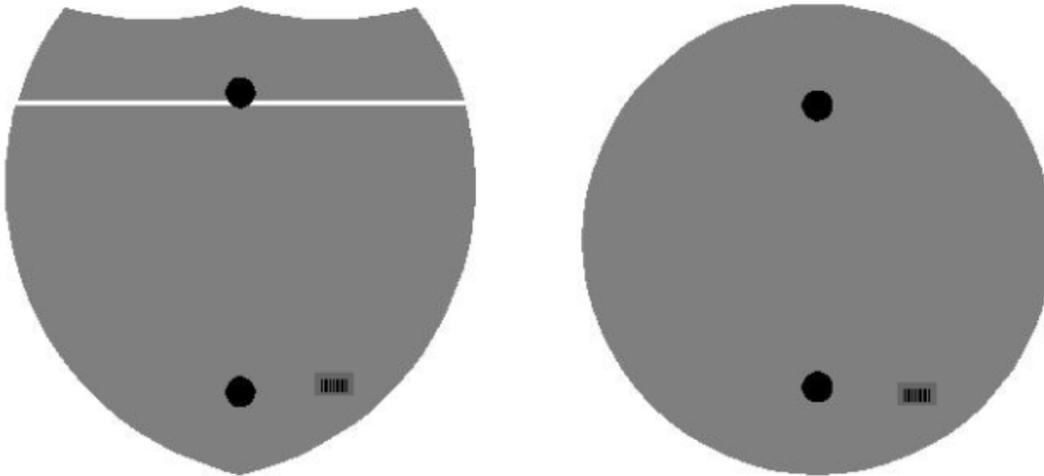
↑
2" Wide Post



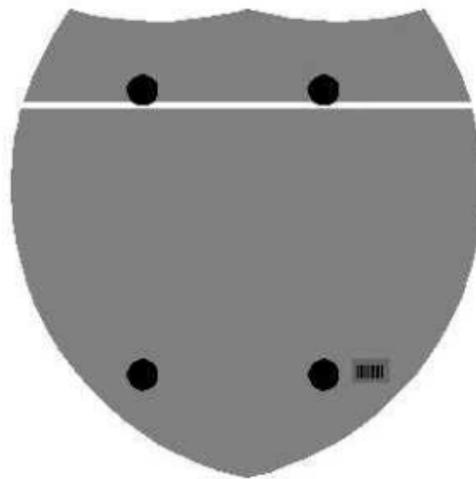
One Sign Post



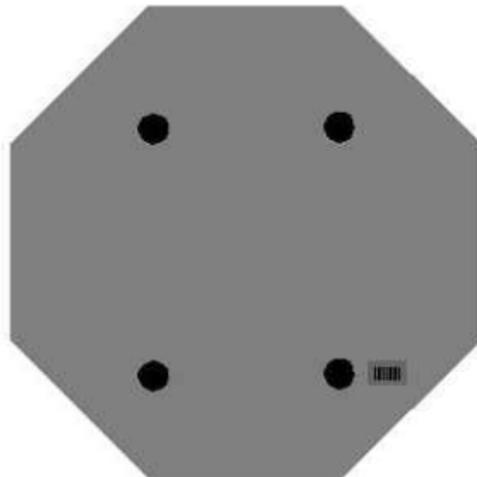
One Sign Post



Double Sign Post



Interstate
Shield

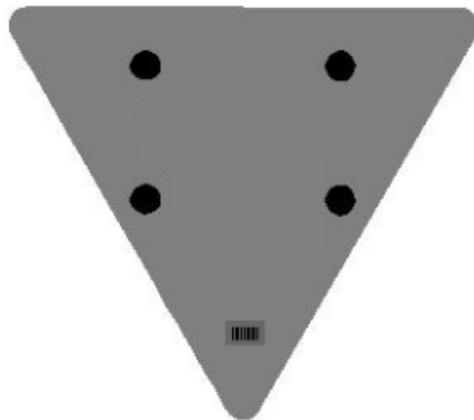


48" Stop

2 Post Signs



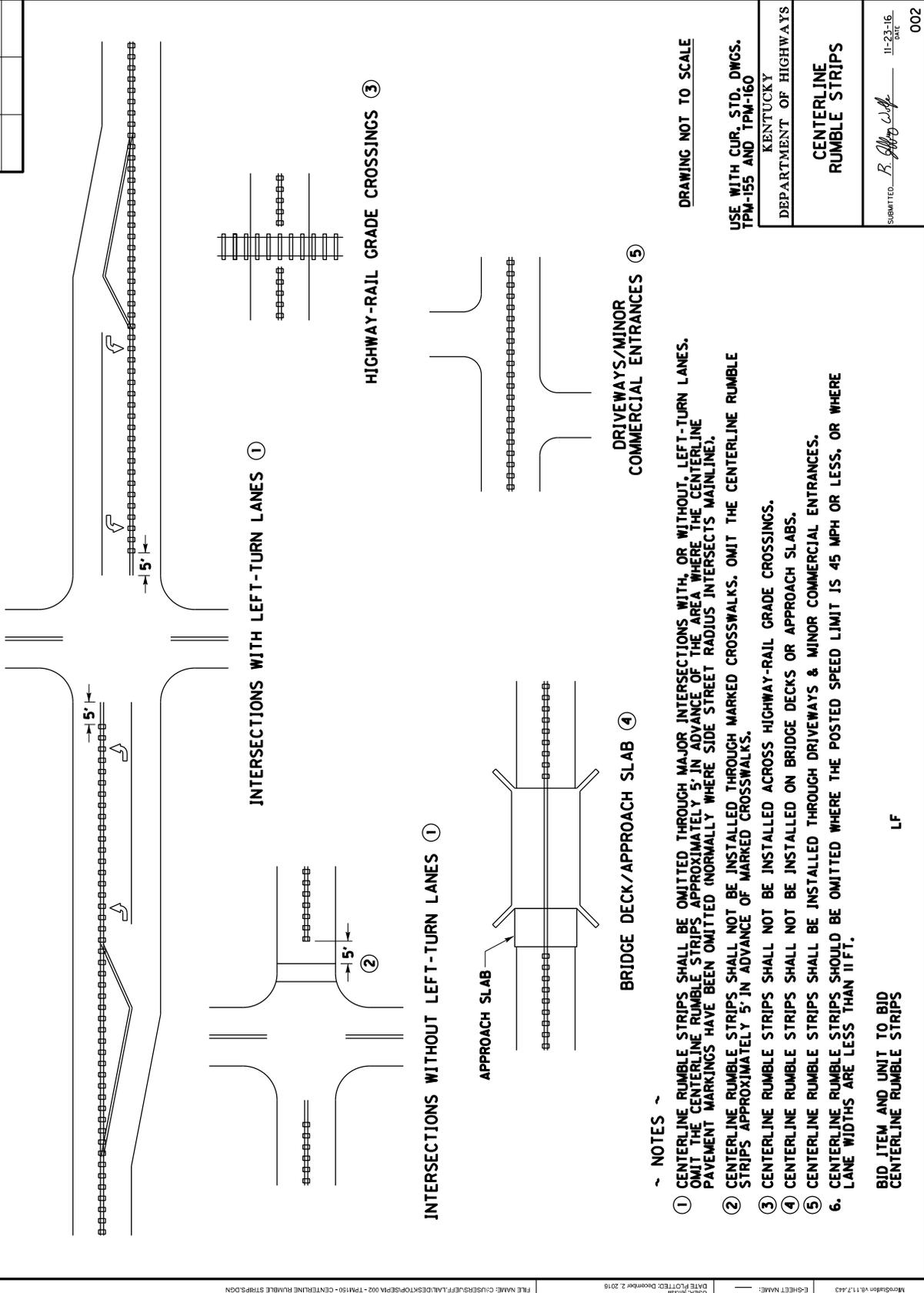
↑
2" Wide Post



Pike Co. 12-9002
HSIP Project on KY 632
MP 0 - MP 7
Project Related Standard Drawings

<u>Guardrail</u>	<u>Drainage</u>	<u>Headwalls</u>	<u>Sepias</u>
RBI-004-05	RDB-001-12	RDH-020-03	24
RBR-005-11	RDB-011-08	RDH-030-03	25
RBR-010-06	RDB-012-10	RDH-110-02	27
RBR-016-05	RDB-105-06	RDH-210-03	28
	RDB-106-05	RDH-1005-02	29
	RDD-040-05	RDH-1015-02	30
<u>General</u>	RDI-001-10	RDH-1105-02	32
RGS-001-07	RDI-002-05	RDH-1125-02	33
RGX-001-06	RDI-003-05	RDH-1145-02	
RGX-005-06	RDI-020-09	RDH-1200-02	
RPM-110-07	RDI-021-01	RDH-1205-02	
	RDI-025-05	RDH-1210-02	
<u>Traffic</u>	RDI-040-01	RDH-1302-03	
TTC-100-04	RDI-041-01	RDH-1314-03	
TTC-110-03	RDX-210-03	RDH-1334-03	
TTC-135-02	RDX-220-05		
TTC-155-02	RDX-225-01		
TTD-125-02	RDX-230-01		

COUNTY OF	TITLING	SHEET NO.



INTERSECTIONS WITH LEFT-TURN LANES ①

HIGHWAY-RAIL GRADE CROSSINGS ③

INTERSECTIONS WITHOUT LEFT-TURN LANES ①

BRIDGE DECK/APPROACH SLAB ④

DRIVEWAYS/MINOR COMMERCIAL ENTRANCES ⑤

NOTES ~

- ① CENTERLINE RUMBLE STRIPS SHALL BE OMITTED THROUGH MAJOR INTERSECTIONS WITH, OR WITHOUT, LEFT-TURN LANES. OMIT THE CENTERLINE RUMBLE STRIPS APPROXIMATELY 5' IN ADVANCE OF THE AREA WHERE THE CENTERLINE PAVEMENT MARKINGS HAVE BEEN OMITTED (NORMALLY WHERE SIDE STREET RADIUS INTERSECTS MAINLINE).
- ② CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED THROUGH MARKED CROSSWALKS. OMIT THE CENTERLINE RUMBLE STRIPS APPROXIMATELY 5' IN ADVANCE OF MARKED CROSSWALKS.
- ③ CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED ACROSS HIGHWAY-RAIL GRADE CROSSINGS.
- ④ CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED ON BRIDGE DECKS OR APPROACH SLABS.
- ⑤ CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED THROUGH DRIVEWAYS & MINOR COMMERCIAL ENTRANCES.
- 6. CENTERLINE RUMBLE STRIPS SHOULD BE OMITTED WHERE THE POSTED SPEED LIMIT IS 45 MPH OR LESS, OR WHERE LANE WIDTHS ARE LESS THAN 11 FT.

BID ITEM AND UNIT TO BID
CENTERLINE RUMBLE STRIPS

LF

DRAWING NOT TO SCALE

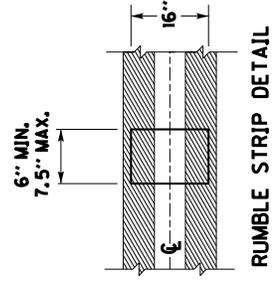
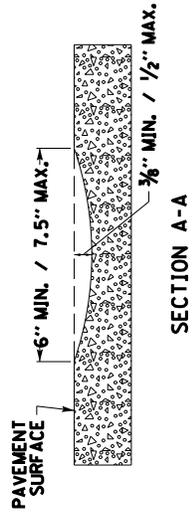
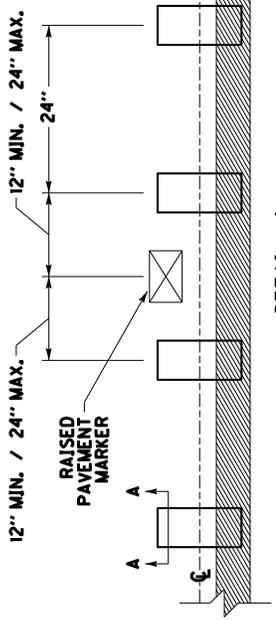
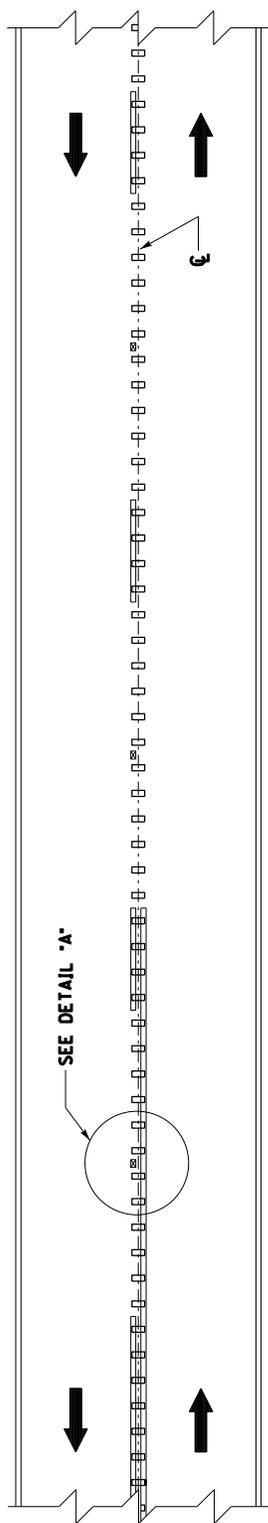
USE WITH CUR. STD. DWGS.
TPM-155 AND TPM-160

KENTUCKY DEPARTMENT OF HIGHWAYS
CENTERLINE RUMBLE STRIPS

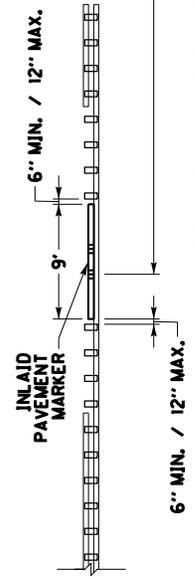
SUBMITTED: <i>B. [Signature]</i>	II-23-16 DATE
	002

COUNTY OF	TITLING	SHEET NO.

PLAN VIEW



DETAIL A-A



NOTES

1. DISTANCES SHOWN ARE APPROXIMATE. MAINTAIN RUMBLE STRIP DIMENSIONS AND SPACING AS MUCH AS POSSIBLE.
2. CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED IN LINE WITH THE CENTER OF THE ROADWAY AS MUCH AS POSSIBLE.
3. DISCONTINUE CENTERLINE RUMBLE STRIPS AT LEAST 12" BEFORE AND AFTER THE CENTER OF EACH RAISED PAVEMENT MARKER, AND AT LEAST 6" BEFORE AND AFTER THE GROOVE FOR EACH INLAID PAVEMENT MARKER, INSTALL AS MANY RUMBLE STRIPS AS POSSIBLE BETWEEN ADJACENT PAVEMENT MARKERS WHILE MAINTAINING THE 24" CYCLE.
4. DO NOT INSTALL CENTERLINE RUMBLE STRIPS IN AREAS INDICATED ON TPM-150.
5. CENTERLINE RUMBLE STRIPS SHOULD BE OMITTED WHERE THE POSTED SPEED LIMIT IS 45 MPH OR LESS, OR WHERE LANE WIDTHS ARE LESS THAN 11 FT.

BID ITEM AND UNIT TO BID
CENTERLINE RUMBLE STRIPS

LF

DRAWING NOT TO SCALE

USE WITH CUR. STD. DWG.
TPM-150

KENTUCKY
DEPARTMENT OF HIGHWAYS

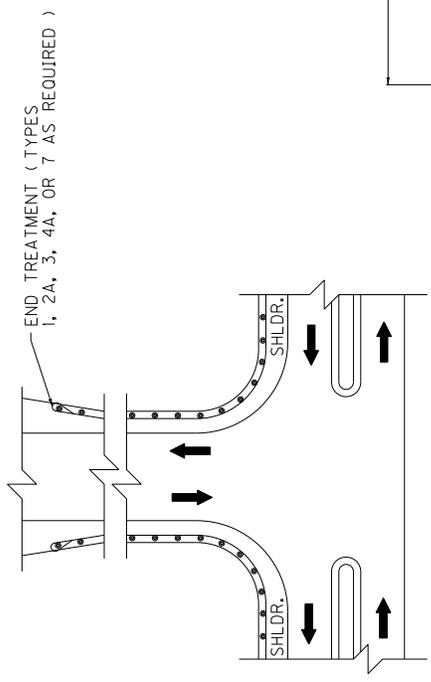
CENTERLINE
RUMBLE STRIPS
6 INCH STRIPING

SUBMITTED: *B. [Signature]*
J-27-17
004

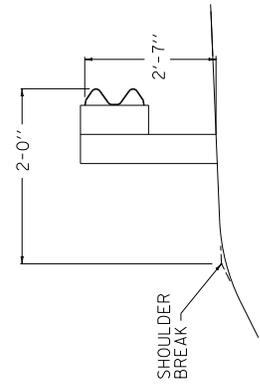
COUNTY OF	TITLING	SHEET NO.

~ NOTES ~

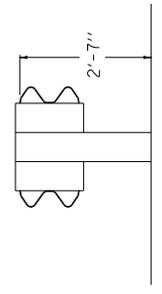
1. FOR END TREATMENT TYPE 4A USE CUR. STD. DWG. RBR-035 FOR OFFSETS.
2. THE MINIMUM LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET: (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).



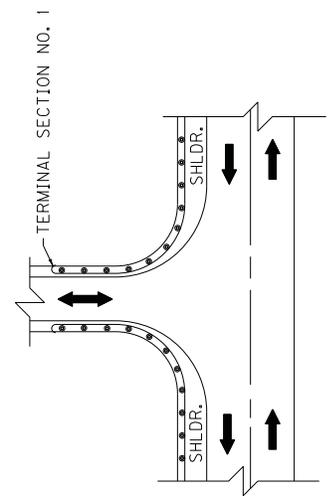
APPROACH ROADS



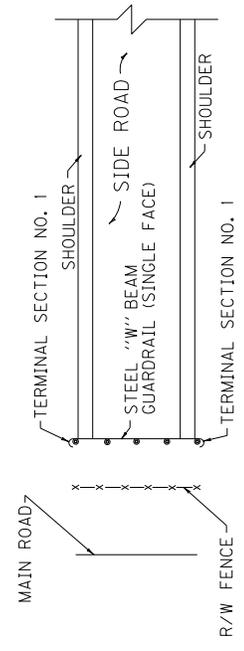
NORMAL GUARDRAIL INSTALLATION



TYPICAL DOUBLE FACE GUARDRAIL INSTALLATION



ENTRANCES



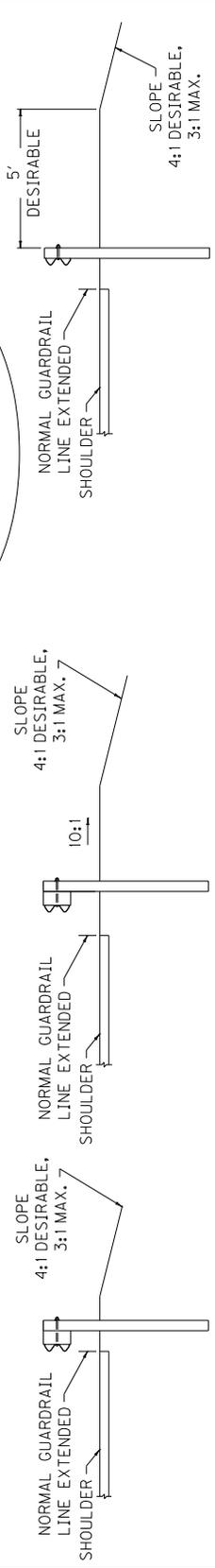
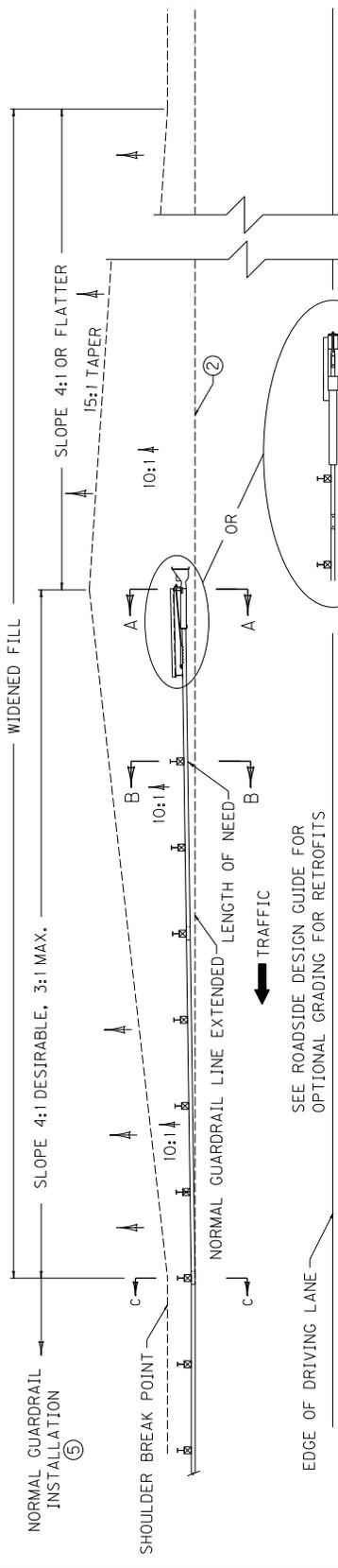
GUARDRAIL USED AS A BARRICADE

USE WITH CUR. STD. DWG.
RBI-002, RBR-035

KENTUCKY
DEPARTMENT OF HIGHWAYS
TYPICAL GUARDRAIL
INSTALLATIONS

SUBMITTED: *[Signature]*
DIRECTOR DIVISION OF DESIGN
DATE: 11-17-17
024

COUNTY OF	PIKE
SHEET NO.	025



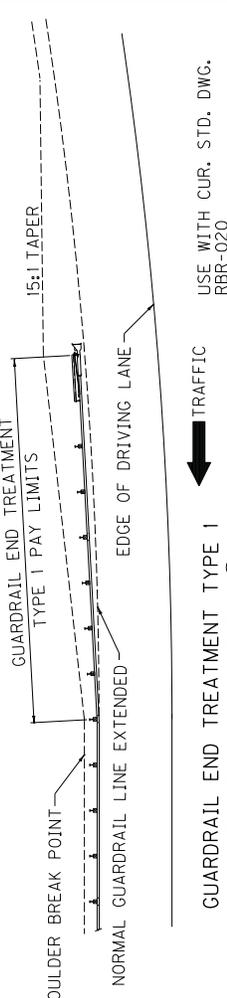
SECTION A-A

SECTION B-B

SECTION C-C

~ NOTES ~

- BID ITEMS AND UNIT TO BID:
GUARDRAIL END TREATMENT TYPE 1
ROADWAY OR BORROW EXCAVATION,
OR EMBANKMENT IN PLACE CUYD
- 1. THE MINIMUM LENGTH OF GUARDRAIL, INCLUDING THE END TREATMENT, PRECEDING A FIXED OBJECT IS 200 FEET (LENGTH MAY BE REDUCED SHOULD FIELD CONDITIONS WARRANT).
- 2. GUARDRAIL EXTRUDER EDGE CLOSEST TO TRAFFIC SHALL BE PLACED ON NORMAL GUARDRAIL LINE EXTENDED.
- 3. END TREATMENT TYPE 1 MAY BE ATTACHED TO CURVED GUARDRAIL PROVIDED CURVE IS A 550' RADIUS OR MORE. END TREATMENT TYPE 1 SHALL BE INSTALLED ON A STRAIGHT LINE TAPER WITHIN THE PAY LIMITS.
- 4. INTENDED USE: FILLS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL.
- 5. FOR MAINTENANCE AND REPAIR PROJECTS, USE "GUARDRAIL SYSTEM TRANSITION "SEPIA 33", TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.



USE WITH CUR. STD. DWG.
RBR-020

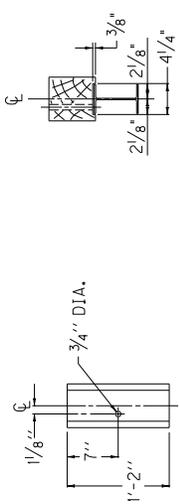
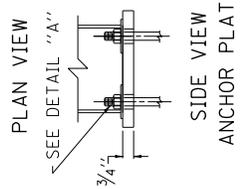
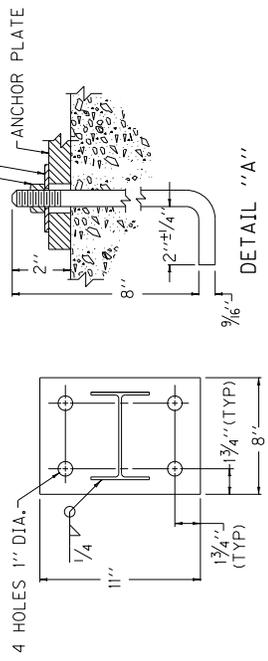
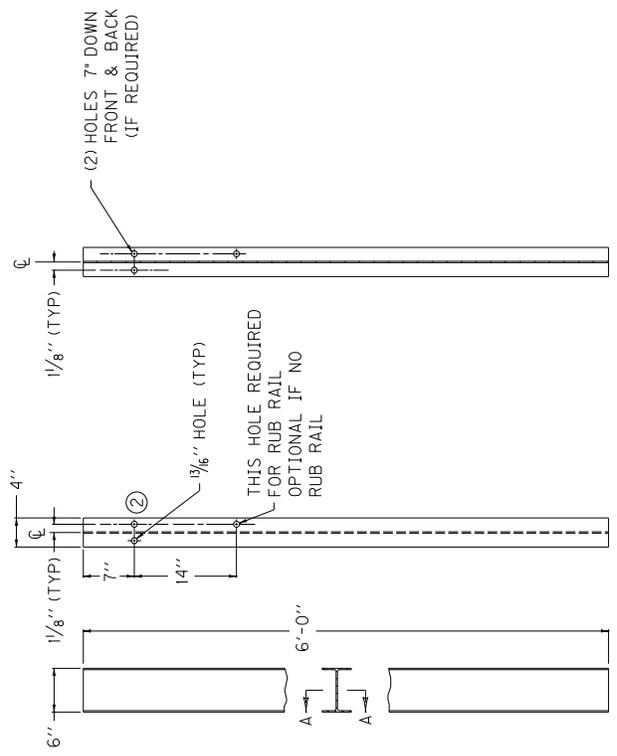
KENTUCKY
DEPARTMENT OF HIGHWAYS
INSTALLATION OF
GUARDRAIL
END TREATMENT
TYPE 1

SUBMITTED: *[Signature]*
DIRECTOR IN CHARGE OF DESIGN
DATE: 11-17-17

025

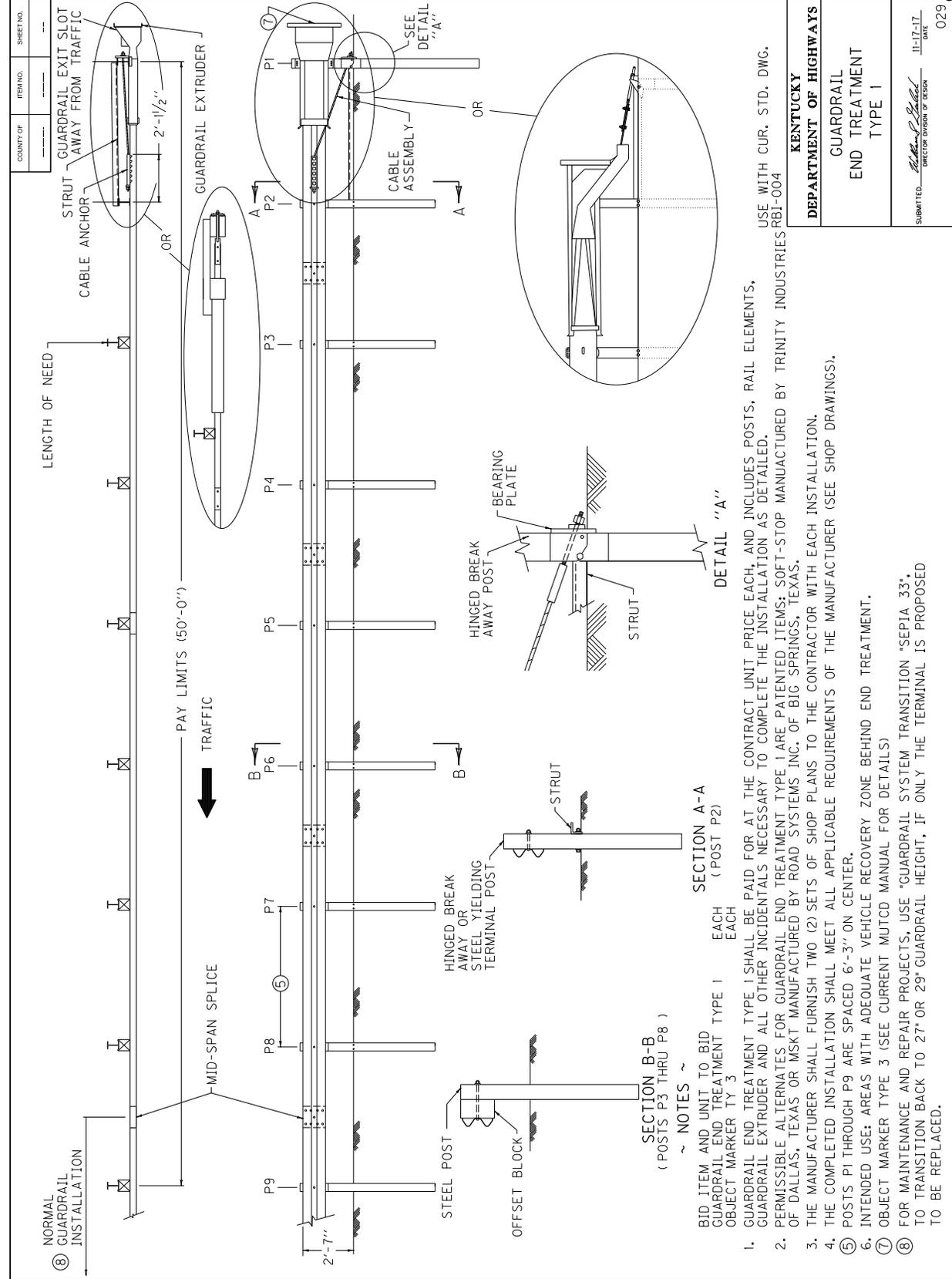
COUNTY OF	ITEM NO.	SHEET NO.

- ~ NOTES ~
- ① W6 X 8.5 IS AN ACCEPTABLE ALTERNATE.
 - ② THESE HOLES ARE REQUIRED FOR ATTACHING RAIL.
 - ③ TIMBER OR COMPOSITE BLOCKOUTS MAY BE USED WITH STEEL POST.



OFFSET BLOCK TYPE 4
6" X 8" (Nominal Size)
(TIMBER OR APPROVED COMPOSITE)
(FOR USE WITH STEEL POST ONLY)

KENTUCKY DEPARTMENT OF HIGHWAYS	STEEL GUARDRAIL POSTS	SUBMITTED: <i>Mark P. Sells</i> DIRECTOR DIVISION OF DESIGN	DATE: 3-06-18	028
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SHEET NO.	ITEM NO.	COUNTY OF

LENGTH OF NEED

GUARDRAIL EXIT SLOT AWAY FROM TRAFFIC

STRUT ANCHOR

2'-1 1/2"

GUARDRAIL EXTRUDER

OR

PAY LIMITS (50'-0")

TRAFFIC

MID-SPAN SPLICE

OR

P1

P2

P3

P4

P5

P6

P7

P8

P9

2'-7"

SEE DETAIL "A"

CABLE ASSEMBLY

OR

HINGED BREAK AWAY POST

BEARING PLATE

STRUT

SECTION A-A

(POST P2)

SECTION B-B

(POSTS P3 THRU P8)

~ NOTES ~

BID ITEM AND UNIT TO BID

GUARDRAIL END TREATMENT TYPE 1 EACH

OBJECT MARKER TY 3 EACH

1. GUARDRAIL END TREATMENT TYPE 1 SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND INCLUDES POSTS, RAIL ELEMENTS, GUARDRAIL EXTRUDER AND ALL OTHER INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION AS DETAILED.
2. PERMISSIBLE ALTERNATES FOR GUARDRAIL END TREATMENT TYPE 1 ARE PATENTED ITEMS: SOFT-STOP MANUFACTURED BY TRINITY INDUSTRIES RBI-004 OF DALLAS, TEXAS OR MSKT MANUFACTURED BY ROAD SYSTEMS INC. OF BIG SPRINGS, TEXAS.
3. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
4. THE COMPLETED INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE MANUFACTURER (SEE SHOP DRAWINGS).
5. POSTS P1 THROUGH P9 ARE SPACED 6'-3" ON CENTER.
6. INTENDED USE: AREAS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND END TREATMENT.
7. OBJECT MARKER TYPE 3 (SEE CURRENT MUTCD MANUAL FOR DETAILS)
8. FOR MAINTENANCE AND REPAIR PROJECTS, USE "GUARDRAIL SYSTEM TRANSITION 'SEP1A 33", TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.

USE WITH CUR. STD. DWG.
RBI-004

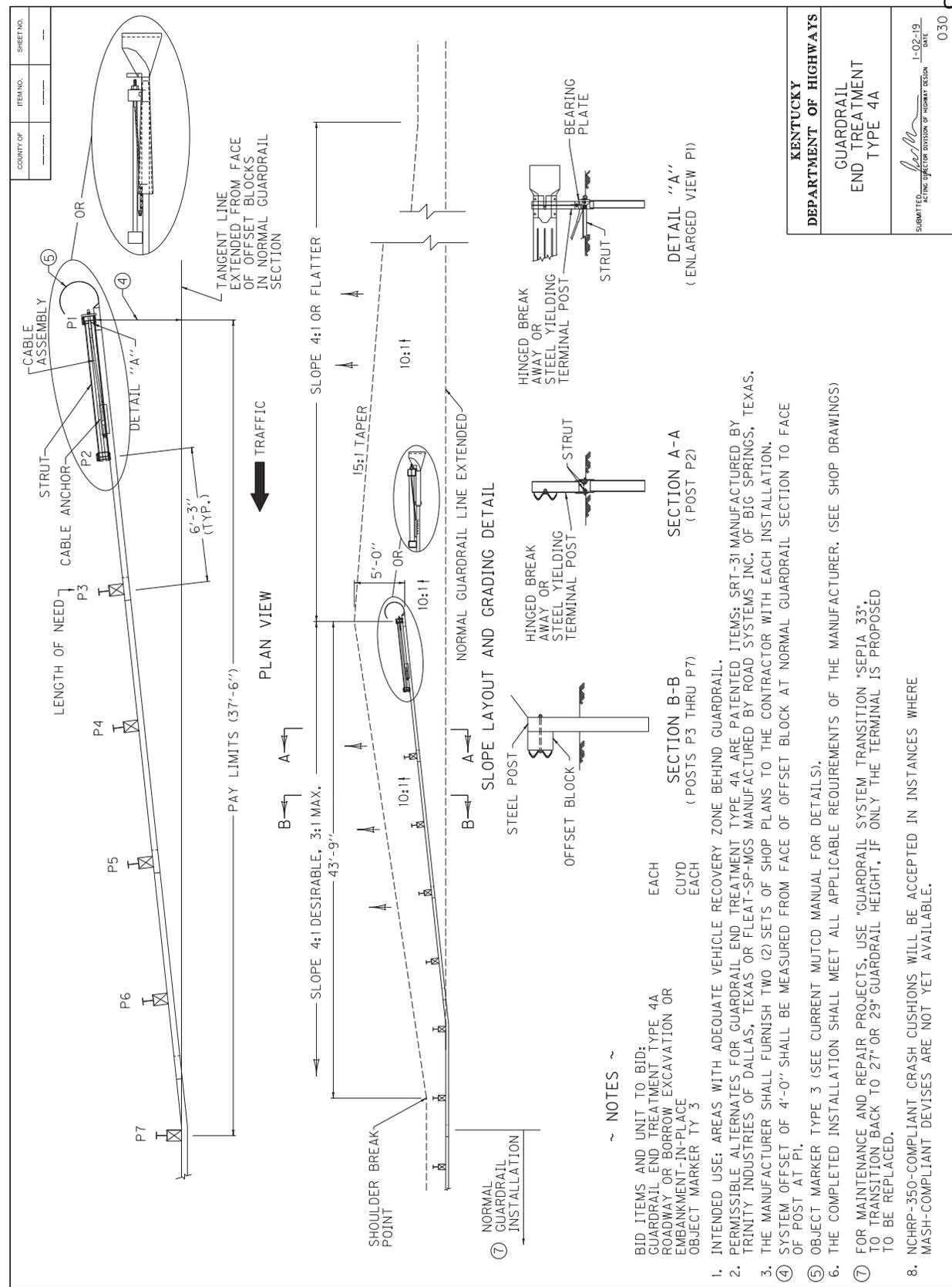
KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL
END TREATMENT
TYPE 1

SUBMITTED: *John P. Scales*
DIRECTOR DIVISION OF DESIGN

DATE: 11-17-17

029



~ NOTES ~

- BID ITEMS AND UNIT TO BID:
GUARDRAIL END TREATMENT TYPE 4A EACH
ROADWAY OR BORROW EXCAVATION OR CUYD EACH
EMBANKMENT-IN-PLACE
OBJECT MARKER TY 3
- INTENDED USE: AREAS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL.
- PERMISSIBLE ALTERNATES FOR GUARDRAIL END TREATMENT TYPE 4A ARE PATENTED ITEMS: SRT-31 MANUFACTURED BY TRINITY INDUSTRIES OF DALLAS, TEXAS OR FLEAT-SP-MGS MANUFACTURED BY ROAD SYSTEMS INC. OF BIG SPRINGS, TEXAS.
- THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
- SYSTEM OFFSET OF 4'-0" SHALL BE MEASURED FROM FACE OF OFFSET BLOCK AT NORMAL GUARDRAIL SECTION TO FACE OF POST AT P1.
- OBJECT MARKER TYPE 3 (SEE CURRENT MUTCD MANUAL FOR DETAILS).
- THE COMPLETED INSTALLATION SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE MANUFACTURER. (SEE SHOP DRAWINGS)
- FOR MAINTENANCE AND REPAIR PROJECTS, USE "GUARDRAIL SYSTEM TRANSITION "SEPIA 33" TO TRANSITION BACK TO 27" OR 29" GUARDRAIL HEIGHT, IF ONLY THE TERMINAL IS PROPOSED TO BE REPLACED.
- NCHRP-350-COMPLIANT CRASH CUSHIONS WILL BE ACCEPTED IN INSTANCES WHERE MASH-COMPLIANT DEVICES ARE NOT YET AVAILABLE.

KENTUCKY
DEPARTMENT OF HIGHWAYS

GUARDRAIL
END TREATMENT
TYPE 4A

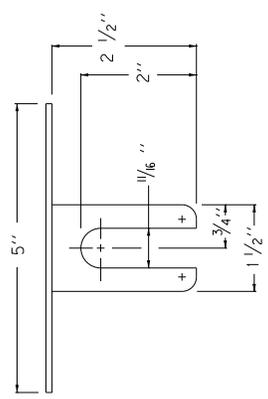
SUBMITTED: *[Signature]* J-02-19 DATE
ACTING INSPECTOR DIVISION OF HIGHWAY DESIGN

030

COUNTY OF	ITEM NO.	SHEET NO.

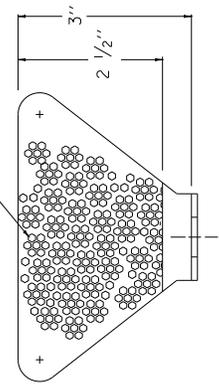
~ NOTES ~

- BID ITEMS AND UNIT TO BID
 DELINEATOR FOR GUARDRAIL B/W EACH
 DELINEATOR FOR GUARDRAIL M/W EACH
 DELINEATOR FOR GUARDRAIL M/Y EACH
1. DELINEATORS SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
 2. DELINEATOR SHAPE AND DIMENSIONS ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. TYPES OF DELINEATORS PERMITTED SHALL BE FROM THE LIST OF APPROVED MATERIALS.
 3. GUARDRAIL DELINEATORS SHALL BE REQUIRED ON ALL GUARDRAIL.
 4. DELINEATORS SHALL NOT BE INSTALLED WITHIN THE PAY LIMITS OF THE END TREATMENT.
 5. DELINEATORS SHALL BE MANUFACTURED FROM 12 GA. GALVANIZED STEEL.
 6. DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MANUFACTURER'S TOLERANCES.
 7. WHEN CONCRETE BARRIERS EXTEND ACROSS BRIDGE STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL, AND DELINEATORS SHALL COMPLY WITH CURRENT STANDARD DRAWING RBM-020.
 8. DELINEATORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

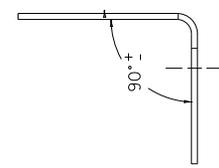


PLAN VIEW

TYPE IX SHEETING,
YELLOW OR WHITE



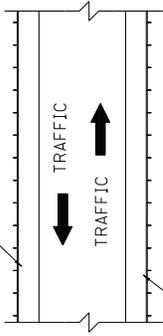
FRONT VIEW



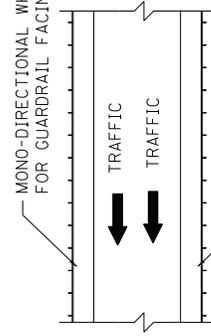
SIDE VIEW

DIMENSIONS SHOWN ARE FOR ONE VERSION OF A WEB-MOUNTED GUARDRAIL DELINEATOR. DELINEATORS WITH ALTERNATE DIMENSIONS MAY BE CONSIDERED FOR INCLUSION ON THE APPROVED PRODUCTS LIST.

BI-DIRECTIONAL WHITE DELINEATOR FOR GUARDRAIL FACING TRAFFIC



BI-DIRECTIONAL WHITE DELINEATOR FOR GUARDRAIL FACING TRAFFIC



MONO-DIRECTIONAL WHITE DELINEATOR FOR GUARDRAIL FACING TRAFFIC

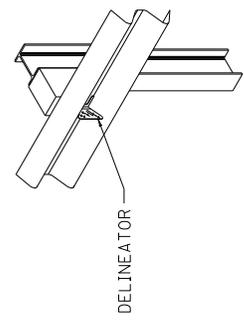
MONO-DIRECTIONAL YELLOW DELINEATOR FOR GUARDRAIL FACING TRAFFIC



PLACEMENT OF DELINEATORS FOR GUARDRAIL

APPROXIMATE DELINEATOR SPACING	
TANGENT	100'
CURVE	50'

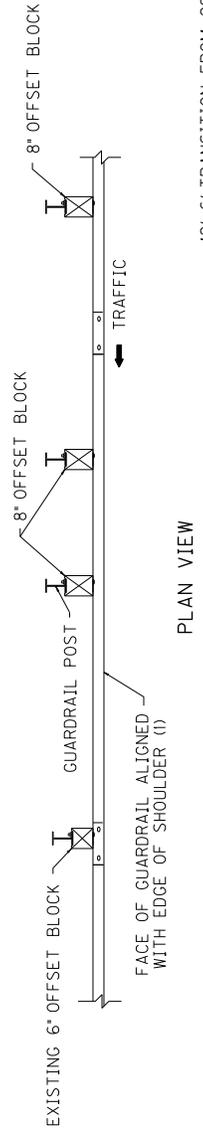
SPACING SHOULD BE ADJUSTED IN CURVES SO THAT SEVERAL DELINEATORS ARE ALWAYS SIMULTANEOUSLY VISIBLE TO THE ROAD USER.



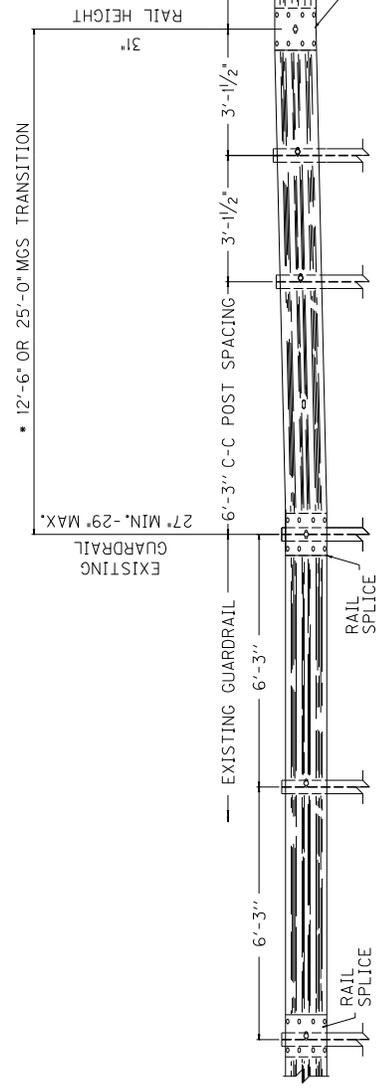
ISOMETRIC VIEW
USE WITH CUR. STD. DWGS.
RBM-020, RBR-060

KENTUCKY	
DEPARTMENT OF HIGHWAYS	
DELINEATORS FOR GUARDRAIL	
SUBMITTED: <i>Mark P. Pickett</i>	DATE: 11-17-12
DIRECTOR DIVISION OF DESIGN 032	

COUNTY OF	ITEM NO.	SHEET NO.



• 12'-6" TRANSITION FROM 29" TO 31" SHOWN,
25'-0" REQUIRED FOR 27" TO 31" TRANSITION.



* 12'-6" OR 25'-0" MGS TRANSITION

~ NOTES ~

- 1) WHERE POST OFFSET IS CONSTRAINED, AND WHEN THE EXISTING SHOULDER IS WIDER THAN 4 FEET, THE EXISTING SHOULDER MAY BE REDUCED UP TO 2 INCHES TO ACCOMMODATE THE 8 INCH BLOCKS OF THE MGS GUARDRAIL. WHERE SITE CONSTRAINTS PROHIBIT THE POST FROM BEING PLACED AT LEAST 6 INCHES IN FRONT OF THE SLOPE BREAK POINT, USE 7 FOOT POSTS.
- 2) MGS TRANSITION FROM EXISTING GUARDRAIL SHALL BE COMPLETED OUTSIDE THE 50 FEET MGS END TERMINAL LIMITS.

KENTUCKY DEPARTMENT OF HIGHWAYS
GUARDRAIL SYSTEM TRANSITION
SUBMITTED: <i>Robert P. Sabel</i> DIRECTOR DESIGN & DESIGN 4-04-18 DATE 033

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 -- Revised May 1, 2012

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (ii) The classification is utilized in the area by the construction industry; and
- (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

**KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS**

**EMPLOYMENT REQUIREMENTS
RELATING TO
NONDISCRIMINATION OF EMPLOYEES
(APPLICABLE TO FEDERAL-AID SYSTEM CONTRACTS)**

**AN ACT OF THE KENTUCKY GENERAL ASSEMBLY
TO PREVENT DISCRIMINATION IN EMPLOYMENT**

**KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972**

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

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

Revised: January 25, 2017

Standard Title VI/Non-Discrimination Assurances

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **Federal Highway Administration** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **Federal Highway Administration**, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **Federal Highway Administration** may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the **Federal Highway Administration** may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Standard Title VI/Non-Discrimination Statutes and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*)

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

Stone Mason.....	\$ 21.50	8.50
CARPENTER		
Carpenter.....	\$ 24.90	14.50
Piledriver.....	\$ 24.55	14.50

CEMENT MASON.....	\$ 21.25	8.50
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ELECTRICIAN		
Electrician.....	\$ 29.36	10.55
Equipment Operator.....	\$ 26.90	10.31
Groundsman.....	\$ 17.79	8.51
Lineman.....	\$ 30.09	10.94

When workmen are required to work from bosum chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and T.V. towers, structural steel (open, unprotected, unfloored raw steel), and bridges or similar hazardous locations where workmen are subject to fall, except where using JLG's and bucket trucks up to 75 feet: Add 25% to workman's base rate for 50 to 75 feet, and add 50% to workman's base rate for over 75 feet.

IRONWORKER.....	\$ 27.56	20.57
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LABORER		
Group 1.....	\$ 21.80	12.36
Group 2.....	\$ 22.05	12.36
Group 3.....	\$ 22.10	12.36
Group 4.....	\$ 22.70	12.36

GROUP 1: Aging and Curing of Concrete (Any Mode or Method), Asbestos Abatement Worker, Asphalt Plant Laborers, Asphalt Laborers, Batch Truck Dumpers, Carpenter Tenders, Cement Mason Tenders, Cleaning of Machines, Concrete Laborers, Demolition Laborers, Dredging Laborers, Drill Tender, Environmental Laborer - Nuclear, Radiation, Toxic and Hazardous Waste - Level D, Flagmen, Grade Checkers, All Hand Digging and Hand Back Filling, Highway Marker Placers, Landscaping Laborers, Mesh Handlers and Placers, Puddler, Railroad Laborers, Rip-rap and Grouters, Right of Way Laborers, Sign, Guard Rail and Fence Installers (All Types), Signalmen, Sound Barrier Installer, Storm and Sanitary Sewer Laborers, Swampers, Truck Spotters and Dumpers, Wrecking of Concrete Forms, General Cleanup

GROUP 2: Batter Board Men (Sanitary and Storm Sewer), Brickmason Tenders, Mortar Mixer Operator, Scaffold Builders, Burner and Welder, Bushammers, Chain Saw Operator, Concrete Saw Operators, Deckhand Scow Man, Dry Cement Handlers, Environmental Laborers - Nuclear, Radiation, Toxic and Hazardous Waste - Level C, Forklift Operators for Masonry, Form Setters, Green Concrete Cutting, Hand Operated Grouter and Grinder Machine Operator, Jack Hammers, Lead Paint Abatement, Pavement Breakers, Paving Joint Machine, Pipe Layers - Laser Operators (Non-metallic), Plastic Pipe Fusion, Power Driven Georgia Buggy and Wheel Barrow, Power Post Hole Diggers, Precast Manhole Setters, Walk-behind Tampers, Walk-behind Trenchers, Sand Blasters, Concrete Chippers, Surface Grinders, Vibrator Operators, Wagon Drillers

GROUP 3: Air Track Driller (All Types), Asphalt Luteman and Rakers, Gunnite Nozzleman, Gunnite Operators and Mixers, Grout

Pump Operator, Powderman and Blaster, Side Rail Setters, Rail Paved Ditches, Screw Operators, Tunnel Laborers (Free Air), Water Blasters

GROUP 4: Caisson Workers (Free Air), Cement Finishers, Environmental Laborer - Nuclear, Radiation, Toxic and Hazardous Waste - Level A and B, miners and Drillers (Free Air), Tunnel Blasters, and Tunnel Mockers (Free Air), Directional and Horizontal Boring, Air Track Drillers (All Types), Powder Man and Blasters, Troxler and Concrete Tester if Laborer is Utilized

PAINTER

All Excluding Bridges.....	\$ 19.92	9.57
Bridges.....	\$ 23.92	10.07

PLUMBER.....\$ 22.52 7.80

POWER EQUIPMENT OPERATOR:

Group 1.....	\$ 29.95	14.40
Group 2.....	\$ 29.95	14.40
Group 3.....	\$ 27.26	14.40
Group 4.....	\$ 26.96	14.40

GROUP 1: Auto Patrol, Batcher Plant, Bituminous Paver, Cable-Way, Clamshell, Concrete Mixer (21 cu ft or over), Concrete Pump, Crane, Crusher Plant, Derrick, Derrick Boat, Ditching and Trenching Machine, Dragline, Dredge Engineer, Elevator (regardless of ownership when used for hoisting any building material), Elevating Grader and all types of Loaders, Hoe-type Machine, Hoisting Engine, Locomotive, LeTourneau or Carry-all Scoop, Bulldozer, Mechanic, Orangepeel Bucket, Piledriver, Power Blade, Roller (Bituminous), Roller (Earth), Roller (Rock), Scarifier, Shovel, Tractor Shovel, Truck Crane, Well Point, Winch Truck, Push Dozer, Grout Pump, High Lift, Fork Lift (regardless of lift height), all types of Boom Cats, Multiple Operator, Core Drill, Tow or Push Boat, A-Frame Winch Truck, Concrete Paver, Grade-All, Hoist, Hyster, Material Pump, Pumpcrete, Ross Carrier, Sheepfoot, Sideboom, Throttle-Valve Man, Rotary Drill, Power Generator, Mucking Machine, Rock Spreader attached to Equipment, Scoopmobile, KeCal Loader, Tower Cranes, (French, German and other types), Hydrocrane, Tugger, Backfiller Gurries, Self-propelled Compactor, Self-Contained Hydraulic Percussion Drill

GROUP 2: All Air Compressors (200 cu ft/min or greater), Bituminous Mixer, Concrete Mixer (21 cu. ft. or over), Welding Machine, Form Grader, Tractor (50 hp and over), Bull Float, Finish Machine, Outboard Motor Boat, Brakeman, Mechanic Tender, Whirly Oiler, Tract-air, Road Widening Trencher, Articulating Trucks

GROUP 3: Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4: Bituminous Distributor, Cement Gun, Conveyor, Mud Jack, Paving Joint Machine, Pump, Tamping Machine, Tractor (under 50 hp), Vibrator, Oiler, Air Compressor (under 200 cu ft per minute), Concrete Saw, Burlap and Curing Machine, Hydro Seeder, Power Form Handling Equipment, Deckhand Oiler, Hydraulic Post Driver

SHEET METAL WORKER.....	\$ 20.40	7.80
TRUCK DRIVER		
Driver (3 Tons and Over), Driver (Truck Mounted Rotary Drill).....	\$ 23.74	14.50
Driver (3 Tons and Under), Tire Changer and Truck Mechanic Tender.....	\$ 23.53	14.50
Driver (Semi-Trailer or Pole Trailer), Driver (Dump Truck, Tandem Axle), Driver of Distributor.....	\$ 23.40	14.50
Driver on Mixer Trucks (All Types).....	\$ 23.45	14.50
Driver on Pavement Breakers.	\$ 23.55	14.50
Driver, Euclid and Other Heavy Earth Moving Equipment and Low Boy.....	\$ 24.31	14.50
Driver, Winch Truck and A- Frame when used in Transporting Materials.....	\$ 23.30	14.50
Greaser on Greasing Facilities.....	\$ 24.40	14.50
Truck Mechanic.....	\$ 23.50	14.50
Truck Tender and Warehouseman.....	\$ 23.20	14.50

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave
for Federal Contractors applies to all contracts subject to the
Davis-Bacon Act for which the contract is awarded (and any
solicitation was issued) on or after January 1, 2017. If this
contract is covered by the EO, the contractor must provide
employees with 1 hour of paid sick leave for every 30 hours
they work, up to 56 hours of paid sick leave each year.
Employees must be permitted to use paid sick leave for their
own illness, injury or other health-related needs, including
preventive care; to assist a family member (or person who is
like family to the employee) who is ill, injured, or has other
health-related needs, including preventive care; or for reasons
resulting from, or to assist a family member (or person who is
like family to the employee) who is a victim of, domestic
violence, sexual assault, or stalking. Additional information
on contractor requirements and worker protections under the EO
is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within
the scope of the classifications listed may be added after
award only as provided in the labor standards contract clauses
(29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage

determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

Fringe benefit amounts are applicable for all hours worked except when otherwise noted.

No laborer, workman or mechanic shall be paid at a rate less than that of a Journeyman except those classified as bona fide apprentices.

Apprentices or trainees shall be permitted to work as such subject to Administrative Regulations adopted by the Commissioner of Workplace Standards. Copies of these regulations will be furnished upon request from any interested person.

Before using apprentices on the job the contractor shall present to the Contracting Officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U. S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U. S. Bureau of Apprenticeship and Training.

The contractor shall submit to the Contracting Officer, written evidence of the established apprenticeship-journeyman ratios and wage rates in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

The wages indicated on this wage schedule are the least permitted to be paid for the occupations indicated. When an employee works in more than one classification, the employer must record the number of hours worked in each classification at the prescribed hourly base rate.

OVERTIME:

Overtime is to be paid to an employee at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek. Wage violations or questions should be directed to the designated Engineer or the undersigned.

Director
Division of Construction Procurement
Frankfort, Kentucky 40622
502-564-3500

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(Executive Order 11246)**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

GOALS FOR MINORITY PARTICIPATION IN EACH TRADE	GOALS FOR FEMALE PARTICIPATION IN EACH TRADE
2.5%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4, 3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of \$10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. The notification shall be mailed to:

**Evelyn Teague, Regional Director
Office of Federal Contract Compliance Programs
61 Forsyth Street, SW, Suite 7B75
Atlanta, Georgia 30303-8609**

4. As used in this Notice, and in the contract resulting from this solicitation, the "**covered area**" is Pike County.

PART IV
INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V
BID ITEMS

PROPOSAL BID ITEMS

Report Date 11/18/19

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	1,457.00	TON		\$	
0020	00020		TRAFFIC BOUND BASE	40.30	TON		\$	
0030	00100		ASPHALT SEAL AGGREGATE	18.50	TON		\$	
0040	00103		ASPHALT SEAL COAT	2.30	TON		\$	
0050	00190		LEVELING & WEDGING PG64-22	176.00	TON		\$	
0060	00205		CL3 ASPH BASE 1.50D PG64-22	1,026.00	TON		\$	
0070	00223		CL3 ASPH BASE 0.75D PG64-22	339.00	TON		\$	
0080	00272		CL2 ASPH BIND 0.50D PG64-22	62.00	TON		\$	
0090	00339		CL3 ASPH SURF 0.38D PG64-22	568.00	TON		\$	
0100	00356		ASPHALT MATERIAL FOR TACK	4.80	TON		\$	
0110	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		\$	
0120	02677		ASPHALT PAVE MILLING & TEXTURING	214.00	TON		\$	
0130	23229EC		HIGH FRICTION SURFACE TREATMENT	1,826.00	SQYD		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0140	00078		CRUSHED AGGREGATE SIZE NO 2	463.00	TON		\$	
0150	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	63.00	EACH		\$	
0160	02014		BARRICADE-TYPE III	2.00	EACH		\$	
0170	02091		REMOVE PAVEMENT	798.00	SQYD		\$	
0180	02159		TEMP DITCH	506.00	LF		\$	
0190	02160		CLEAN TEMP DITCH	253.00	LF		\$	
0200	02204		SPECIAL EXCAVATION	254.00	CUYD		\$	
0210	02230		EMBANKMENT IN PLACE	3,007.00	CUYD		\$	
0220	02242		WATER	5.00	MGAL		\$	
0230	02351		GUARDRAIL-STEEL W BEAM-S FACE	2,956.50	LF		\$	
0240	02360		GUARDRAIL TERMINAL SECTION NO 1	4.00	EACH		\$	
0250	02367		GUARDRAIL END TREATMENT TYPE 1	1.00	EACH		\$	
0260	02381		REMOVE GUARDRAIL	1,625.00	LF		\$	
0270	02391		GUARDRAIL END TREATMENT TYPE 4A	3.00	EACH		\$	
0280	02429		RIGHT-OF-WAY MONUMENT TYPE 1	7.00	EACH		\$	
0290	02432		WITNESS POST	7.00	EACH		\$	
0300	02460		REMOVE TREES OR STUMPS	4.00	EACH		\$	
0310	02545		CLEARING AND GRUBBING PIKE CO. KY 632	1.00	LS		\$	
0320	02562		TEMPORARY SIGNS	591.00	SQFT		\$	
0330	02567		DELINEATOR POSTS	6.00	EACH		\$	
0340	02575		DITCHING AND SHOULDERING	1,745.00	LF		\$	
0350	02585		EDGE KEY	56.00	LF		\$	
0360	02599		FABRIC-GEOTEXTILE TYPE IV	926.00	SQYD		\$	
0370	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0380	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0390	02690		SAFELOADING	11.40	CUYD		\$	
0400	02701		TEMP SILT FENCE	506.00	LF		\$	

PROPOSAL BID ITEMS

Report Date 11/18/19

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0410	02703		SILT TRAP TYPE A	2.00	EACH		\$	
0420	02704		SILT TRAP TYPE B	2.00	EACH		\$	
0430	02705		SILT TRAP TYPE C	2.00	EACH		\$	
0440	02706		CLEAN SILT TRAP TYPE A	2.00	EACH		\$	
0450	02707		CLEAN SILT TRAP TYPE B	2.00	EACH		\$	
0460	02708		CLEAN SILT TRAP TYPE C	2.00	EACH		\$	
0470	02726		STAKING	1.00	LS		\$	
0480	04934		TEMP SIGNAL MULTI PHASE	3.00	EACH		\$	
0490	05952		TEMP MULCH	5,163.00	SQYD		\$	
0500	05953		TEMP SEEDING AND PROTECTION	5,163.00	SQYD		\$	
0510	05963		INITIAL FERTILIZER	.16	TON		\$	
0520	05964		MAINTENANCE FERTILIZER	.25	TON		\$	
0530	05985		SEEDING AND PROTECTION	4,418.00	SQYD		\$	
0540	05992		AGRICULTURAL LIMESTONE	3.00	TON		\$	
0550	06510		PAVE STRIPING-TEMP PAINT-4 IN	3,500.00	LF		\$	
0560	06578		PAVE MARKING-THERMO MERGE ARROW	3.00	EACH		\$	
0570	20458ES403		CENTERLINE RUMBLE STRIPS	26,400.00	LF		\$	
0580	24189ER		DURABLE WATERBORNE MARKING-6 IN W (REVISED: 11-18-19)	73,920.00	LF		\$	
0590	24190ER		DURABLE WATERBORNE MARKING-6 IN Y (REVISED: 11-18-19)	73,920.00	LF		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0600	00460		CULVERT PIPE-12 IN	16.30	LF		\$	
0610	00461		CULVERT PIPE-15 IN	101.40	LF		\$	
0620	00462		CULVERT PIPE-18 IN	19.90	LF		\$	
0630	00464		CULVERT PIPE-24 IN	160.70	LF		\$	
0640	00468		CULVERT PIPE-36 IN	42.00	LF		\$	
0650	01200		PIPE CULVERT HEADWALL-12 IN	1.00	EACH		\$	
0660	01202		PIPE CULVERT HEADWALL-15 IN	1.00	EACH		\$	
0670	01204		PIPE CULVERT HEADWALL-18 IN	2.00	EACH		\$	
0680	01208		PIPE CULVERT HEADWALL-24 IN	2.00	EACH		\$	
0690	01212		PIPE CULVERT HEADWALL-36 IN	2.00	EACH		\$	
0700	01216		PIPE CULVERT HEADWALL-48 IN	2.00	EACH		\$	
0710	01310		REMOVE PIPE	43.00	LF		\$	
0720	01443		SLOPED AND PARALLEL HEADWALL-15 IN	2.00	EACH		\$	
0730	01451		S & F BOX INLET-OUTLET-24 IN	2.00	EACH		\$	
0740	01490		DROP BOX INLET TYPE 1	2.00	EACH		\$	
0750	01544		DROP BOX INLET TYPE 11	1.00	EACH		\$	
0760	01550		DROP BOX INLET TYPE 12A	31.20	LF		\$	
0770	01729		SAFETY BOX INLET-24 IN DBL SDB-5	1.00	EACH		\$	
0780	02403		REMOVE CONCRETE MASONRY	2.00	CUYD		\$	
0790	02483		CHANNEL LINING CLASS II	222.00	TON		\$	
0800	02484		CHANNEL LINING CLASS III	154.00	TON		\$	
0810	02555		CONCRETE-CLASS B	70.00	CUYD		\$	
0820	02596		FABRIC-GEOTEXTILE TYPE I	440.00	SQYD		\$	
0830	02599		FABRIC-GEOTEXTILE TYPE IV	506.00	SQYD		\$	

PROPOSAL BID ITEMS

Report Date 11/18/19

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0840	02625		REMOVE HEADWALL	10.00	EACH		\$	
0850	03262		CLEAN PIPE STRUCTURE	3.00	EACH		\$	
0860	08003		FOUNDATION PREPARATION 4'X8' RCBC EXTENSION AT 190+43.97	1.00	LS		\$	
0870	08003		FOUNDATION PREPARATION 4'X8' RCBC EXTENSION AT 313+44.16	1.00	LS		\$	
0880	20465EC		CLEAN CULVERT STA 190+43.97	1.00	LS		\$	
0890	20465EC		CLEAN CULVERT STA 313+44.16	1.00	LS		\$	
0900	23275EN11F		TURF REINFORCEMENT MAT 2	422.00	SQYD		\$	
0910	24583EC		HDPE PIPE LINER 48 IN	38.00	LF		\$	
0920	24694ED		BOX CULVERT 8'X4'	25.00	LF		\$	
0930	24695ED		BOX CULVERT HEADWALL 8'X6', 0 DEG SK	2.00	EACH		\$	
0940	24695ED		BOX CULVERT HEADWALL 8'X6', 15 DEG SK	1.00	EACH		\$	
0950	24695ED		BOX CULVERT HEADWALL 8'X6', 30 DEG SK	1.00	EACH		\$	

Section: 0004 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0960	06406		SBM ALUM SHEET SIGNS .080 IN	1,206.75	SQFT		\$	
0970	06410		STEEL POST TYPE 1	2,988.00	LF		\$	
0980	21373ND		REMOVE SIGN	93.00	EACH		\$	
0990	21813NN		REMOVE AND RELOCATE SHEET SIGNS	3.00	EACH		\$	
1000	24631EC		BARCODE SIGN INVENTORY	249.00	EACH		\$	

Section: 0005 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1010	14037		W PIPE DUCTILE IRON 08 INCH	930.00	LF		\$	
1020	14060		W PIPE PVC 08 INCH	940.00	LF		\$	
1030	14095		W TIE-IN 08 INCH	14.00	EACH		\$	
1040	14106		W VALVE 08 INCH	7.00	EACH		\$	
1050	14144		W LINE MARKER	22.00	EACH		\$	

Section: 0006 - STEEL AND CRIBBING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1060	02599		FABRIC-GEOTEXTILE TYPE IV	538.00	SQYD		\$	
1070	03234		RAILROAD RAILS-DRILLED	5,296.00	LF		\$	
1080	03235		EXCAVATION AND BACKFILL	82.00	CUYD		\$	
1090	03236		CRIBBING	3,762.00	SQFT		\$	

PROPOSAL BID ITEMS

Report Date 11/18/19

Section: 0007 - DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1100	02569		DEMOBILIZATION	1.00	LS		\$	