



**CALL NO. 202**

**CONTRACT ID. 195152**

**GRANT COUNTY**

**FED/STATE PROJECT NUMBER 041GR19D067-STP&HSIP**

**DESCRIPTION KY-22**

**WORK TYPE ASPHALT REHAB WITH BRIDGE (S)**

**PRIMARY COMPLETION DATE 11/30/2020**

**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.

**PLANS AVAILABLE FOR THIS PROJECT.**

**DBE CERTIFICATION REQUIRED - 5%**

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

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**PART I**  
**SCOPE OF WORK**

ADMINISTRATIVE DISTRICT - 06

CONTRACT ID - 195152

041GR19D067-STP&HSIP

COUNTY - GRANT

PCN - 0604100221901

HSIP 5140 (041)

TAFT HIGHWAY (KY 22) (MP 5.758) FROM KY 36 EXTENDING EAST TO 0.108 MILE EAST OF NEW DEL DRIVE (MP 10.630), A DISTANCE OF 04.87 MILES.ASPHALT PAVEMENT & ROADWAY REHAB SYP NO. 06-09019.00.  
GEOGRAPHIC COORDINATES LATITUDE 38:39:52.00 LONGITUDE -84:38:31.00

PCN - BR04100221985

STP BRZ 9030 (033)

KY 22 (MP 3.489) ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER RATTLESNAKE CREEK (041B00013N) (MP 3.528), A DISTANCE OF 0.04 MILES.BRIDGE REPLACEMENT SYP NO. 06-10002.10.  
GEOGRAPHIC COORDINATES LATITUDE 38:37:45.00 LONGITUDE 84:42:30.00

PCN - BR04100221986

STP BRZ 9030 (031)

KY 22 (MP 3.371) ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER EAGLE CREEK (041B00014N) (MP 3.431), A DISTANCE OF 0.06 MILES.BRIDGE REPLACEMENT SYP NO. 06-10002.00.  
GEOGRAPHIC COORDINATES LATITUDE 38:37:41.00 LONGITUDE 84:42:34.00

PCN - BR04100221987

STP BRZ 9030 (032)

KY 22 (MP 6.594) ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER CLARKS CRK + BATON ROUGE R. (041B00011N), FROM MP 6.594 TO MP 6.64 (MP 6.64), A DISTANCE OF 0.05 MILES.BRIDGE REPLACEMENT SYP NO. 06-10010.00.  
GEOGRAPHIC COORDINATES LATITUDE 38:39:31.00 LONGITUDE 84:40:19.00

COMPLETION DATE(S):

COMPLETED BY 11/30/2020	APPLIES TO ENTIRE CONTRACT
COMPLETED BY 05/30/2020	INTERMEDIATE MILESTONE - BRIDGE 041B00011N COMPLETED

## **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](http://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](mailto: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](http://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  
6<sup>th</sup> 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](mailto: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.

### **EXPEDITE PROJECT WORK ORDER**

The Contractor may request that the Department expedite the work order for this project to allow for maximization of time to complete the work. In order for the Department to accomplish this task, the Contractor may be required to “hand carry” all required project documentation to facilitate the process. Immediately UPON NOTIFICATION OF AWARD OF THE CONTRACT, deliver required project documentation to:

Division of Construction Procurement  
200 Mero St.  
Frankfort, KY 40602

### **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.

### **INCIDENTAL SURFACING**

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

### **FUEL AND ASPHALT PAY ADJUSTMENT**

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

### **OPTION A**

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

### **OPTION B**

Be advised that the Department will control and accept compaction of asphalt mixtures furnished on the Bridging KY projects that are part of this Proposal under OPTION B in accordance with Sections 402 and 403.

## **SPECIAL NOTE FOR TRAFFIC CONTROL ON BRIDGE REPAIR CONTRACTS**

041B00011N	Grant County	6-10010.00
041B00013N	Grant County	6-10002.10
041B00014N	Grant County	6-10002.00

### **I. TRAFFIC CONTROL GENERAL**

Except as provided herein, traffic shall be maintained in accordance with the current standard specifications, section 112. The contractor will be responsible for developing and implementing the maintenance of traffic details with guidance through standard drawings and the MUTCD current editions. The developed traffic control plan must be approved by the Engineer prior to implementation. The contractor is expected to provide at a minimum the items listed in this note, however this note does not relieve the contractor of other items that may be necessary to comply with current standards. 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 new condition, at the beginning of the work and maintained in like new condition until completion of the work.

The contractor must notify the engineer and public information officer at least 14 calendar days prior to the beginning work. Please see the Special Note for Liquidated Damages for additional information.

### **II. TRAFFIC COORDINATOR**

Furnish a traffic coordinator as per section 112. The traffic coordinator shall inspect the project maintenance of traffic, at least three times daily, or as directed by the engineer, during the contractor's operations and at any time a bi-directional lane closure or road closure is in place. The personnel shall have access on the project to a radio or telephone to be used in case of emergencies or accidents. The traffic coordinator shall report all incidents throughout the work zone to the engineer on the project. The contractor shall furnish the name and telephone number where the traffic coordinator can be contacted at all times.

### **III. SIGNS**

The contractor is responsible for all signage during construction. The contractor shall adhere to the standard drawings and manual on uniform traffic control devices (MUTCD) for guidance. If, at any time, the engineer requests a change in the maintenance of traffic signage, the contractor shall implement the change within 8 hours. Failure to implement these changes within the required eight hours will result in liquidated damages of \$5,000 per day.



The contractor shall provide all detour signing needed for the bridge closure, if allowed in the contract documents. All signing required will be incidental to the lump sum bid item “Maintain and Control Traffic”.

The department will not measure installation, maintenance, or removal for payment of any detour signage or standard construction signage, and will consider these incidental to “Maintain and Control Traffic”

Closure signs, detour signs, and bi-directional lane closure signs should be placed no sooner than two weeks prior to the closing of the bridge (when applicable) or placing lane closures.

Wayfinding detour signs should be placed a maximum of 2 miles apart unless specified by the engineer. Signs shall be covered or removed within 24 hours of opening the bridge to traffic.

Road closed signs (when applicable) should be double signed and placed a minimum of 1500’, 1000’, and 500’ in advance of the closure, in addition to signage required by the MUTCD and standard drawings.

#### **IV. TEMPORARY PAVEMENT STRIPING**

For projects where road closures are allowed in the contract documents, it is not anticipated that temporary pavement striping will be needed since the bridge will be closed. However, if the contractor’s means and methods allows for need for temporary striping, conflicting pavement marking will be covered with 6” black removable tape. However, for bi-directional lane closures or if the plans call for a diversion, temporary striping will be required per the plans and MUTCD. Contrary to the standard specifications, no direct payment will be made for any temporary striping, pavement striping removal, or any other temporary striping item. If temporary striping is used, the contractor shall replace any temporary striping that becomes damaged or fails to adhere to the pavement before dark on the day of the notification. Liquidated damages shall be assessed to the contractor at a rate of \$500 per day for failing to replace temporary striping within this time limit.

#### **V. PROJECT PHASING & CONSTRUCTION PROCEDURES**

Project phasing shall be as directed by the plans, special notes, and the approved Traffic Control Plan prepared by the contractor. Maintain traffic over the bridge as long as possible. Once work on the structure begins that impacts traffic, ensure work progresses to minimize the effected time to the public. All materials that must be made specific for the project should be ordered and made prior to closure of the bridge or implementation of bi-directional lane closures so that delivery does not delay progress of the work, unless approved by the Engineer. If the bridge is reopened prior to safety devices being in place, an approved protective barrier wall shall be placed in accordance to the standard drawings. Contrary to standard specifications, no direct payment would be made for the barrier wall and will be considered incidental to “Maintain and Control Traffic”.

For projects which require an on-site diversion to be constructed to maintain traffic, the traffic control plan and project schedule prepared by the contractor shall include provisions such that traffic is not switched to the diversion until all materials that must be made specific for the project are ordered and made so that use of the diversion is minimized, unless approved by the Engineer.

## **VI. PAVEMENT DROP-OFF**

Less than two inches - no protection required. Warning signs should be placed in advance and throughout the drop-off area.

Two to four inches - plastic drums, vertical panels or barricades every 100 feet on tangent sections for speeds of 50 mph or greater. Cones may be used in place of plastic drums, panels and barricades during daylight hours. For tangent sections with speeds less than 50 mph and curves devices should be placed every 50 feet. Spacing of devices on tapered sections should be in accordance with the manual on uniform traffic control devices, current edition.

Greater than four inches - positive separation or wedge with 3:1 or flatter slope needed. If there is five feet or more distance between the edge of the pavement and the drop-off, then drums, panel, or barricades may be used. If the drop-off is greater than 12 inches, positive separation is strongly encouraged. If concrete barriers are used, special reflective devices or steady burn lights should be used for overnight installations.

For temporary conditions, drop-offs greater than four inches may be protected with plastic drums, vertical panels or barricades for short distances during daylight hours while work is being done in the drop-off area.

## **VII. VARIABLE MESSAGE SIGNS AND TEMPORARY TRAFFIC SIGNALS**

At the direction of the Engineer, the contractor is expected to provide up to four (4) message boards for use at locations determined by the Engineer. These message boards are expected to be in place one week prior to the closure of the roadway and remain in place for the duration of the closure. The message boards will be paid for as per the standard specifications.

For projects that involve the use of lane closures, all lane closures shall be bi-directional. The contractor shall provide temporary traffic signals and all labor, materials, and incidentals needed to maintain bi-directional traffic for the project. For short term bi-directional lane closures, the use of flaggers in lieu of temporary traffic signals may be acceptable if approved by the Engineer.

## **VIII. BARRICADES**

For projects which allow full closure, ensure a minimum of (4) type III barricades are used at each end of the bridge for a total of (8) type III barricades. Contrary to the standard

specifications, no direct payment will be made for barricades but they will be included in the lump sum price for “Maintain and Control Traffic”.

## **VIII. DETOUR AND ON SITE DIVERSIONS**

For projects which allow a full closure of the bridge, or if necessary to detour trucks, the traffic control plan proposed by the contractor shall include a signed detour route for the road closure. The traffic control plan along with the proposed detour plan will be delivered to the engineer 7 days prior to the pre-construction meeting. The proposed detour route shall meet the following requirements:

- 1) Detour routes must remain at minimum on the same classification of roadway (i.e. AA, AAA, state, county, etc.) Unless written approval is obtained through the owner of the facility.
- 2) The contractor must coordinate with other projects along the detour route in order to avoid ongoing construction projects along those routes.
- 3) It may be determined that two detour routes would be needed if the first selected route cannot accommodate truck traffic. If this occurs, the contractor is expected to sign both detours per the standard drawings and MUTCD. Additional clarification signage between the detours may be needed at points where they diverge.
- 4) For projects that involve the use of bi-directional lane closures and the temporary lane width per the plans or as proposed by the contractor is less than 10 feet, the contractor shall be required to provide a signed detour for oversized vehicles.

The traffic control plan must be submitted and approved to allow for coordination of the public information officer with the closure notification. The public must be notified of the proposed detour route when they are notified of the closure, 2 weeks before closure. All time and expenses necessary for the development of the detour plan(s) will be incidental to the lump sum bid item “Maintain and Control Traffic”.

For projects with an on-site diversion included in the construction, the preparation of traffic control plans for a detour and implementation of a detour will not be required, unless specified in the plans.

## **IX. PAYMENT**

Unless listed as a bid item in the contract documents, payment will only be made for the following items:

1. Portable Changeable Message Boards - Each
2. Maintain and Control Traffic - Lump Sum

All other items needed to maintain traffic in accordance with these contract documents and the approved traffic control plan shall be considered incidental to Maintain and Control Traffic.

These items include but are not limited to traffic signals, signs, barrier wall, crash cushions, temporary guardrail, temporary and permanent pavement striping, cones, barrels, flaggers, etc.

**SPECIAL NOTE FOR PLACING BRIDGE OVERLAY APPROACH PAVEMENT**

041B00011N	Grant County	6-10010.00
041B00013N	Grant County	6-10002.10
041B00014N	Grant County	6-10002.00

**I. DESCRIPTION**

Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway’s current Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, this Note, and the Contract Documents. Section references are to the Standard Specifications.

This work consists of the following:

- 1. Furnish all labor, materials, tools, and equipment.
- 2. Removal of existing abutment backfill, if needed.
- 3. Structural Granular Backfill, as needed.
- 4. Mill the existing pavement.
- 5. Place new DGA, asphalt base, and asphalt surface
- 6. Repair the roadway shoulders, if needed.
- 7. Provide Pavement Markings if needed.
- 8. Any other work specified as part of this contract.

**II. MATERIALS**

- A. Structural Granular Backfill.** See Section 8.05.11
- B. DGA.** See Section 302.
- C. Tack Coat.** This material shall be in accordance with the Standard Specifications.
- D. CL2 ASPH BASE 1.0D PG 64-22.** See Standard Specifications
- E. ASPHALT LEVEL AND WEDGE.** See Standard Specifications
- F. CL2 ASPH SURF 0.38D PG 64-22.** This material shall be in accordance with the Standard Specifications.
- G. GRANULAR EMBANKMENT.** This material shall be in accordance with the Standard Specifications.
- H. Pavement Striping.** See Section 713.

**III. CONSTRUCTION – DECK, SUPERSTRUCTURE, AND FULL BRIDGE REPLACEMENTS**

- A. Foundation Preparation.** For projects involving the removal and replacement of the asphalt and backfill behind the existing abutments and new abutments or end bents, the required excavation, Type IV geotextile fabric, 4” perforated pipe, and new backfill as shown in Figure 1 as well as any excavation and grading needed to shape the bridge approaches to match the existing roadway template, will be paid for by the bid item for Foundation Preparation. See Special Provision 69 and the Standard Drawings regarding additional construction details as required.

Backfill material used behind newly constructed abutments on county routes may be constructed with Type III soil backfill. All existing abutments, abutments on state routes, and newly constructed or existing bents must be backfilled with material meeting Structural Granular Backfill specifications.

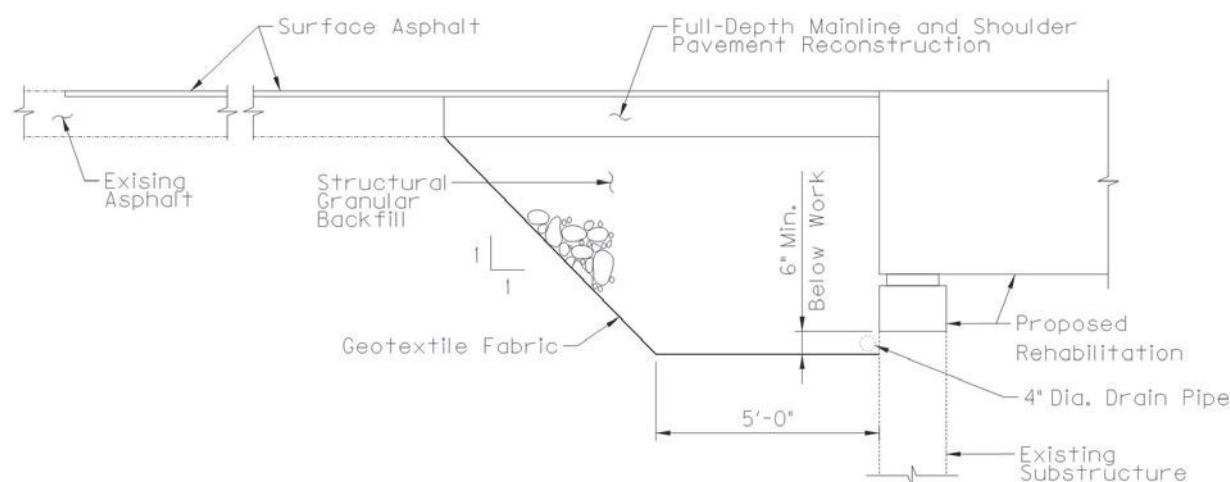


Figure 1: Detail showing proposed work for deck and superstructure replacements

- B. Remove Existing Asphalt Surface.** Remove the existing pavement material beyond the limits of full depth asphalt replacement to provide for a minimum of 1¼" new pavement surface from the bridge end extending approximately 25 feet, or as shown in the plans, into the approach pavement and across the width of the approach pavement. The Engineer shall determine the actual length and width of the milling depending on site conditions at each bridge approach. Mill the existing surface so that the new asphalt surface will match the elevation of the end of the full depth asphalt replacement and the bridge end. The Engineer shall approve the Contractor's plan for restoring the approach grade prior to the removal of the existing surface. Dispose of all removed material entirely away from the job site or as directed by the Engineer.
- C. Produce and Place New Asphalt Base.** Replace any full depth mainline and shoulder pavement removed as part of bridge backwall construction, superstructure replacement, or other work (if included in the Contract Documents) with a minimum of 8 inches of DGA, placed in two lifts of 4 inches each compacted and 8 inches of CL2 ASPH BASE 1.0D PG 64-22, placed in two lifts of 4 inches each compacted. Final elevation of the Asphalt Base at the approaches to match the width and new elevation of the riding surface on the bridge less the New Asphalt Surface to be placed. Shoulders shall receive identical treatment to the mainline pavement.
- D. Produce and Place New Asphalt Surface.** Apply an asphalt tack coat in accordance with Section 406. Produce and place the new 1 ¼" Asphalt Surface in accordance with Section 403 and compact under Option B. The new asphalt surface mixture required for this project shall be "CL2 ASPH SURF 0.38D PG 64-22". Place the new asphalt surface to smoothly connect the existing roadway grade at the end of the project, and/or the new abutment backwall.
- E. Granular Embankment for Guardrails.** When necessary to ensure compliance with standards, widen shoulders behind guardrail with granular embankment and cap with

DGA in accordance with plans or as directed by the Engineer. Remove existing topsoil as needed and place embankment in a manner to ensure proper compaction.

- F. Pavement Markings.** Pavement striping will be required to match the existing pavement striping on both approaches and the structure. Pavement striping shall be in accordance with applicable sections of the Standard Specifications and shall be incidental to the work. Raised pavement markers within the limits of the "Bridge Overlay Approach Pavement" shall be removed prior to the milling operation. The marker castings shall be cleaned and returned to the Engineer.

#### **IV. CONSTRUCTION – OVERLAY PROJECTS**

- A. Remove Existing Materials.** Remove the existing pavement material to provide for a minimum of 1¼" new pavement surface from the bridge end extending approximately 25 feet, or as shown in the plans, into the approach pavement and across the width of the approach pavement. The Engineer shall determine the actual length and width of the milling depending on site conditions at each bridge approach. Mill the existing surface so that the new asphalt surface will tie into the new armored edge, if applicable, and matches the elevation of the bridge end. The Engineer shall approve the Contractor's plan for restoring the approach grade prior to the removal of the existing surface. Dispose of all removed material entirely away from the job site or as directed by the Engineer.
- B. Mainline and Shoulder Reconstruction.** Replace shoulders in kind at the approaches to match the width and new elevation of the riding surface on the bridge. Shoulders shall receive identical treatment to the mainline pavement.
- C. Produce and Place New Asphalt Surface.** Apply an asphalt tack coat in accordance with Section 406. Produce and place the new 1¼" Asphalt Surface in accordance with Section 403 and compact under Option B. The new asphalt surface mixture required for this project shall be "CL2 ASPH SURF 0.38D PG 64-22". Place the new asphalt surface to smoothly connect the existing roadway grade at the end of the project and the bridge end.

For bridge decks specified to receive a new asphalt overlay as part of the work, place asphalt level and wedge and CL2 ASPH SURF 0.38D PG 64-22 as detailed in the plans to smoothly connect to the bridge approaches. If plans call for use of a waterproof membrane, this shall be addressed as a separate bid item.

- D. Granular Embankment for Guardrails.** When necessary to ensure compliance with standards, widen shoulders behind guardrail with granular embankment and cap with DGA in accordance with the plans or as directed by the Engineer. Remove existing topsoil as needed and place embankment in a manner to ensure proper compaction.
- E. Pavement Markings.** Pavement striping will be required to match the existing pavement striping on both approaches and the structure. Pavement striping shall be in accordance with applicable sections of the Standard Specifications and shall be incidental to the work. Raised pavement markers within the limits of the "Bridge



Overlay Approach Pavement” shall be removed prior to the milling operation. The marker castings shall be cleaned and returned to the Engineer.

## **V. MEASUREMENT**

- A. Granular Embankment: The Department will measure the quantity in cubic yards. The Department will measure along the centerline to determine a linear foot of placement multiplied by a theoretical cross section of 12 square feet to achieve the quantity per side of the roadway.
- B. Bridge Overlay Approach Pavement: The Department will measure the quantity of in square yards. The Department will measure along the centerline from each end of the limits of the work as detailed on the plans to the point where the new pavement ties into the exiting pavement and across the width of the new pavement perpendicular to the centerline of the roadway.
- C. Foundation Preparation: See Section 603.

## **VI. PAYMENT**

- A. Granular Embankment: Payment at the contract unit price per cubic yard of granular embankment is full compensation for granular embankment and DGA used for widening the shoulder for guardrail as directed. Variance of actual cross sectional quantities versus theoretical quantities will not be considered for additional payment.
- B. Bridge Overlay Approach Pavement: Payment at the contract unit price per square yard of is full compensation for removing existing pavement markers, mobilization of milling equipment, removing specified existing pavement material, reconstruct shoulders as needed, furnishing and installing the asphalt tack coat, producing and placing the new asphalt and DGA, and all incidental items necessary to complete the work within the specified pay limits as specified by this note and as shown in the Contract Documents.
- C. Foundation Preparation: See Section 603. Payment for Structural Granular Backfill or Type III soil backfill to be incidental to Foundation Preparation.

<i><b>Code</b></i>	<i><b>Pay Item</b></i>	<i><b>Pay Unit</b></i>
02223	Granular Embankment	Cubic Yards
03304	Bridge Overlay Approach Pavement	Square Yards
08803	Foundation Preparation	Lump Sum

The Department will consider payment as full compensation for all work required.



SPECIAL NOTE FOR SEALING BRIDGE DECKS

041B00011N	Grant County	6-10010.00
041B00013N	Grant County	6-10002.10
041B00014N	Grant County	6-10002.00

These Notes or designated portions thereof, apply where so indicated on the plans, proposals or bidding instruction.

- I. **DESCRIPTION.** Perform all work in accordance with the Department's current Standard Specifications, and applicable Supplemental Specifications, the attached sketches, and these Notes. Section references are to the Standard Specifications. This work consists of: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

II. **MATERIALS.**

A. **Sealer.** Use one of the following:

Product	Supplier
Protectosil BHN	Evonik Industries
Protectosil 300	Evonik Industries
TK-590-40 Tri-Silane 40%	TK Products
Certivex Penseal 244 O/W 80	Vexcon
SW-244-100 DOT	Chemical Products Industries, Inc.
TK-590-1 MS Tri-Silane	TK Products

III. **CONSTRUCTION.**

- A. **Cleaning the Deck.** Dry clean the deck to remove all loose debris. Remove all visible hydrocarbons from the surface with detergent approved by the manufacturer of the deck sealant. Pressure wash all surfaces to be sealed at 2000 to 3000 psi. Install pressure gauges at each wand to verify pressure. Use 30° fan tip or as recommended by the manufacturer of the deck sealant. Hold pressure washing wand a minimum of 45° from the deck with a maximum stand-off distance of 12 inches.
- B. **Sealing the Deck.** Allow new concrete to cure a minimum 28 days prior to application of sealer. Monitor weather conditions prior to sealer application. Refer to manufacturer’s recommendations for proper ambient conditions. Do not apply sealer if precipitation is anticipated within the time stated by the manufacturer. Allow the deck to dry 24 hours (after washing or rain event) before sealer application. The deck can be reopened to traffic while drying. Sealer must be applied within 48 hours of washing or the deck must be rewashed. Divide the deck into predefined areas of specific square footage to aid in determining usage. Comply with manufacturer’s usage recommendation. Using a low

pressure pump, apply sealer and spread evenly with broom or squeegee; do not allow pooling to remain. When each predefined area is complete, measure the amount of sealer used to verify proper usage. After sealing, follow manufacturer's recommended cure time before opening to traffic.

**C. Inspection:** Monitor all aspects of the project to assure compliance to this specification. Observe and document general conditions during the entirety of the project. Verify that each phase of work has been satisfactorily completed prior to beginning the next phase. Phases are described as follows:

1. Dry cleaning to remove loose debris, verify and document:
  - a. All debris has been removed and disposed of properly.
2. Removal of hydrocarbons, verify and document:
  - a. The manufacturer's recommended detergent is used for removal.
  - b. Hydrocarbons have been satisfactorily removed.
3. Pressure washing, verify and document:
  - a. Washing pressure at the wand.
  - b. Tip size used.
  - c. Wash angle and stand-off distance.
  - d. The deck is satisfactorily cleaned.
4. Sealer application, verify and document:
  - a. Proper cure time for new concrete.
  - b. Deck surface is dry.
    1. Document time since washed.
    2. Was deck opened to traffic after washing?
  - c. Ambient conditions.
    1. Document ambient temperature, surface temperature, relative humidity, and dew point.
  - d. Application and distribution method.
  - e. Coverage to be complete and even.
  - f. Material is not allowed to remain pooled.
  - g. Monitor material usage.
  - h. No traffic until proper cure time is allowed.

#### **IV. MEASUREMENT**

- A. Concrete Sealing.** The Department will measure the quantity per square feet of each area sealed.

#### **V. PAYMENT**

- A. Concrete Sealing.** Payment at the contract unit price per square feet is full compensation for the following: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

## ***SPECIAL NOTE***

**For Avoiding Impacts to Gray Bats (*Myotis Grisescens*)**

**Grant County**

**Item No. 6-10010  
Bridge No. 041B00011N**

DUE TO THE PRESENCE OF ENDANGERED BATS ROOSTING UNDER THE  
BRIDGE, A BIOLOGIST SHALL CONDUCT ON-SITE REVIEW OF BRIDGE PRIOR  
TO DEMOLITION.

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

## Special Note for Concrete Sealing

041B00011N	Grant County	6-10010.00
041B00013N	Grant County	6-10002.10
041B00014N	Grant County	6-10002.00

These Notes or designated portions thereof, apply where so indicated on the plans, proposals or bidding instruction.

- I. DESCRIPTION.** Perform all work in accordance with the Department's current Standard Specifications, and applicable Supplemental Specifications, the attached sketches, and these Notes. Section references are to the Standard Specifications.

This work consists of:

1. Furnish all labor, materials, tools, equipment, and incidental items necessary to complete the work.
2. Provide safe access to the bridge, in accordance with Section 107.01.01, for the Engineer to sound possible repair areas and for workers to complete the construction.
3. Repair cracks as applicable in accordance with the Special Note for Epoxy Injection Crack Repair.
4. Repair delaminated or spalled areas as applicable in accordance with the Special Note for Concrete Patching.
5. Apply Ordinary Surface Finish
6. Prepare the surfaces to receive sealing.
7. Apply concrete sealing.
8. Any other work as specified as part of this contract.

**II. MATERIALS.**

- A. Sealer.** Use one of the following:

Product	Supplier
Protectosil BHN	Evonik Industries
Protectosil 300	Evonik Industries
TK-590-40 Tri-Silane 40%	TK Products
Certivex Penseal 244 O/W 80	Vexcon
SW-244-100 DOT	Chemical Products Industries, Inc.
TK-590-1 MS Tri-Silane	TK Products

**III. CONSTRUCTION.**

- A. Perform Concrete Repairs.** Repair concrete surface in accordance with the Special Note for Epoxy Injection Crack Repair and/or the Special Note for Concrete Patching Repair if included in the contract documents.

- B. Apply Ordinary Surface Finish.** In addition to new concrete, areas receiving epoxy injection, concrete patching, and other surface imperfections, including areas of minor cracking, should receive Ordinary Surface Finish in accordance with Section 601.03.18 of the Standard Specifications. Use mortar of the same cement and fine aggregate as the concrete patching, or as directed by the Engineer. Payment will be incidental to Concrete Sealing. Finish surface of bridge decks in accordance with Section 609 of the Standard Specifications.
- C. Areas to Receive Concrete Sealing:**
1. Every exposed surface above a point 6" below ground or fill line of abutments, wing walls, end bent and pier caps, pedestals, back walls, columns, and exposed footings.
  2. All exposed surfaces of concrete deck, barrier walls, parapets, curbs, and plinths.
  3. Prestressed Concrete I-Girders, Concrete Beams, and Spread Prestressed Concrete Box Beams: The underneath surfaces of slab overhangs outside of exterior concrete girders and to the exterior side and bottom of exterior concrete girders and beams.
  4. Adjacent Prestressed Concrete Composite Box Beams: Full length of the exterior face of all exterior beams from the top of the box beam to 1'-0" underneath the beams.
  5. Prestressed Non-Composite Box Beams: All faces of all beams, including surfaces to be covered with a waterproofing membrane, except take care to ensure that the grout pockets are not sealed.
  6. If the contract documents include the Special Note for Concrete Coating, do not apply concrete sealer to the areas where Concrete Coating is specified.
- D. Cleaning the Concrete Surfaces to be sealed.** Dry clean the concrete to remove all loose debris. Remove all visible hydrocarbons from the surface with detergent approved by the manufacturer of the deck sealant. Pressure wash all surfaces to be sealed at 2000 to 3000 psi. Install pressure gauges at each wand to verify pressure. Use 30° fan tip or as recommended by the manufacturer of the sealant. Hold pressure washing wand a minimum of 45° from the surfaces with a maximum stand-off distance of 12 inches.
- E. Sealing the Concrete.** Allow new concrete to cure a minimum 28 days prior to application of sealer. Monitor weather conditions prior to sealer application. Refer to manufacturer's recommendations for proper ambient conditions. Do not apply sealer if precipitation is anticipated within the time stated by the manufacturer. Allow the concrete to dry 24 hours (after washing or rain event) before sealer application. The bridge deck can be reopened to traffic while drying. Sealer must be applied within 48 hours of washing or the concrete must be rewashed. Divide the concrete into predefined areas of specific square footage to aid in determining usage. Comply with manufacturer's usage recommendation. Using a low-pressure pump, apply sealer and spread evenly with broom or squeegee; do not allow pooling to remain. When each predefined area is complete, measure the amount of sealer used to verify proper usage. After sealing,

follow manufacturer's recommended cure time before opening to traffic.

**F. Inspection:** Monitor all aspects of the project to assure compliance to this specification. Observe and document general conditions during the entirety of the project. Verify that each phase of work has been satisfactorily completed prior to beginning the next phase. Phases are described as follows:

1. Dry cleaning to remove loose debris, verify and document:
  - a. All debris has been removed and disposed of properly.
2. Removal of hydrocarbons, verify and document:
  - a. The manufacturer's recommended detergent is used for removal.
  - b. Hydrocarbons have been satisfactorily removed.
3. Pressure washing, verify and document:
  - a. Washing pressure at the wand.
  - b. Tip size used.
  - c. Wash angle and stand-off distance.
  - d. The concrete is satisfactorily cleaned.
4. Sealer application, verify and document:
  - a. Proper cure time for new concrete.
  - b. Concrete surface is dry.
  - c. Document time since washed.
  - d. Was the bridge deck opened to traffic after washing?
  - e. Document ambient temperature, surface temperature, relative humidity, and dew point.
  - f. Application and distribution method.
  - g. Coverage to be complete and even.
  - h. Material is not allowed to remain pooled.
  - i. Monitor material usage.
  - j. No traffic on the bridge decks until proper cure time is allowed.

#### **IV. MEASUREMENT**

**A. Concrete Sealing.** The Department will measure the quantity per square feet of each area sealed.

#### **V. PAYMENT**

**A. Concrete Sealing.** Payment at the contract unit price per square feet is full compensation for the following: (1) Furnish all labor, materials, tools, and equipment; (2) Cleaning; (3) Sealing; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

## SPECIAL NOTE FOR EROSION PREVENTION AND SEDIMENT CONTROL

041B00011N	Grant County	6-10010.00
041B00013N	Grant County	6-10002.10
041B00014N	Grant County	6-10002.00

When the total disturbed area for a project, including laydown and waste/borrow areas, is greater than 1 acre, the Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW). The contractor will be responsible for following the KPDES requirements of local Municipal Separate Storm Sewer System (MS4) programs with jurisdiction. Required NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference. For grouped contracts with more than one structure, each structure will be treated independently in regards to disturbed area unless another structure is within 0.25 miles of the structure. For structures within 0.25 miles of each other, the total disturbed area will be the sum of the combined disturbed areas. The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 Program that has jurisdiction. The NOT shall be filed after the Engineer agrees the project is stabilized or the project has been formally accepted.

The Contractor shall perform all temporary erosion/sediment control functions including: providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009 or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC current Department of Highways, Standard Specifications for Road and Bridge Construction.

Regardless of the size of disturbed area, the contractor shall provide a BMP Plan to the KYTC Engineer and place erosion control devices as identified in the site-specific BMP Plan prior to beginning work. Should the contractor fail to create a BMP Plan or provide and maintain the necessary erosion control, Liquidated Damages will apply at the rate specified in the contract. If no rate is specified, Liquidated Damages will be applied at the rate specified in Section 108 of the Standard Specifications. The Contractor shall perform all final seeding and protection, in accordance with the plans and Section 212 of the KYTC current Department of Highways, Standard Specifications for Road and Bridge Construction.

Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC current Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit. If corrections are not made within the 5 days specified, liquidated damages will apply at the rate specified in the Liquidated Damages note in the contract.

Contrary to Section 212.05 and 213.05, unless listed in the proposal, bid items for temporary BMPs and items for permanent erosion control will not be measured for payment and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.

The contractor shall be responsible for applying "good engineering practices". The contractor may use any temporary BMPs and permanent BMPs that fall within the guidance of the current Standard Specifications, KYTC's Best Management Practices manual, and with the approval of the KYTC Engineer.

The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control. The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.



## SPECIAL NOTE

### For Additional Environmental Commitments

IN ADDITION TO OTHER ENVIRONMENTAL COMMITMENTS LISTED IN THIS CONTRACT, THE FOLLOWING COMMITMENTS ALSO APPLY, AS THIS IS A FEDERALLY FUNDED UNDERTAKING AS DEFINED IN SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT, [36 CFR 800.16\(Z\)](#):

- 1) The KYTC has completed a Phase 1 archaeological survey for a site-specific area surrounding the bridge. The cleared area is shown as “Archaeologically Cleared Area” or “Environmentally Cleared Area” on the concept plans and/or the map attached to this note. Likewise, any areas that must be avoided have been labeled “Do Not Disturb.”

If the Contractor deems it necessary to use additional areas outside the SHPO-cleared area for any purposes—e.g., laydown yards, vehicle parking, parking cranes, delivering beams, borrow areas, waste areas, etc.—the Contractor must first get a written agreement with the landowner (assuming it is outside the right-of-way). Then the Contractor shall seek approval of the use of the site—whether within or outside the right-of-way—by both the KYTC Section Supervisor and the Bridging Kentucky Environmental Lead at [BKY\\_Env@docs.e-builder.net](mailto:BKY_Env@docs.e-builder.net). The Contractor shall provide a map of the area(s) to be used, including access points, and property-owner agreements. The BKY Environmental Team will complete initial field investigations for archaeological, historical, ecological, and other environmental clearances. If any potentially significant site or resources are found, the KYTC has the right to deny the use of the proposed site. The maps and property owner agreements are to be submitted at least ten (10) business days prior to the Preconstruction Conference, or sixty (60) days prior to the Contractors access to the site, for coordination and review by the KYTC District and Bridging Kentucky Team.

A Liquidated Damage of \$50,000 will be assessed whenever the Contractor has used any restricted areas. The fee will be assessed on a *per bridge* basis, whether the contract involves bridge bundles or a single bridge. In addition, all fines, fees, penalties, remediation costs, and other damages related to breaches of Threatened and Endangered Species Act Section 7, National Historic Preservation Act Section 106, Clean Water Act Sections 401 and 404, Kentucky General Permit for Stormwater Discharges KYR10, Environmental Protection Agency requirements, State Historic Preservation Office requirements, and other related permitting agencies will be paid by the Contractor, including all associated costs and burdens placed upon the Kentucky Transportation Cabinet.

- 2) In the event that human remains are encountered during project activities, all work should be immediately stopped in the area. The area should be cordoned off, and, in accordance with KRS 72.020, the county coroner and local law enforcement must be contacted immediately. Upon confirmation that the human remains are not of forensic interest, the unanticipated discovery must be reported to Nicolas Laracuente at the Kentucky Heritage Council at (502) 892-3614, George Crothers at the Office of State Archaeology at (859) 257-1944, and KYTC DEA archaeologists at (502) 564-7250.



For guidance regarding inadvertent discovery and treatment of human remains, refer to the KYTC's [\*Right of Way Guidance Manual\*](#) (Section ROW-1202), and the Advisory Council on Historic Preservation's (ACHP) [\*Policy Statement Regarding Treatment of Human Remains and Grave Goods\*](#) (adopted by ACHP February 23, 2007).

- 3) If, during the implementation of The Project, a previously unidentified historic/ archaeological property is discovered or a previously identified historic/archaeological property is affected in an unanticipated manner, the contractor shall (1) call KYTC DEA archaeologists at (502) 564-7250, (2) call SHPO archaeologists at (502) 892-3614, and (3) ensure that all work within a reasonable area of the discovery shall cease until such time as a treatment plan can be developed and implemented.

041B00011N   Grant County   6-10010.00



Project APE.

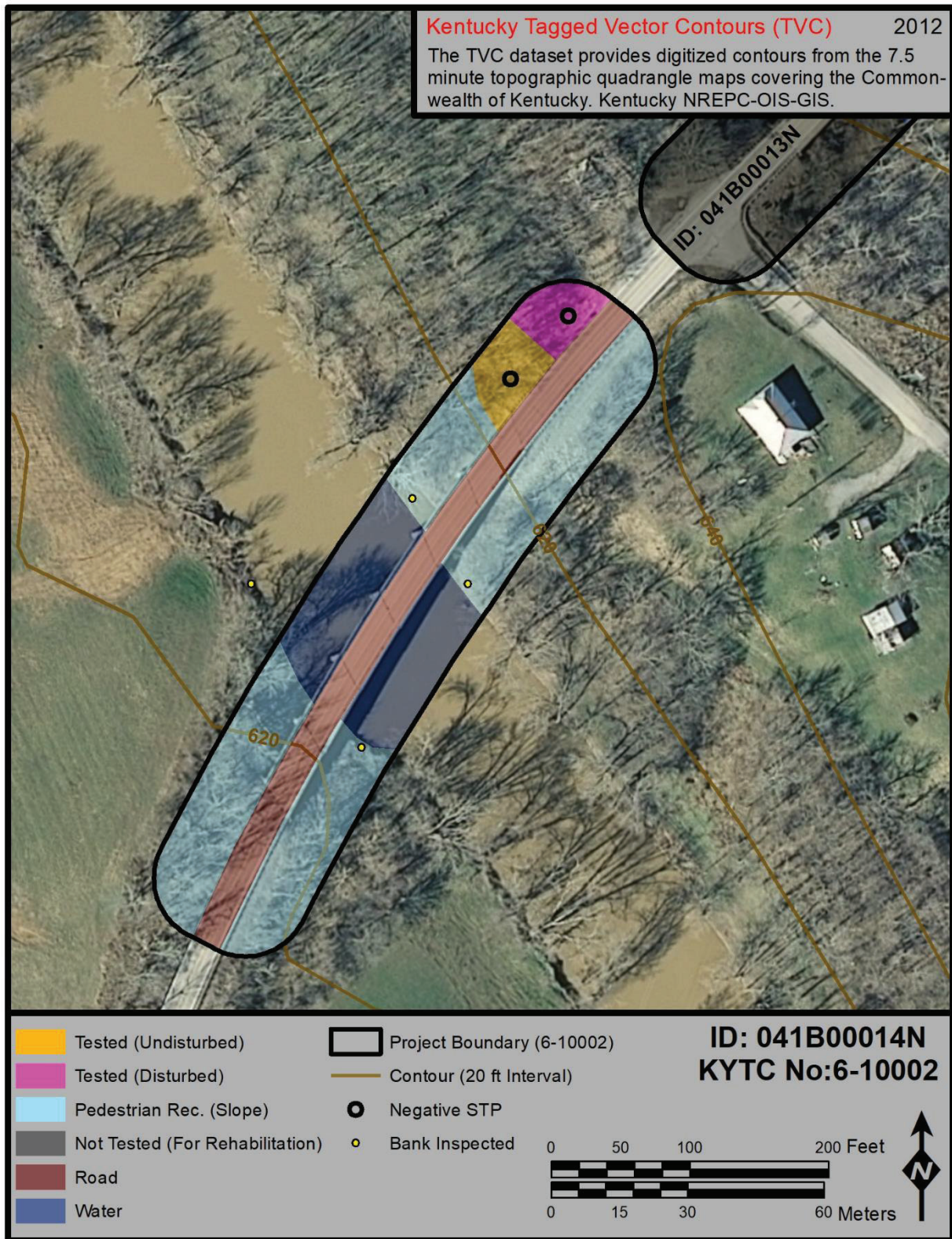
041B00013N    Grant County    6-10002.10



Project APE.



041B00014N Grant County 6-10002.00



**Figure 18. Bridge 041B00014N (Item No. 6-10002) showing project area conditions and excavated test locations on aerial map.**

KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N



## **Kentucky Transportation Cabinet**

**Highway District \_\_ (1)**

**And**

**\_\_\_\_\_ (2), Construction**

**Kentucky Pollutant Discharge Elimination System**

**Permit KYR10**

**Best Management Practices (BMP) plan**

**Groundwater protection plan**

**For Highway Construction Activities**

**For**

**[Project Description](1)**

**Project: CID ## - #####**

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

### Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District \_\_ (1)
2. Resident Engineer: (2)
3. Contractor name: (2)  
Address: (2)  
  
Phone number: (2)  
Contact: (2)  
Contractors agent responsible for compliance with the KPDES permit requirements (3):
4. Project Control Number (2)
5. Route (Address) (1)
6. Latitude/Longitude (project mid-point) dd/mm/ss, dd/mm/ss (1)
7. County (project mid-point) (1)
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

## 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 (1)
4. Estimate of total project area (acres) (1)
5. Estimate of area to be disturbed (acres) (1)
6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information.(1)
7. Data describing existing soil condition (1) & (2)
8. Data describing existing discharge water quality (if any) (1) & (2)
9. Receiving water name (1)
10. TMDLs and Pollutants of Concern in Receiving Waters: (1 DEA)
11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.
12. Potential sources of pollutants:

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 041B00011N, 041B00013N, & 041B00014N

## **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.



## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

- Clearing and Grubbing – The following BMP's will be considered and used where appropriate.
  - Leaving areas undisturbed when possible.
  - Silt basins to provide silt volume for large areas.
  - Silt Traps Type A for small areas.
  - Silt Traps Type C in front of existing and drop inlets which are to be saved
  - Diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
  - Brush and/or other barriers to slow and/or divert runoff.
  - Silt fences to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence may be considered.
  - Temporary Mulch for areas which are not feasible for the fore mentioned types of protections.
  - Non-standard or innovative methods.
- Cut & Fill and placement of drainage structures - The BMP Plan will be modified to show additional BMP's such as:
  - Silt Traps Type B in ditches and/or drainways as they are completed
  - Silt Traps Type C in front of pipes after they are placed
  - Channel Lining
  - Erosion Control Blanket
  - Temporary mulch and/or seeding for areas where construction activities will be ceased for 21 days or more.
  - Non-standard or innovative methods
- Profile and X-Section in place – The BMP Plan will be modified to show elimination of BMP's which had to be removed and the addition of new BMP's as the roadway was shaped. Probably changes include:
  - Silt Trap Type A, Brush and/or other barriers, Temporary Mulch, and any other BMP which had to be removed for final grading to take place.
  - Additional Silt Traps Type B and Type C to be placed as final drainage patterns are put in place.
  - Additional Channel Lining and/or Erosion Control Blanket.
  - Temporary Mulch for areas where Permanent Seeding and Protection cannot be done within 21 days.
  - Special BMP's such as Karst Policy
- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
  - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

- Permanent Seeding and Protection
  - Placing Sod
  - Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are : (1)

### C. Other Control Measures

1. No solid materials, including building materials, shall be discharged to waters of the commonwealth, except as authorized by a Section 404 permit.

2. Waste Materials

All waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) will be collected and stored in appropriate covered waste containers. Waste containers shall be removed from the project site on a sufficiently frequent basis as to not allow wastes to become a source of pollution. All personnel will be instructed regarding the correct procedure for waste disposal. Wastes will be disposed in accordance with appropriate regulations. Notices stating these practices will be posted in the office.

3. Hazardous Waste

All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the Section Engineer if there any hazardous wastes being generated at the project site and how these wastes are being managed. Site personnel will be instructed with regard to proper storage and handling of hazardous wastes when required. The Transportation Cabinet will file for generator, registration when appropriate, with the Division of Waste Management and advise the contractor regarding waste management requirements.

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 041B00011N, 041B00013N, & 041B00014N

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

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

This project (will / will not) (3) have over 1,320 gallons of petroleum products with a total capacity, sum of all containers 55 gallon capacity and larger.

### ➤ **Fertilizers:**

Fertilizers will be applied at rates prescribed by the contract, standard specifications or as directed by the resident engineer. Once applied, fertilizer will be covered with mulch or blankets or worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

### ➤ **Paints:**

All containers will be tightly sealed and stored indoors or under roof when not being used. Excess paint or paint wash water will not be discharged to the drainage or storm sewer system but will be properly disposed of according to manufacturers' instructions or state and local regulations.

### ➤ **Concrete Truck Washout:**

Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within 75 feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, excess concrete and wash water will be discharged to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, a shallow earthen wash basin will be excavated away from ditches to receive the wash water

### ➤ **Spill Control Practices**

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- 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.

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations.

### **D. Other State and Local Plans**

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. (1)

### **E. Maintenance**

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.
- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.
  - Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. (1)

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

### **F. Inspections**

Inspection and maintenance practices that will be used to maintain erosion and sediment controls:

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by individuals that have successfully completed the KEPSC-RI course as required by Section 213.02.02 of the Standard Specifications for Road and Bridge Construction, current edition.
- Inspection reports will be written, signed, dated, and kept on file.
- Areas at final grade will be seeded and mulched within 14 days.
- Areas that are not at final grade where construction has ceased for a period of 21 days or longer and soil stock piles shall receive temporary mulch no later than 14 days from the last construction activity in that area.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Sediment basins will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

### **G. Non – Storm Water discharges**

## KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

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).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

## H. Groundwater Protection Plan (3)

This plan serves as the groundwater protection plan as required by 401 KAR 5:037.

- Contractors statement: (3)

The following activities, as enumerated by 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan, will or may be may be conducted as part of this construction project:

\_\_\_\_\_ 2. (e) land treatment or land disposal of a pollutant;

\_\_\_\_\_ 2. (f) Storing, ..., or related handling of hazardous waste, solid waste or special waste, ..., in tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);

\_\_\_\_\_ 2. (g) .... Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;

\_\_\_\_\_ 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);



KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

\_\_\_\_\_ 2. (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

\_\_\_\_\_ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

The contractor is responsible for the preparation of a plan that addresses the

401 KAR 5:037 Section 3. (3) Elements of site specific groundwater protection plan:

- (a) General information about this project is covered in the Project information;
- (b) Activities that require a groundwater protection plan have been identified above;
- (c) Practices that will protect groundwater from pollution are addressed in section C. Other control measures.
- (d) Implementation schedule – all practices required to prevent pollution of groundwater are to be in place prior to conducting the activity;
- (e) Training is required as a part of the ground water protection plan. All employees of the contractor, sub-contractor and resident engineer personnel will be trained to understand the nature and requirements of this plan as they pertain to their job function(s). Training will be accomplished within one week of employment and annually thereafter. A record of training will be maintained by the contractor with a copy provide to the resident engineer.
- (f) Areas of the project and groundwater plan activities will be inspected as part of the weekly sediment and erosion control inspections
- (g) Certification (see signature page.)



## Revised 3/4/2016

KyTC BMP Plan for 041B00011N, 041B00013N, & 041B00014N

Sub-Contractor Certification

The following sub-contractor shall be made aware of the BMP plan and responsible for implementation of BMPs identified in this plan as follows:

Subcontractor

Name:  
Address:  
Address:  
  
Phone:

The part of BMP plan this subcontractor is responsible to implement is:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System permit that authorizes the storm water discharges, the BMP plan that has been developed to manage the quality of water to be discharged as a result of storm events associated with the construction site activity and management of non-storm water pollutant sources identified as part of this certification.

Signed \_\_\_\_\_title\_\_\_\_\_, \_\_\_\_\_  
Typed or printed name<sup>1</sup>signature

1. Sub Contractor Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

KYTC BMP Plan for HSIP Project: Item 6-9019



**Kentucky Transportation Cabinet**

**Highway District 06**

**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 22 in  
GRANT County**

**Project Item #: 6-9019.00**

## KYTC BMP Plan for HSIP Project: Item 6-9019

### Project information

Note – (1) = Design (2) = Construction (3) = Contractor

1. Owner – Kentucky Transportation Cabinet, District 06
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 22
6. Latitude/Longitude (project mid-point): 38° 39' 52", -84° 38' 31"
7. County (project mid-point): Grant
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

## KYTC BMP Plan for HSIP Project: Item 6-9019

### A. Site description:

1. Nature of Construction Activity (from letting project description): Asphalt Pavement & Roadway Rehab
2. Order of major soil disturbing activities: (2) and (3)
3. Projected volume of material to be moved: 0 CY (Cut) & 235 CY (Fill)
4. Estimate of total project area (acres): 29.5
5. Estimate of area to be disturbed (acres): 7.8
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: Clarks Creek, Jacks Lick, Clay Lick
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 HSIP Project: Item 6-9019

### **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 HSIP Project: Item 6-9019

- 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 HSIP Project: Item 6-9019

- 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 HSIP Project: Item 6-9019

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 HSIP Project: Item 6-9019

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 HSIP Project: Item 6-9019

- 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. (1) Typically use: *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 HSIP Project: Item 6-9019

- 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).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

## KYTC BMP Plan for HSIP Project: Item 6-9019

All non-storm water discharges will be directed to the sediment basin or to a filter fence enclosure in a flat vegetated infiltration area or be filtered via another approved commercial product.

### H. Groundwater Protection Plan (3)

This plan serves as the groundwater protection plan as required by 401 KAR 5:037.

➤ Contractors statement: (3)

The following activities, as enumerated by 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan, will or may be may be conducted as part of this construction project:

\_\_\_\_\_ 2. (e) land treatment or land disposal of a pollutant;

\_\_\_\_\_ 2. (f) Storing, ..., or related handling of hazardous waste, solid waste or special waste, ..., in tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);

\_\_\_\_\_ 2. (g) .... Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;

\_\_\_\_\_ 2. (j) Storing or related handling of road oils, dust suppressants, ....., at a central location;

\_\_\_\_\_ 2. (k) Application or related handling of road oils, dust suppressants or deicing materials, (does not include use of chloride-based deicing materials applied to roads or parking lots);

\_\_\_\_\_ 2. (m) Installation, construction, operation, or abandonment of wells, bore holes, or core holes, (this does not include bore holes for the purpose of explosive demolition);

Or, check the following only if there are no qualifying activities

\_\_\_\_\_ There are no activities for this project as listed in 401 KAR 5:037 Section 2 that require the preparation and implementation of a groundwater protection plan.

The contractor is responsible for the preparation of a plan that addresses the

KYTC BMP Plan for HSIP Project: Item 6-9019

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.)

### Contractor and Resident Engineer Plan certification

The following certification applies to all parties that are signatory to this BMP plan:

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 gathered and evaluated 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, 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. Further, this plan complies with the requirements of 401 KAR 5:037. By this certification, the undersigned state that the individuals signing the plan have reviewed the terms of the plan and will implement its provisions as they pertain to ground water protection.

## Resident Engineer and Contractor Certification:

(2) Resident Engineer signature

Signed \_\_\_\_\_ title \_\_\_\_\_,  
Typed or printed name<sup>2</sup> signature

(3) Signed \_\_\_\_\_ title \_\_\_\_\_,  
 Typed or printed name<sup>1</sup> \_\_\_\_\_ signature \_\_\_\_\_

1. Contractors Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

2. KyTC note: to be signed by the Chief District Engineer or a person designated to have the authority to sign reports by such a person (usually the resident engineer) in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601 Reference the Project Control Number (PCN) and KPDES number when one has been issued.

KYTC BMP Plan for HSIP Project: Item 6-9019

Sub-Contractor Certification

The following sub-contractor shall be made aware of the BMP plan and responsible for implementation of BMPs identified in this plan as follows:

Subcontractor

Name:  
Address:  
Address:

Phone:

The part of BMP plan this subcontractor is responsible to implement is:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System permit that authorizes the storm water discharges, the BMP plan that has been developed to manage the quality of water to be discharged as a result of storm events associated with the construction site activity and management of non-storm water pollutant sources identified as part of this certification.

Signed \_\_\_\_\_title\_\_\_\_\_, \_\_\_\_\_  
Typed or printed name<sup>1</sup>signature

1. Sub Contractor Note: to be signed by a person who is the owner, a responsible corporate officer, a general partner or the proprietor or a person designated to have the authority to sign reports by such a person in accordance with 401 KAR 5:060 Section 9. This delegation shall be in writing to: Manager, KPDES Branch, Division of Water, 14 Reilly Road, Frankfort Kentucky 40601. Reference the Project Control Number (PCN) and KPDES number when one has been issued.

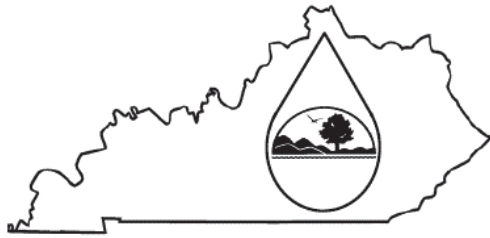


**Grant County**  
**Highway Safety Improvement Project along KY 22**  
**from MP 5.758 – 10.522**  
**Item No.: 6-9019.00**

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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: 168485**



## KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM (KPDES)

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

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

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

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

Reason for Submittal:(*) Application for New Permit Coverage ▼	Agency Interest ID: Agency Interest ID	Permit Number:(✓) KPDES Permit Number	
If change to existing permit coverage is requested, describe the changes for which modification of coverage is being sought:(✓) 			
<b>ELIGIBILITY:</b> 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.			
<b>EXCLUSIONS:</b> 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:(✓) Kentucky Transportation Cabinet, District 6	First Name:(✓) Bob	M.I.: MI	Last Name:(✓) Yeager
Mailing Address:(*) 421 Buttermilk Pike	City:(*) Ft. Mitchell	State:(*) Kentucky ▼	Zip:(*) 41017
eMail Address:(*) Robert.Yeager@ky.gov	Business Phone:(*) 859-341-2700	Alternate Phone: Phone	
SECTION II -- GENERAL SITE LOCATION INFORMATION			
Project Name:(*) KYTC Project: Item # 6-9019	Status of Owner/Operator(*) State Government ▼	SIC Code(*) 1611 Highway and Street Constr ▼	
Company Name:(✓) Company Name	First Name:(✓) First Name	M.I.: MI	Last Name:(✓) Last Name
Site Physical Address:(*) KY 22			
City:(*) Dry Ridge	State:(*) Kentucky ▼	Zip:(*) 41035	
County:(*) Grant ▼	Latitude(decimal degrees)(*)DMS to DD Converter (https://www.fcc.gov/media/radio/dms-decimal) 38.665566	Longitude(decimal degrees)(*) -84.641674	
SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION ⓘ			
Project Description:(*) Highway Safety Improvement Project consisting of asphalt paving, roadside slope repairs, replacement and/or extension of various pipes, ditching & shouldering, guardrail			

a. For single projects provide the following information

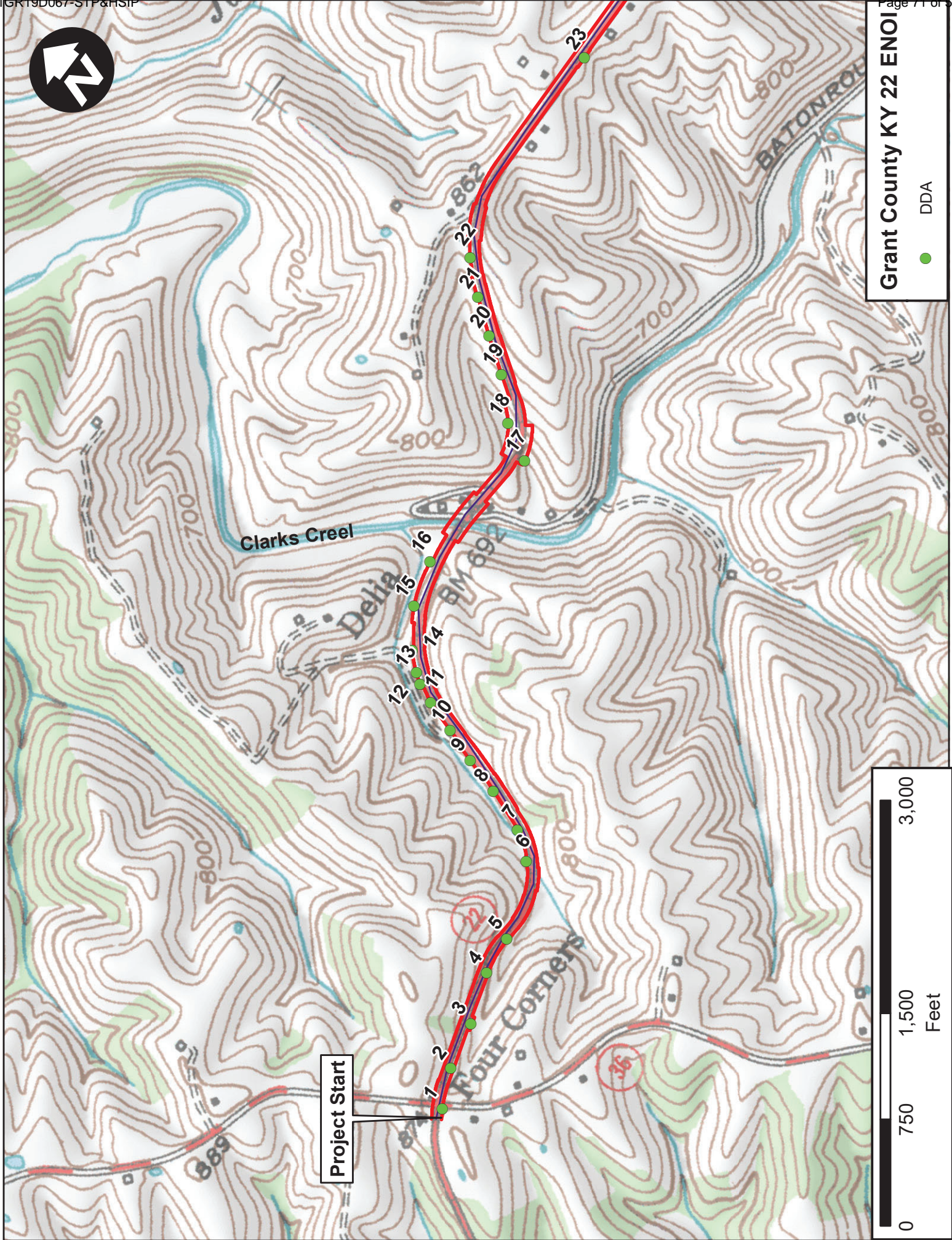
Is a Clean Water Act 404 permit required?:(*)		<div>Yes</div>	
Is a Clean Water Act 401 Water Quality Certification required?:(*)		<div>Yes</div>	
SECTION VII -- NOI PREPARER INFORMATION			
First Name:(*) <div>First Name</div>	M.I.: <div>MI</div>	Last Name:(*) <div>Last Name</div>	Company Name:(*) <div>Company Name</div>
Mailing Address:(*) <div>Mailing Address</div>	City:(*) <div>City</div>	State:(*) <div></div>	Zip:(*) <div>Zip</div>
eMail Address:(*) <div>eMail Address</div>		Business Phone:(*) <div>Phone</div>	Alternate Phone: <div>Phone</div>
SECTION VIII -- ATTACHMENTS			
Facility Location Map:(*)		<div>Upload file</div>	
Supplemental Information:		<div>Upload file</div>	
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:(*) <div>Signature</div>		Title:(*) <div>Title</div>	
First Name:(*) <div>First Name</div>	M.I.: <div>MI</div>	Last Name:(*) <div>Last Name</div>	
eMail Address:(*) <div>eMail Address</div>	Business Phone:(*) <div>Phone</div>	Alternate Phone: <div>Phone</div>	Signature Date:(*) <div>Date</div>
<div><div>Click to Save Values for Future Retrieval</div><div>Click to Submit to EEC</div></div>			



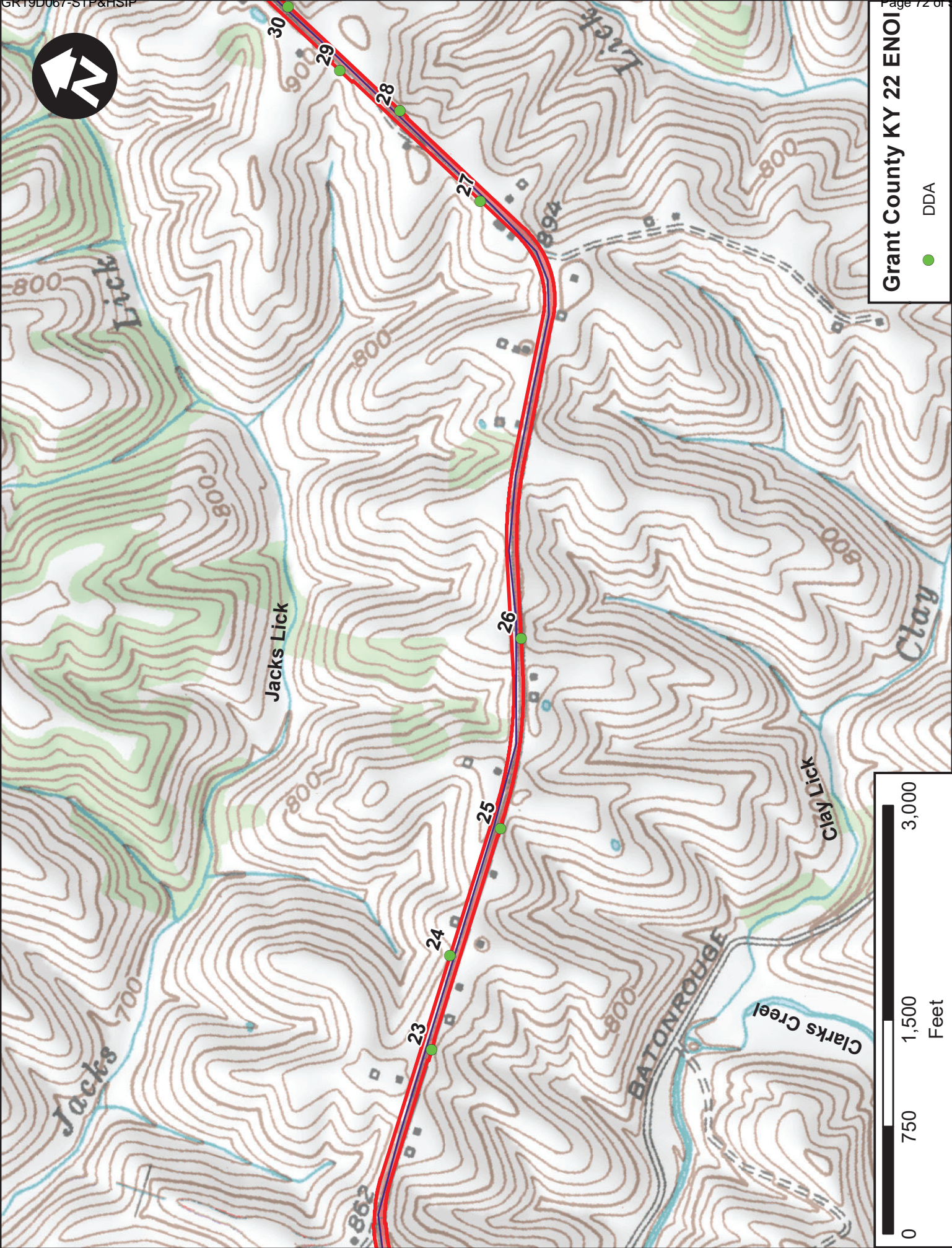


Grant County KY 22 ENOI

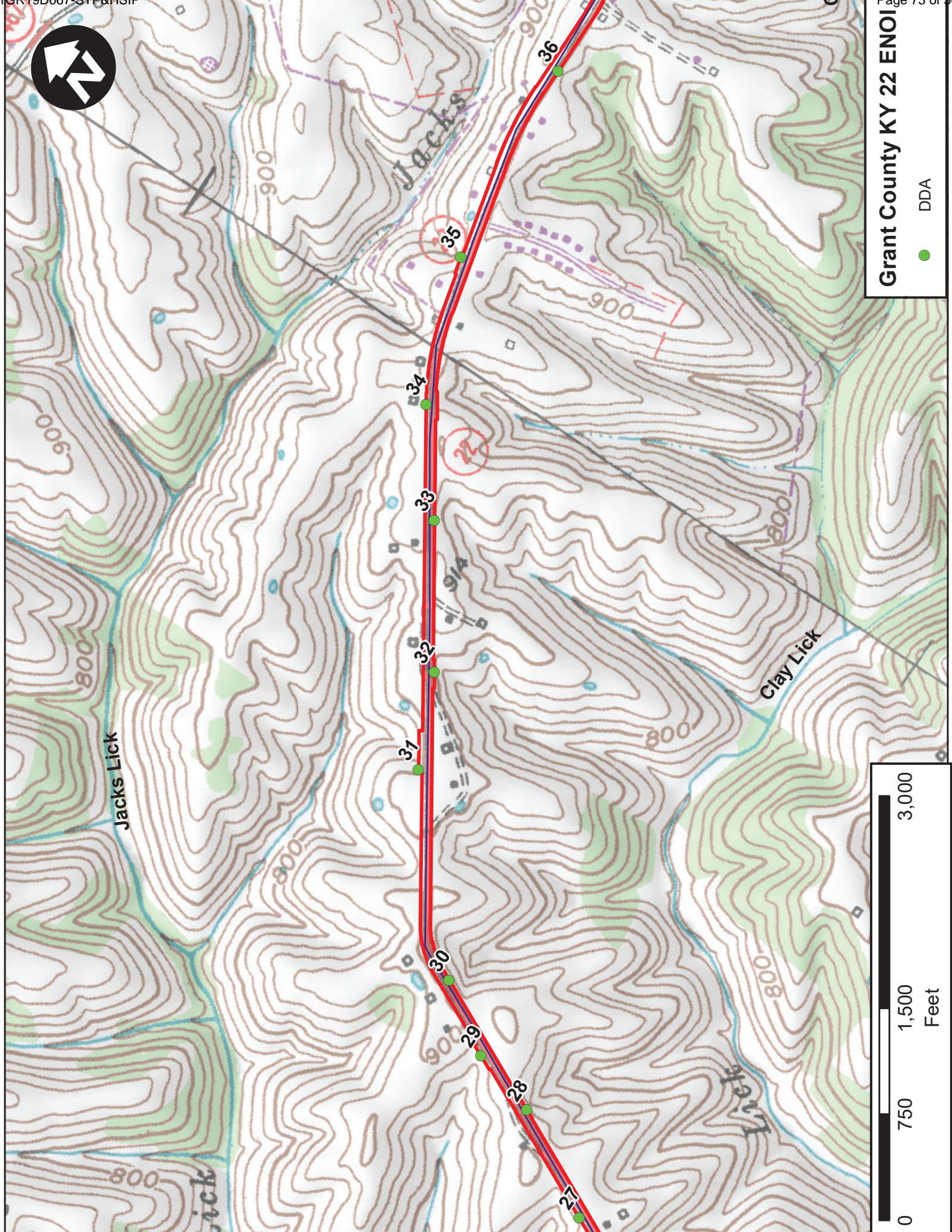
DDA





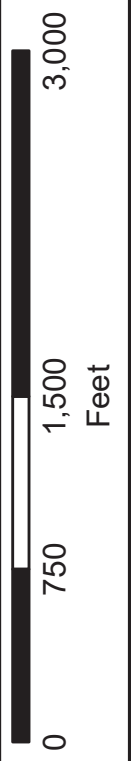




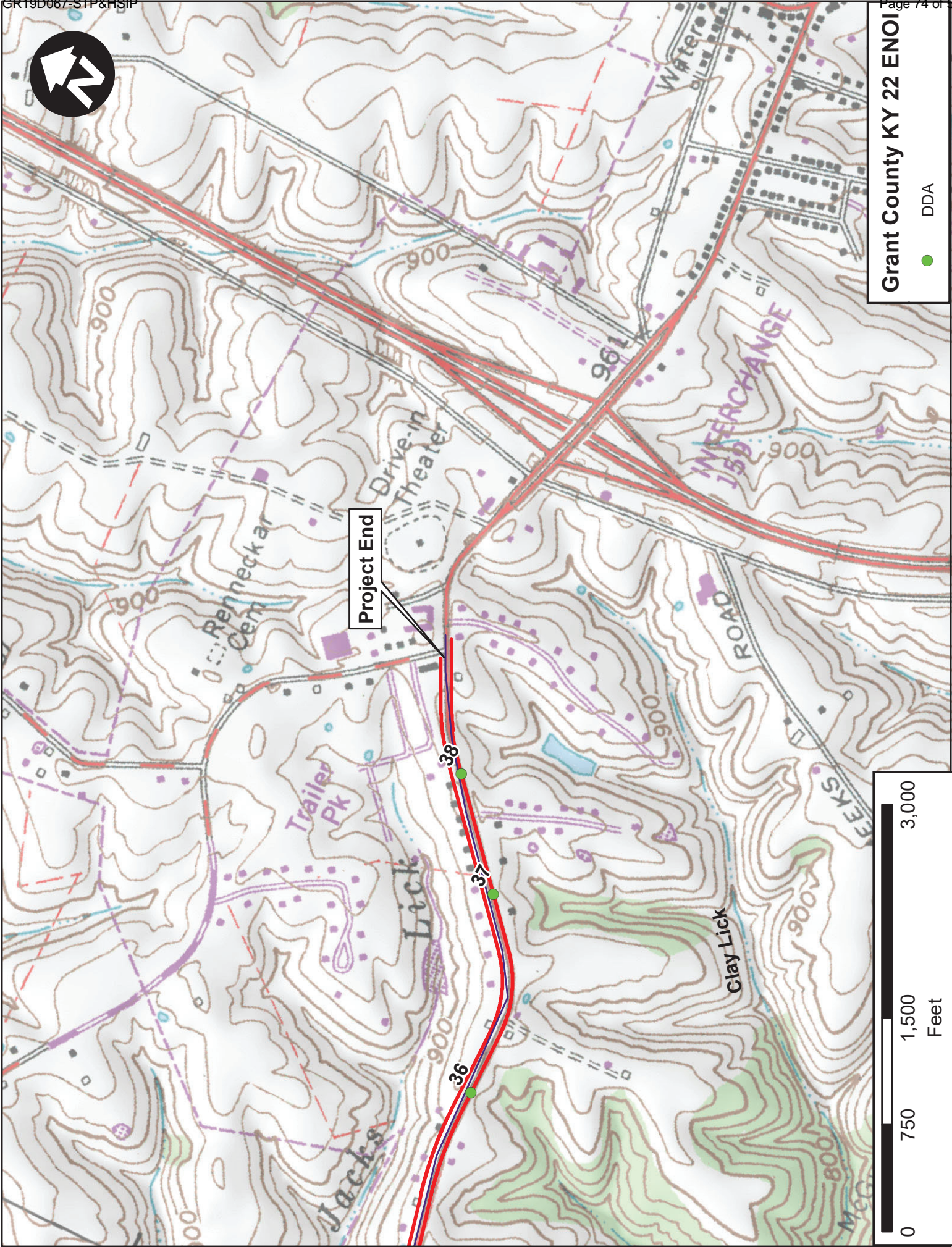


**Grant County KY 22 ENOI**

● DDA









## **General Notes & Description of Work ON HSIP PROJECT**

06-9019.00 Grant KY 22

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The Bid Items for this Highway Safety Improvement Project are located on the Plan Sheets, Typical Sections, Pipe Sheets, and as summarized in the Project Improvement Summary Sheets.

### **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 304+55 at the KY 22 (Taft Hwy) and KY 36 (Jonesville Rd & Stewartsville Rd) Intersection (Four Corners Intersection). Milepoints were established from a beginning Milepoint which is MP 5.758. The existing mile marker signs may not correspond to the proposed work locations.

### **LIDAR**

All survey information was obtained from available KYTC Aerial LIDAR data and 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. Unless a consent and release form is obtained from the adjoining property owner, the Contractor shall limit work activities to the obvious Right-of-Way and staging areas secured and cleared environmentally 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. The Contractor shall be responsible for all encroachments onto private lands.

### **PROPERTY DAMAGE**

The Contractor shall 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.

General Notes & Description of Work  
Page 2 of 7

**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.

**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:

**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 Superelevation Improvements are set up and quantified for the Contractor to utilize Leveling & Wedging in order to achieve the desired superelevation improvements at the identified location(s). The Superelevation Improvement Summary lists the estimated quantities of Leveling & Wedging for each curve; however, the Engineer will make the final determination as to which Leveling & Wedging mix design 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 the superelevation improvements have been constructed, the full width of the identified curves will be overlaid with a surface course. As a result of the superelevation improvements and surfacing operations, the roadside shoulders, fill slopes, and/or ditches will have to be modified to match the final pavement elevations and tie in with the existing ground lines. A representative typical is given for each curve showing the proposed superelevation improvements and the resulting shoulder and fill slope grading. A quantity of "Ditching and Shouldering" has been estimated for regrading the roadside within the identified curves. Adjust any sign within the Superelevation Improvement due to the raised pavement. A quantity of Steel Post Type 1 and Remove, Store, & Reinstall Sign has been included to adjust signs to meet minimum clear height above the newly constructed edge of pavement.

NOTE: Some field adjustments of the proposed shoulder width, fill slope, ditch, and/or superelevation improvement may be required. The proposed 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 construct the new fill slopes at 3:1 or flatter. When a fill slope needs to be constructed steeper than 3:1 to remain within Right-of-Way or not impact a sensitive obstruction, and the existing fill slope is steeper than 3:1,

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then the new fill slope can be constructed steeper than 3:1, but the new fill slope shall not be constructed steeper than the existing fill slope. If a desired superelevation improvement will result in the new fill slope having to be graded steeper than the existing fill slope in order to remain within Right-of-Way or 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.

**Pavement Resurfacing.** The existing roadway is to be resurfaced as noted in the Resurfacing Improvement Summary. The resurfacing primarily occurs in curves and is to have Type A polish-resistant aggregate. Other items associated with the pavement resurfacing include: removal of existing pavement by milling and texturing, construction of edge keys, installation of rumble strips, and application of 6" Spray Thermo pavement markings. All Pavement Resurfacing shall occur following the completion of Superelvation Improvements, Base Failure Repairs, and Soil Nail Wall construction. Refer to the Rumble Strip Sepia Drawings for recommended placement of edgeline rumble strips.

**Pipe Replacements & Extensions.** There are locations throughout the project where culvert pipes are being extended and one location where the culvert pipe is being replaced. Locations are noted on the Pipe Drainage Summary. Other items that may be associated with the pipe extensions include: **Pipe Culvert Headwalls, Safety Box Inlets, Drop Box Inlet Type 1, Sloped & Mitered Concrete Headwalls, Fittings, Ditching, Channel Lining, etc.** Refer to the Special Note for Pipe Replacements / Extensions for more information on this item of work. For each extension, the Contractor shall remove 4' of pipe or the length of pipe to the first joint. Refer to the Pipe Drainage Summary for quantity. Refer to the Pipe Replacement Paving Detail for more information on the paving operations to be performed at pipe replacement location.

NOTE: Do NOT Disturb any underground utility or existing rock wall at pipe replacement and extension locations. Refer to the Pipe Cross Sections for approximate utility locations.

**Sloped & Mitered Concrete Headwalls.** Sloped & Mitered Concrete Headwalls shall be constructed as shown on the Sloped & Mitered Concrete Headwall Details. This headwall is intended to combine the benefits of a pipe headwall with the advantages of safety and adaptability by allowing the headwall to be custom fit with the surrounding embankment. The Pipe Drainage Summary identifies which pipe ends are to receive the Sloped & Mitered Concrete Headwalls. The identified pipe ends shall have the headwall installed at an angle that matches the final embankment slopes at each location. If the pipe is on a skew, install the headwall and miter the pipe so that the slope paving of the new headwall is perpendicular to the roadway. In other words, the headwall should be installed and the pipe should be mitered to match the final embankment slope, so that the roadside fill slope is fairly consistent prior to the pipe, at the pipe, and beyond the pipe. When completed the edges of the Sloped & Mitered Concrete Headwall should be flush with the surrounding ground line. Payment at the Contract unit price shall be full compensation for furnishing all labor, materials, equipment, and incidentals necessary to install the headwall and miter the pipe.

NOTE: For pipes that receive the Sloped & Mitered Concrete Headwall, the pipe length will be measured to the furthest point along the mitered end of the pipe.

**Intermediate Anchor/Collar.** There are quantities of Class A Concrete included in the Pipe Drainage Summary to construct an intermediate anchor, or collar, around the pipes at the pipe extension

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locations. This is so the new pipe can be securely connected to the existing pipe. The intermediate anchors shall be constructed as shown on Standard Drawing RDX-060, current edition, or as directed by the Engineer.

**Entrance Pipe Replacement & Driveway Surfacing.** Due to the construction of superelevation improvements, areas of existing ditch lines being reshaped and relocated further from edge of pavement, and due to entrances having existing damage or no existing entrance pipe; there are areas throughout the project where the existing entrance pipe will have to be removed and relocated to accommodate the construction and line up with the new ditch line. Refer to the Entrance Detail within the Typical Sections for details on this work item. See the Entrance Pipe and Paving Summary for the locations and bid items/quantities associated with the entrance pipe replacements. The existing driveway surface is to be replaced with asphalt pavement as noted on the Entrance Paving Summary. The Engineer will make the final determination as to the locations and quantities required to complete the work based on the existing conditions encountered during construction. Refer to the Special Note for Pipe Replacements / Extensions for more information on this item of work.

**Guardrail Replacement.** Existing guardrail within the project will be replaced. Refer to the Guardrail Summary for the approximate locations for guardrail replacement and the proposed end treatment to be installed. Object Markers Ty 3 has been included on the Guardrail Summary for installation on Type 1 and Type 4A end treatments. Additional materials associated with Guardrail End Treatment Type 3 has been included in the Guardrail Summary. There is one strand of guardrail that requires additional DGA shoulder. Refer to the Guardrail Summary for location and quantity. There are three strands of guardrail that will be installed in the area of soil nail walls, two of these strands are new locations of guardrail. See the Special Note for Guardrail for more information on Guardrail Replacement.

When the plans call for a Type 1 or Type 4 End Treatment, a MASH eligibility letter from FHWA is required for these end terminals. When a MASH tested eligibility letter is not available for the end terminal being utilized, the most recent NCHRP 350 eligibility letter from FHWA for that terminal will apply. Acceptance of the terminal will be at the discretion of the engineer.

**Pavement Failure Repair.** There are locations throughout the project where pavement failures are being repaired. Work involves saw cutting the pavement, excavating trench, backfill with crushed limestone, asphalt base and leveling and wedging. Pavement Failure Repair will occur from outside edge of pavement to centerline of roadway. After a minimum 14 calendar days of initial compaction, and the Engineer has determined repair area has stabilized, resurfacing operations may begin. Following resurfacing operations, edgeline rumble strips shall be constructed at repair locations and at existing pavement patches that do not have existing edgeline rumble strips. Pavement failure repair locations may encounter unsuitable material. Included in the proposal are bid items associated with Undercutting to remove and dispose of unsuitable material. The location and depth of undercutting is at the discretion of the engineer. Refer to the Special Note for Base Failure Repair for more information.

There are two cases of Base Failure Repair. The Case A design is for areas where subgrade water is able to daylight under existing conditions. The Case B design is for areas where a perforated pipe underdrain has been include so that water will be able to drain away from roadway subgrade. Refer to the Pavement Failure Repair Summary, Typical Sections, and Plan Sheets for locations of pavement failure repair and more information.

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NOTE: Fiber reinforcement shall be added to the Asphalt Base for further stabilization. See Special Note for Fiber Reinforcement of Asphalt for more information.

**Perforated Pipe.** A quantity of 626 linear feet of Perforated Pipe – 4 IN, 125 linear feet of Non-perforated Pipe – 4 IN, and 5 each Perforated Pipe Headwall Type 3 – 4 IN, has been included for Pavement Failure Repair Areas. The Contractor and Engineer should work together to determine any locations throughout the project requiring perforated pipe. The Engineer will make the final determination as to the quantities and placement of Perforated Pipe and associated bid items.

**Soil Nail Walls.** There are three locations where soil nail walls are to be constructed. Excavation in the vicinity of the wall face requires special care and effort compared to general earthwork excavation and coordination between the earthwork contractor and the Soil Nail Wall contractor. There are existing railroad rails and cribbing that are to be removed from Sta. 441+39 to 443+03 and is incidental to Soil Nail Wall. Excavation stability, slope stability, wall alignment, and wall stability are the Contractor's responsibilities from the beginning of work until final acceptance. A quantity of Soil Nail Wall – Square Foot has been provided in the Soil Nail Wall Summary. This will constitute full compensation for all costs including materials, labor, tools, equipment, and other incidental items required for designing, constructing, and performing nail testing for the permanent soil nail wall(s) as described in the Special Note for Soil Nail Walls.

Soil nail wall includes all specialty work involved with excavation and construction of soil nail wall including mobilization, 20ft drilled/launched soil nail, 8" shotcrete, lightweight backfill, and horizontal drains and will be incidental to Soil Nail Wall. Guardrail for the soil nail walls has been included in the Guardrail Summary. Paving operations has been included in the Superelevation and/or Resurfacing Summaries. Refer to the Special Note for Soil Nail Walls, Soil Nail Wall Summary, and Plan Sheets for more information.

**Remove – Railroad Rail Above Ground Line by Torch Cutting.** Existing railroad rails that protrude above the ground line are present from Sta. 457+38 to Sta. 458+68 RT. There are approximately 26 rails to cut. Contractor shall cut railroad rails by torch cutting rails as close to the existing ground line as possible and at a maximum of within 2" of existing ground line. Disposal of the rails will be incidental to bid item "Remove (Railroad Rail Above Ground Line by Torch Cutting)." Refer to the Cut Rails Summary for more information.

**Ditching and Shouldering.** Several areas throughout the project are set up for Ditching & Shouldering. Perform Ditching & Shouldering at the locations identified in the Superelevation, Entrance Pipe and Paving, Guardrail, and Ditching & Shouldering Summaries, or the locations 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 and Shouldering, refer to the detail sheets titled: DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS. Do not disturb any manholes or underground utilities while performing Ditching and Shouldering.

**Ditching.** Perform ditching in accordance with Section 209. The bid item "Ditching" applies to ditches extending perpendicular to the roadway at culvert inlets or outlets. The approximate quantities are shown on the Pipe Drainage Summary.

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**Striping and Passing Zones Summary.** Refer to the Striping and Passing Zones Summary for the new striping configuration. Note that there are six existing passing zone locations being removed.

**Permanent Striping.** Following construction activities, stripe the entire project length with SPRAY THERMO-6 IN striping. Refer to the Striping and Passing Zones Summary for striping configuration and quantities of Pave Striping-Spray Thermo-6 IN W and Pave Striping-Spray Thermo-6 IN Y. For public roads, break the striping on the outside white line and centerline yellow lines of KY 22 along the length of the public approach road. Refer to the Special Note for Spray Thermo for more information.

**Removal of Existing Signing and Installation of Proposed Signing.** A quantity of "Remove Sign" has been included in the Remove Sign Summary for removal of existing signing along the corridor. The Department will consider all signs attached to one or more connected posts as a single sign. The Department will measure each sign assembly removed and not each individual sign removed. See the Plan Sheets and the Remove Sign Summary for locations of signs to be removed. An estimated quantity of new signing and sign post is included on the Proposed Signing Summaries (Horizontal Alignment and Object Markers). Refer to the Plan Sheets, Special Note for Signing, and Special Note for Staking for more details.

The advisory speeds shown in the summaries and signing plans are assumed. They are based on the proposed geometric improvements and/or ball bank readings of the existing roadway measure during the design of this project. The actual advisory speed to be used on the curve warning signs (W1-2a) and advisory speed plaques (W13-1P) shall be determined by the District Traffic Section after final asphalt surfacing operations are complete. Coordinate with District 6 Division of Traffic.

The signing quantities and sign types shown in the summaries are estimated. The District Traffic Section will provide the final signing quantities and sign types after initial surfacing operations are complete. Refer to the Special Note for Signing, Special Note for Staking, and Special Note for Signage for more details concerning the procedures for determining and staking the final layout and installation of the curve signing. DO NOT ORDER ANY CURVE SIGNING MATERIAL UNTIL AFTER COORDINATION WITH THE DISTRICT TRAFFIC SECTION.

**Curb & Gutter Inside Curve #5:** There is erosion of the existing DGA shoulder on the inside of Curve #5 (LT) from Sta. 357+00 to Sta. 359+50. This improvement involves shoulder milling/trenching, constructing modified 4" standard curb and gutter, flume inlet, DGA base, seal coat and seal aggregate, and channel lining. Refer to the Curb & Gutter Inside Curve #5 Summary and Plan Sheets for more information.

**Remove Trees.** There is one location within the project where two trees are to be removed for the extension of a pipe drainage. The location is noted on the Pipe Drainage Summary. The Contractor shall remove the entire tree and stump as part of site preparation for the pipe extension and headwall installation. Site preparation is incidental to installation of pipe extension.

**Channel Lining.** 20 Tons of Channel Lining Class II has been included on the Guardrail Summary, 30 Tons of Channel Lining Class II has been included on the Pipe Drainage Summary, and 20 Tons of Channel Lining Class II has been include on the Curb and Gutter Inside Curve #5 Summary for use at the locations indicated on the Summaries. An additional 100 Tons, for a total quantity of 170 Tons of Channel Lining Class II, has been included in the contract for potential use around drop box inlets, safety box inlets, inlets and outlets of pipes, along areas of regraded ditch line and/or fill slope, and



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

**Erosion Control Blanket.** A quantity of 1,000 square yards of Erosion Control Blanket has been included in the contract for potential use along areas of Ditching & Shouldering, and any other areas as directed by the Engineer. The Contractor and Engineer should work together to determine the location and best use of Erosion Control Blanket throughout this project. The Engineer will make the final determination as to the quantities and placement of Erosion Control Blanket.

**Special Seeding Crown Vetch.** A quantity of 500 square yards of Special Seeding Crown Vetch has been included in the contract for potential use along areas of inlets and outlets of pipes and any other areas as directed by the Engineer. The Contractor and Engineer should work together to determine the location and best use of Special Seeding Crown Vetch throughout this project. The Engineer will make the final determination as to the quantities and placement of Special Seeding Crown Vetch.

**Remove, Store & Reinstall Signs.** A quantity of 18 each of "Remove-Store and Reinstall Sign" has been included on the Superelevation Summary for signs that are to be adjusted due to the raised pavement. An additional quantity of 10 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. The intent is for the sign to be "down" the minimum length of time necessary.

**Existing Roadway Signs.** The contractor is to take care not to damage any existing roadway signs labeled as Do Not Disturb (DND) on the Plans, or as directed by D6 Traffic. Any roadway signs that are damaged during construction are to be replaced at the contractor's expense in accordance with section 105.08 of the standard specifications.

**Temporary Striping.** A quantity of 63,144 linear feet of Pave Striping-Temp Paint-6 in has been included in the contract for potential use in Superelevation Improvement areas and any other areas as directed by the Engineer. The Contractor and Engineer should work together to determine any locations throughout the project requiring temporary pavement striping. The Engineer will make the final determination as to the quantities and placement of temporary pavement striping.

**Temporary Signal 2 Phase.** A Temporary Signal 2 Phase has been included in the project for possible use during the construction of Soil Nail Walls and pavement failure repairs. 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 Signal 2 Phase 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 Signal 2 Phase if it becomes damaged or non-functioning, nor if the Engineer directs that it be replaced due to poor condition or visibility. The Contractor shall retain possession of the Temporary Signal 2 Phase upon completion of construction.

TRAFFIC CONTROL PLAN  
ON HSIP PROJECT

06-9019.00    Grant    KY 22

TRAFFIC CONTROL GENERAL

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” as set forth in the Standard and Supplemental Specifications and the Standard and Sepia Drawings, current editions, unless otherwise provided in these notes. The lump sum bid price to “Maintain and Control Traffic” shall also include, but is not limited to, the following items and operations:

- A. All labor and materials necessary for construction and maintenance of traffic control devices and markings.
- B. All flag persons and traffic control devices such as, but not limited to, flashers, signs, barricades and vertical panels, plastic drums (steel drums will not be permitted), and cones, necessary for the control and protection of vehicular and pedestrian traffic as specified in these notes, the proposal, the Manual on Uniform Traffic Control Devices (MUTCD) current edition, or the Engineer.

Contrary to Section 106.01, furnish new, or used in like new condition, traffic control devices at the beginning of the work and maintain 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 when no longer needed. Traffic control devices will conform to current MUTCD.

PROJECT PHASING & CONSTRUCTION PROCEDURES

The Engineer will coordinate with Bridging KY Project 6-10010 regarding the KY 22 closure due to the bridge replacement of KY 22 over Clarks Creek and Baton Rouge Road. The bridge replacement is to be completed by August 7, 2020.

If work is scheduled to begin prior to the end of the school year, no traffic restrictions shall be implemented during school bus hours, 6:00 AM to 8:00 AM and 3:00 PM to 5:00 PM. Full closure is not to occur until Grant County schools are closed for the summer.

No road closures are permitted for the HSIP Project work outside of the Bridge Replacement closure. Lane closures are permitted as outlined in this Traffic Control Plan.

No lane closures will be allowed on the following dates:

Christmas	Monday, December 23, 2019 – Wednesday, December 25, 2019
New Year’s	Monday, December 30, 2019 – Wednesday, January 1 2020
Easter Weekend,	Friday, April 10, 2020 – Sunday, April 12, 2020
Memorial Day Weekend	Friday, May 22, 2020 – Monday, May 25, 2020
Independence Day Weekend	Friday, July 3, 2020 – Sunday, July 5, 2020
Labor Day Weekend	Friday, September 4, 2020 – Monday, September 7, 2020
Thanksgiving Weekend	Wednesday, November 25, 2020 – Sunday, November 29, 2020

At the discretion of the Engineer, additional days and hours may be specified when lane closures

## Traffic Control Plan

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will not be allowed due to unforeseen events.

The Contractor shall maintain a two-lane traveled way with a minimum lane width of 10 feet. However, during working hours, alternating one-way traffic may be allowed at the discretion of the Engineer, provided adequate signing and flag persons are in place. When maintaining alternating one-way traffic provide a minimum clear lane width of 10 feet; however, provide for the 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.

The Contractor shall completely cover any signs, existing, permanent, or temporary, which do not properly apply to the current traffic phasing, and shall maintain the covering until signs are applicable or are removed.

In general, all traffic control devices shall be placed starting and proceeding in the direction of the flow of traffic, and removed starting and proceeding in the direction opposite the flow of traffic.

The Contractor shall 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 residential or farm entrance is blocked to the minimum length of time required for actual operations, do not extend the time for the Contractor's convenience, and in no case allow the blockage to exceed six (6) hours. Notify 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.

### **TEMPORARY SIGNAL 2 PHASE**

A Temporary Signal 2 Phase has been included in the project for possible use during the construction of Soil Nail Walls and pavement failure repairs. 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 Signal 2 Phase 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 Signal 2 Phase if it becomes damaged or non-functioning, nor if the Engineer directs that it be replaced due to poor condition or visibility. The Contractor shall retain possession of the Temporary Signal 2 Phase upon completion of construction.

### **LANE AND SHOULDER CLOSURES**

When the road is open to through traffic, do not leave lane closures in place during non-working hours. Maintain lane closures only during hours of actual operations. Reduce lane closures to a shoulder closure, or remove as appropriate, when active operations do not require a lane closure. The Engineer will permit shoulder closures during non-working hours; however do not park equipment or store materials on a closed shoulder during non-working hours. The Engineer may designate days and hours when lane and/or shoulder closures will not be allowed.

Provide a minimum distance of 1 mile between lane closures when closing lanes to traffic in more than one location.

Contrary to Section 112.04.17, lane closures, whether long term or short term, will not be measured for payment and will be incidental to the bid item "Maintain and Control Traffic".

## **SIGNS**

The Engineer and the Contractor, or their authorized representative, shall review the signing before traffic is allowed to use any lane closures, crossovers, or detours. All signing shall be approved by the Engineer before work can be started by the Contractor.

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 shall be incidental to Maintain and Control Traffic. Individual signs will be measured only once for payment, regardless of how many times they are set, reset, relocated, and removed during the duration of the project. Replacements for damaged signs directed by the Engineer to be replaced due to poor condition or reflectivity will not be measured for payment.

## **PORTABLE CHANGEABLE MESSAGE SIGNS**

Provide portable changeable message sign (PCMS) at least two weeks prior to construction at the locations approved by the Engineer. The messages required to be provided will be designated by the Engineer. The PCMS will be in operation at all times. In the event of damage or mechanical/electrical failure, the contractor will repair or replace the PCMS immediately. The Department will not take possession of the signs upon completion of the work. The Department will measure for payment the maximum number of PCMS in concurrent use at the same time on a single day on all sections of the contract. PCMS will be paid for once, no matter how many times they are set, reset, removed, and relocated during the duration of the project. Replacements for damaged changeable message signs directed by the Engineer to be replaced due to poor condition or readability will not be measured for payment.

## **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 construction 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 replacements for damaged barricades the Engineer directs to be replaced due to poor condition or reflectivity. Retain possession of the Barricades upon completion of construction.

## **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 final surface course. Removal of pavement markings will be by water blasting process to the satisfaction of the Engineer. Place temporary and permanent striping in accordance with Section 112 with following exception for Temporary Striping:

If the Contractor's operations or phasing requires temporary markings that must subsequently be removed from the final surface course or existing surface to remain in place, 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.

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**PAVEMENT EDGE DROP-OFFS**

Do not allow a pavement edge between opposing directions of traffic or lanes that is expected to cross in a lane change situation with an elevation difference greater than 1 ½". 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 unsurfaced areas which traffic may cross with asphalt mixture for leveling and wedging. Remove the wedges prior to placement of the final surface course.

Protect pavement edges that traffic is not expected to cross, except accidentally, as follows:

Less than 2" – Not protection required. Warning signs should be placed in advance and throughout the drop-off area.

2" to 4" – Place plastic drums, vertical panels, or barricades every 50 feet. During daylight working hours only, the Engineer will allow the Contractor to use cones in lieu of plastic drums, panels, and barricades. Spacing of devices on tapered sections shall be in accordance with MUTCD, current edition. When work is not active in the drop-off area, wedge the drop-off with DGA or asphalt mixture for leveling and wedging with 1:1 or flatter slope in daylight hours, or 3:1 or flatter slope during nighttime hours.

Greater than 4" – Positive separation or wedge with a 3:1 or flatter slope. If there is five feet or more distance between the edge of pavement and drop-off, then drums, panels, or barricades may be used. If the drop-off is greater than 12 inches, positive separation is strongly encouraged. If concrete barriers are used, special reflective devices or steady burn lights should be used for overnight installations. Barricades may be used if the drop-off is greater than 12 inches.

## **USE AND PLACEMENT OF CHANGEABLE MESSAGE SIGNS**

The following policy is based upon current Changeable Message Signs (CMS) standards and practice from many sources, including the Federal Highway Administration (FHWA), other State Departments of Transportation, and Traffic Safety Associations. It is understood that each CMS installation or use requires individual consideration due to the specific location or purpose. However, there will be elements that are constant in nearly all applications. Accordingly these recommended guidelines bring a level of uniformity, while still being open to regional experience and engineering judgment.

### **Application**

The primary purpose of CMS is to advise the driver of unexpected traffic and routing situations. Examples of applications where CMS can be effective include:

- Closures (road, lane, bridge, ramp, shoulder, interstate)
- Changes in alignment or surface conditions
- Significant delays, congestion
- Construction/maintenance activities (delays, future activities)
- Detours/alternative routes
- Special events with traffic and safety implications
- Crash/incidents
- Vehicle restrictions (width, height, weight, flammable)
- Advance notice of new traffic control devices
- Real-time traffic conditions (must be kept up to date)
- Weather /driving conditions, environmental conditions, Roadway Weather Information Systems
- Emergency Situations
- Referral to Highway Advisory Radio (if available)
- Messages as approved by the County Engineer's Office

### **CMS should not be used for:**

- Replacement of static signs (e.g. road work ahead), regulatory signage (e.g. speed limits), pavement markings, standard traffic control devices, conventional warning or guide signs.
- Replacement of lighted arrow board
- Advertising (Don't advertise the event unless clarifying "action" to be taken by driver – e.g. Speedway traffic next exit)
- Generic messages
- Test messages (portable signs only)
- Describe recurrent congestion (e.g. rush hour)
- Public service announcements (not traffic related)



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## **Messages**

Basic principles that are important to providing proper messages and insuring the proper operation of a CMS are:

- Visible for at least ½ mile under ideal daytime and nighttime conditions
- Legible from all lanes a minimum of 650 feet
- Entire message readable twice while traveling at the posted speed
- No more than two message panels should be used (three panels may be used on roadways where vehicles are traveling less than 45 mph). A panel is the message that fits on the face of the sign without flipping or scrolling.
- Each panel should convey a single thought; short and concise
- Do not use two unrelated panels on a sign
- Do not use the sign for two unrelated messages
- Should not scroll text horizontally or vertically
- Should not contain both the words left and right
- Use standardized abbreviations and messages
- Should be accurate and timely
- Avoid filler/unnecessary words and periods (hazardous, a, an, the)
- Avoid use of speed limits
- Use words (not numbers) for dates

## **Placement**

Placement of the CMS is important to insure that the sign is visible to the driver and provides ample time to take any necessary action. Some of the following principles may only be applicable to controlled access roadways. The basic principles of placement for a CMS are:

- When 2 signs are needed, place on same side of roadway and at least 1,000 feet apart
- Place behind semi-rigid/rigid protection (guardrail, barrier) or outside of the clear zone
- Place 1,000 feet in advance of work zone; at least one mile ahead of decision point
- Normally place on right side of roadway; but should be placed closest to the affected lane so that either side is acceptable
- Signs should not be dual mounted (one on each side of roadway facing same direction)
- Point trailer hitch downstream
- Secure to immovable object to prevent theft (if necessary)
- Do not place in sags or just beyond crest
- Check for reflection of sun to prevent the blinding of motorist
- Should be turned ~3 degrees outward from perpendicular to the edge of pavement
- Bottom of sign should be 7 feet above the elevation of edge of roadway
- Should be removed when not in use



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**Standard Abbreviations**

The following is a list of standard abbreviations to be used on CMS:

<b><u>Word</u></b>	<b><u>Abbrev</u></b>	<b><u>Example</u></b>
Access	ACCS	ACCIDENT AHEAD/ USE ACCS RD NEXT RIGHT
Alternate	ALT	ACCIDENT AHEAD/ USE ALT RTE NEXT RIGHT
Avenue	AVE	FIFTH AVE CLOSED/ DETOUR NEXT LEFT
Blocked	BLKD	FIFTH AVE BLKD/ MERGE LEFT
Boulevard	BLVD	MAIN BLVD CLOSED/ USE ALT RTE
Bridge	BRDG	SMITH BRDG CLOSED/ USE ALT RTE
Cardinal Directions	N, S, E, W	N I75 CLOSED/ DETOUR EXIT 30
Center	CNTR	CNTR LANE CLOSED/ MERGE LEFT
Commercial	COMM	OVRSZ COMM VEH/ USE I275
Condition	COND	ICY COND POSSIBLE
Congested	CONG	HVY CONG NEXT 3 MI
Construction	CONST	CONST WORK AHEAD/ EXPECT DELAYS
Downtown	DWNTN	DWNTN TRAF USE EX 40
Eastbound	E-BND	E-BND I64 CLOSED/ DETOUR EXIT 20
Emergency	EMER	EMER VEH AHEAD/ PREPARE TO STOP
Entrance, Enter	EX, EXT	DWNTN TRAF USE EX 40
Expressway	EXPWY	WTRSN EXPWY CLOSED/ DETOUR EXIT 10
Freeway	FRWY, FWY	GN SYNDR FWY CLOSED/ DETOUR EXIT 15
Hazardous Materials	HAZMAT	HAZMAT IN ROADWAY/ ALL TRAF EXIT 25
Highway	HWY	ACCIDENT ON AA HWY/ EXPECT DELAYS
Hour	HR	ACCIDENT ON AA HWY/ 2 HR DELAY
Information	INFO	TRAF INFO TUNE TO 1240 AM
Interstate	I	E-BND I64 CLOSED/ DETOUR EXIT 20
Lane	LN	LN CLOSED MERGE LEFT
Left	LFT	LANE CLOSED MERGE LFT
Local	LOC	LOC TRAF USE ALT RTE
Maintenance	MAINT	MAINT WRK ON BRDG/ SLOW
Major	MAJ	MAJ DELAYS I75/ USE ALT RTE
Mile	MI	ACCIDENT 3 MI AHEAD/ USE ALT RTE
Minor	MNR	ACCIDENT 3 MI MNR DELAY
Minutes	MIN	ACCIDENT 3 MI/ 30 MIN DELAY
Northbound	N-BND	N-BND I75 CLOSED/ DETOUR EXIT 50
Oversized	OVRSZ	OVRSZ COMM VEH/ USE I275 NEXT RIGHT
Parking	PKING	EVENT PKING NEXT RGT
Parkway	PKWY	CUM PKWAY TRAF/ DETOUR EXIT 60
Prepare	PREP	ACCIDENT 3 MI/ PREP TO STOP
Right	RGT	EVENT PKING NEXT RGT
Road	RD	HAZMAT IN RD/ ALL TRAF EXIT 25
Roadwork	RDWK	RDWK NEXT 4 MI/ POSSIBLE DELAYS
Route	RTE	MAJ DELAYS I75/ USE ALT RTE
Shoulder	SHLDR	SHLDR CLOSED NEXT 5 MI
Slippery	SLIP	SLIP COND POSSIBLE/ SLOW SPD
Southbound	S-BND	S-BND I75 CLOSED/ DETOUR EXIT 50
Speed	SPD	SLIP COND POSSIBLE/ SLOW SPD

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**Standard Abbreviations** (cont)

<b><u>Word</u></b>	<b><u>Abbrev</u></b>	<b><u>Example</u></b>
Street	ST	MAIN ST CLOSED/ USE ALT RTE
Traffic	TRAF	CUM PKWAY TRAF/ DETOUR EXIT 60
Vehicle	VEH	OVRSZ COMM VEH/ USE I275 NEXT RIGHT
Westbound	W-BND	W-BND I64 CLOSED/ DETOUR EXIT 50
Work	WRK	CONST WRK 2MI/ POSSIBLE DELAYS

Certain abbreviations are prone to inviting confusion because another word is abbreviated or could be abbreviated in the same way. DO NO USE THESE ABBREVIATIONS:

<b><u>Abbrev</u></b>	<b><u>Intended Word</u></b>	<b><u>Word Erroneously Given</u></b>
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (merge)
LOC	Local	Location
LT	Light (traffic)	Left
PARK	Parking	Park
POLL	Pollution (index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
TEMP	Temporary	Temperature
WRNG	Warning	Wrong

**Typical Messages**

The following is a list of typical messages used on CMS. The list consists of the reason or problem that you want the driver to be aware of and the action that you want the driver to take.

<b><u>Reason/Problem</u></b>	<b><u>Action</u></b>
ACCIDENT	ALL TRAFFIC EXIT RT
ACCIDENT/XX MILES	AVOID DELAY USE XX
XX ROAD CLOSED	CONSIDER ALT ROUTE
XX EXIT CLOSED	DETOUR
BRIDGE CLOSED	DETOUR XX MILES
BRIDGE/(SLIPPERY, ICE, ETC.)	DO NOT PASS
CENTER/LANE/CLOSED	EXPECT DELAYS
DELAY(S), MAJOR/DELAYS	FOLLOW ALT ROUTE
DEBRIS AHEAD	KEEP LEFT
DENSE FOG	KEEP RIGHT
DISABLED/VEHICLE	MERGE XX MILES
EMER/VEHICLES/ONLY	MERGE LEFT
EVENT PARKING	MERGE RIGHT
EXIT XX CLOSED	ONE-WAY TRAFFIC
FLAGGER XX MILES	PASS TO LEFT
FOG XX MILES	PASS TO RIGHT

**Typical Messages (cont)**

**Reason/Problem**

FREEWAY CLOSED  
FRESH OIL  
HAZMAT SPILL  
ICE  
INCIDENT AHEAD  
LANES (NARROW, SHIFT, MERGE, ETC.)  
LEFT LANE CLOSED  
LEFT LANE NARROWS  
LEFT 2 LANES CLOSED  
LEFT SHOULDER CLOSED  
LOOSE GRAVEL  
MEDIAN WORK XX MILES  
MOVING WORK ZONE, WORKERS IN ROADWAY  
NEXT EXIT CLOSED  
NO OVERSIZED LOADS  
NO PASSING  
NO SHOULDER  
ONE LANE BRIDGE  
PEOPLE CROSSING  
RAMP CLOSED  
RAMP (SLIPPERY, ICE, ETC.)  
RIGHT LANE CLOSED  
RIGHT LANE NARROWS  
RIGHT SHOULDER CLOSED  
ROAD CLOSED  
ROAD CLOSED XX MILES  
ROAD (SLIPPERY, ICE, ETC.)  
ROAD WORK  
ROAD WORK (OR CONSTRUCTION) (TONIGHT, TODAY, TOMORROW, DATE)  
ROAD WORK XX MILES  
SHOULDER (SLIPPERY, ICE, SOFT, BLOCKED, ETC.)  
NEW SIGNAL XX MILES  
SLOW 1 (OR 2) - WAY TRAFFIC  
SOFT SHOULDER  
STALLED VEHICLES AHEAD  
TRAFFIC BACKUP  
TRAFFIC SLOWS  
TRUCK CROSSING  
TRUCKS ENTERING  
TOW TRUCK AHEAD  
UNEVEN LANES  
WATER ON ROAD  
WET PAINT  
WORK ZONE XX MILES  
WORKERS AHEAD

**Action**

PREPARE TO STOP  
REDUCE SPEED  
SLOW  
SLOW DOWN  
STAY IN LANE  
STOP AHEAD  
STOP XX MILES  
TUNE RADIO 1610 AM  
USE NN ROAD  
USE CENTER LANE  
USE DETOUR ROUTE  
USE LEFT TURN LANE  
USE NEXT EXIT  
USE RIGHT LANE  
WATCH FOR FLAGGER

## SPECIAL NOTE FOR DITCHING & SHOULDERING ON HSIP PROJECT

06-9019.00   Grant   KY 22

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### I.      DESCRIPTION

Except as provided herein, all work shall be performed in accordance with Department's Standard Specifications, Interim Supplemental Specifications, applicable Standard and Sepia Drawings, applicable Special Provisions and Special Notes, 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) Site Preparation; (3) Ditching; (4) Shouldering; (5) Constructing Embankments, Embankment Benching, and/or Excavation; (6) Erosion Control; and (7) Any other work as specified in this 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.
- C. Channel Lining, Class II.** When listed as a bid item, furnish Channel Lining, Class II as per Section 805.
- D. Geotextile Fabric Type IV.** When listed as a bid item, furnish Geotextile Fabric Type IV as per Section 843.

### 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: staking; clearing, grubbing, and removal of all obstructions or any other items; excavation, embankment benching, compacting embankment in place; temporary pollution and erosion

Ditching & Shouldering  
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control; disposal of excess, waste, and debris; and final dressing, cleanup, and seeding and protection. Perform all site preparation as approved or directed by the Engineer.

**D. Staking.** See Special Note for Staking.

**E. Ditching & Shouldering.** Perform Ditching & Shouldering at the approximate locations listed on the Summary Sheets and/or Plan Sheets, or at locations as directed by the Engineer. All work shall be completed according to Section 209, or as specified in the DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS, the Typical Sections, the Plan Sheets, or as directed by the Engineer. Ditching & Shouldering shall consist of any 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 detailed on the Typical Sections. Depending on the existing conditions encountered and to achieve the dimensions as detailed in the Typical Sections, Ditching & Shouldering may also include, but is not limited to: embankment benching, excavating and removing excess material, excavation of rock, providing additional earth material suitable for vegetation growth and grading, shaping, and compacting the earth material.

Provide positive drainage of ditches and slopes at all times during and upon completion of construction. When asphalt surfacing or resurfacing is included in the contract, perform all ditching and as much of the shouldering operations as is practical before beginning final surfacing operations.

**F. Embankment Benching.** Embankment Benching shall be required when the existing groundline has an incline greater than 15%. Any and all required embankment benching shall be incidental to the bid item DITCHING & SHOULDERING. For more information refer to the DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS.

**G. Channel Lining.** Install Class II Channel Lining along any sections of ditches identified in the Proposal, along any fill or ditch backslopes identified in the Proposal requiring Slope Protection, or any other locations the Engineer directs for slope protection or erosion control. When Channel Lining is proposed to be installed along a steep fill slope in order to establish a width of shoulder (as shown in Figure 5 of the DITCHING & SHOULDERING AND EMBANKMENT BENCHING DETAILS), the Channel Lining is to be capped with Geotextile Fabric Type IV and 4" of Crushed Stone Base. In lieu of 4" of Crushed Stone Base, 4" of DGA and a Double Asphalt Seal Coat may be specified in the Proposal. Install whichever aggregate capping material the Proposal specifies, or as directed by the Engineer.

**H. 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

Ditching & Shouldering  
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(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.

- I. 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.
- J. 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 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.
- K. 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.
- L. 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

Ditching & Shouldering  
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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.

- M. Clean Up, Disposal of Waste.** Clean up the project area as work progresses. Dispose of all removed excess material, debris, and 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.
- N. 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.

#### IV. METHOD OF MEASUREMENT

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Erosion Control.** See Special Note for Erosion Control.
- C. 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.
- D. Staking.** See Special Note for Staking.
- E. Ditching & Shouldering.** Contrary to Section 209.04 the Department will measure the bid item DITCHING & SHOULERING in linear feet along the centerline of the roadway as the length of the actual ditching and/or shouldering work performed. Further, this measurement will only include one side of the roadway. Therefore, for areas where ditching and shouldering occurs on both sides of the road, the Department will measure each side independently. The Department will not measure cleaning pipe structures 36 inches or less in diameter or reshaping any deformed ends on metal entrance pipes that are to remain in place, as these operations are considered incidental to the bid item DITCHING & SHOULERING.
- F. Embankment Benching.** The Department will not measure Embankment Benching for payment. Any and all required embankment benching shall be incidental to the bid item DITCHING & SHOULERING.



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- G. Channel Lining, Class II.** When listed as a bid item, Class II Channel Lining shall be measured according to Section 703.04.
- H. Geotextile Fabric, Type IV.** When listed as a bid item, Geotextile Fabric, Type IV shall be measured according to Section 214.04.
- I. 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.

**V. BASIS OF PAYMENT**

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Erosion Control.** See Special Note for Erosion Control.
- C. Staking.** See Special Note for Staking.
- D. Ditching & Shouldering.** The Department will make payment for the completed and accepted quantities under the bid item DITCHING & SHOULERING. The Department will consider payment full compensation for furnishing all labor, materials, equipment, and incidentals necessary to perform Ditching & Shouldering as required by these notes, at the locations indicated on the summary sheets, plans, and/or as directed by the Engineer.
- E. Channel Lining, Class II.** When listed as a bid item, the Department will make payment for Class II Channel Lining according to Section 703.05.
- F. Geotextile Fabric, Type IV.** When listed as a bid item, the Department will make payment for Geotextile Fabric, Type IV according to Section 214.05.

## SPECIAL NOTES FOR PIPE REPLACEMENTS / EXTENSIONS ON HSIP PROJECT

06-9019.00   Grant   KY 22

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### 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

Pipe Replacements/Extensions  
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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.

- 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 milling and/or 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,

Pipe Replacements/Extensions  
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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.

- 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. 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 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**

Pipe Replacements/Extensions  
Page 4 of 5

- 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.
- C. Remove Headwall.** The Department will measure the removal of existing headwalls as Each. Any excavation, including rock excavation, necessary to remove existing headwalls will NOT be measured for payment, but shall be incidental to the bid item "Remove Headwall".
- D. Remove Pipe.** Removal of existing culvert and entrance pipe shall be measured according to Section 701.04.14. Any excavation, including rock 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, including rock 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. Any excavation, including rock excavation, necessary to construct headwalls and/or drainage boxes will NOT be measured for payment, but shall be incidental to the applicable bid item.
- G. Excavation, Pipe Backfill, Embankments.** The Department will NOT measure for payment the following items: any excavation, including rock excavation, necessary to remove the existing pipe and/or install the proposed culvert or entrance pipe, pipe backfill material, flowable fill, and re-constructing shoulder embankments, but shall considered 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. Payment at the Contract unit price per Each shall be full compensation for furnishing all labor, materials, equipment, and incidentals for removing the existing headwall.

Pipe Replacements/Extensions  
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- 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 Soil Nail Walls ON HSIP PROJECT

06-9019.00 Grant KY 22

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### 1.0 DESCRIPTION

- 1.1 This work is for the design and construction of permanent "Soil Nail Walls". Use an approved Soil Nail Wall Contractor that has the expertise and capability to complete the work required by this Special Note. Only Contractors pre-qualified by the Kentucky Department of Highways (the Department) and that meet any specific requirements for this project may perform soil nail wall design and construction for this project.
- 1.2 The contractor shall submit construction plans prepared by a soil nail wall contractor under the direction of the wall design Engineer to the project Engineer for review and approval.

### 2.0 SCOPE OF WORK

- 2.1 The contract item "Soil Nail Wall" includes furnishing the materials, labor, tools, equipment, and other incidental items required for the design, construction, and testing of permanent soil nail walls as described herein.
- 2.2 Soil nail wall construction includes excavating in staged lifts; drilling soil nail drillholes; providing, placing and grouting the encapsulated or epoxy coated nail bar tendons into the drillholes; placing drainage elements; placing shotcrete reinforcement; applying shotcrete facing over the reinforcement; attaching bearing plates and nuts; performing nail testing; and installing permanent facing. Refer to Figure 2.1 in the FHWA Geotechnical Engineering Circular No. 7 "Soil Nail Walls" for the components of a soil nail wall.
- 2.3 Soil nail wall construction may requires excavation in staged lifts. ***Excavation in the vicinity of the wall face requires special care and effort compared to general earthwork excavation and close coordination between the earthwork contractor and the Soil Nail Wall Contractor.*** The Prime Contractor should take this into account during bidding and should consult the Excavation Section of this Special Note and the Contract Plans for details.
- 2.4 Subject to the requirements in the Contract Plans and this Special Note, select the method of excavation, drilling method and equipment, final drillhole diameter(s), and grouting procedures to meet the performance requirements specified herein.
- 2.5 In design and construction of the wall, consider the potential risks involved due to slope failure. Excavation stability, slope stability, wall alignment, and wall stability



are the Contractor's responsibilities from the beginning of work until final acceptance. Damage to property (public or private) or to the wall itself during construction is the responsibility of the Contractor. Analyze the soil nail wall system in order to ensure that the wall system will function as intended.

**2.6 The main body of this Special Note is general for permanent soil nail walls.**

**2.7** Construction Plans are defined as plans prepared by or for the Soil Nail Wall Contractor under the direction of the Wall Design Engineer and accepted by the Engineer for construction of the soil nail wall.

### **3.0 REFERENCES**

The documents below apply to this work. Unless noted otherwise, use the current edition as of the letting date of this project.

**3.1** Contract Plans and Plan Notes

**3.2** The "Kentucky Standard Specifications for Road and Bridge Construction", Current Edition with supplements. This document may be referred to as "Specifications" or "Standard Specifications" elsewhere in this Special Note.

**3.3** The Department Manuals "Kentucky Methods", "List of Approved Materials", and "Field Sampling and Testing Practices".

**3.4** American Society for Testing and Materials (ASTM) Standards, Current Edition.

**3.5** American Association of State Highway and Transportation Officials (AASHTO) Standards, Current Edition.

**3.6** FHWA Publication FHWA-NHI-14-007, " Geotechnical Engineering Circular No. 7: Soil Nail Walls" (GEC No. 7), February 2, 2015.

**3.7** AASHTO LRFD Bridge Design Specifications, Current Edition, with all interims.

**3.8** AISC Steel Construction Manual for the design of structural hardware applies if the design is not covered in the AASHTO Standard Specifications for Highway Bridges, Current Edition, with all interims.

### **4.0 EXPERIENCE REQUIREMENTS AND SUBMITTALS**

Requirements for personnel experience and pre-construction submittals, **including submittal deadlines**, are in this section. Do not begin construction on any soil nail wall, other than stockpiling of wall materials, until the Engineer receives and accepts all submittals required in this section. Additional submittals and records required during and after construction may be included in other sections of this Special Note. The use of electronic submittals (.pdf format) will expedite the approval process.

**4.1** Experience Requirements: The Department considers a satisfactory record of experience in soil nail wall design and construction important to successfully

complete this work. Use personnel meeting the requirements below on this project and submit electronically in PDF format all information necessary to verify that they meet the requirements. **Submit this information no later than thirty (30) calendar days after receiving Notice to Begin Work.** As a minimum, include the following for each project necessary to satisfy the requirements:

1. The names and current phone numbers of the owner's representative(s) who can verify that the Contractor meets the requirements.
2. The dates of construction.
3. The type (temporary/permanent) of structure.
4. The number of nails.
5. The maximum wall design height.

The Department will review the experience requirements and respond to the Contractor within twenty-one (21) calendar days. Review and acceptance by the Engineer is for evidence of the required experience and does not in any way relieve the Contractor of full responsibility for the successful and satisfactory completion of the work.

**4.2** Contractor Experience Requirements The requirements for the Soil Nail Wall Contractor are:

- a. A minimum of five (5) years experience constructing temporary and/or permanent soil nail retaining walls, with a minimum of three (3) projects and at least 600 soil nails or 15,000 ft<sup>2</sup> of wall face completed in the past five (5) years.
- b. A minimum of three (3) soil nail retaining wall projects with permanent soil nail retaining walls at least 15 ft high completed in the past five (5) years, and at least 600 permanent soil nails or 15,000 ft<sup>2</sup> of wall face completed in the past five (5) years.

Only drilled and grouted soil nails will satisfy these requirements. Some projects may be used to satisfy more than one requirement.

**4.3** Personnel Experience Requirements

**4.3.1** Wall Design Engineer Experience Requirements

Use a Wall Design Engineer meeting the requirements below to assume full responsibility for soil nail wall design on this project. One or more other Engineers may assist with the design and plan preparation under the supervision of the Wall Design Engineer, who may be an employee of the Soil Nail Wall Contractor or a Consultant. However, manufacturers' representatives may not be used to satisfy these requirements. The requirements for the Wall Design Engineer are:

- a. Licensed Professional Engineer (Civil and/or Structural) in Kentucky.
- b. A minimum of five (5) years design and/or construction experience on temporary and/or permanent soil nail retaining walls, with experience on a minimum of three (3) projects and at least 600 soil nails or 15,000 ft<sup>2</sup> of wall

face, constructed in the past five (5) years.

#### 4.3.2 Project Engineer Experience Requirements

Use an engineer meeting the requirements below to have overall technical responsibility for soil nail wall construction on this project. It is not necessary for the Project Engineer to be on site on a daily basis. Consultants or manufacturers' representatives may not be used to satisfy these requirements. The requirements for the Project Engineer are:

- a. Licensed Professional Engineer in the U.S.
- b. A minimum of five (5) years design and/or construction experience on temporary and/or permanent soil nail retaining walls, with experience on a minimum of three (3) projects and at least 600 soil nails or 15,000 ft<sup>2</sup> of wall face, constructed in the past five (5) years.
- c. An employee of the Soil Nail Wall Contractor.

The Project Engineer and the Wall Design Engineer may be the same person if that person meets all the stated requirements.

#### 4.3.3 On-Site Supervisor Experience Requirements

Use an on-site supervisor (project manager, superintendent, etc.) meeting the requirements below to be responsible for the daily soil nail wall construction activities on this project. Consultants or manufacturers' representatives may not be used to satisfy the requirements of this section. The requirements for the On-Site Supervisor are:

- a. A minimum of five (5) years construction experience on temporary and/or permanent soil nail retaining walls, with experience on a minimum of three (3) projects and at least 600 soil nails or 15,000 ft<sup>2</sup> of wall face, constructed in the past five (5) years.
- b. An employee of the Soil Nail Wall Contractor.

The On-Site Supervisor and the Project Engineer may be the same person if that person meets all the stated requirements. The Department will consider allowing a team of more than one supervisor to satisfy these requirements and perform the associated functions, subject to certain conditions at the discretion of the Engineer. The Department may consider related experience with other similar types of specialty construction.

#### 4.3.3 Shotcrete Nozzlemen and Finishers Experience Requirements

Use shotcrete nozzlemen and finishers meeting the requirements below:

- a. Certification in accordance with the ACI 506.3R "Guide to Certification of Shotcrete Nozzlemen" by an ACI recognized shotcrete testing lab and/or recognized shotcreting consultant and covering the type of shotcrete to be used (plain wet-mix, plain dry-mix or steel fiber reinforced). Provide proof of ACI certification.
- b. Experience with similar shotcrete application on at least three (3) projects

constructed in the past five (5) years, with work totaling at least 5,000 square feet of area.

4.3.5 The Engineer may suspend work on the wall if the Contractor substitutes unqualified and/or unapproved personnel or if the personnel are not performing the required duties. If work is suspended due to substitution of unqualified and/or unapproved personnel, the Contractor is fully liable for all costs resulting from the suspension of work. No adjustment in contract time resulting from this suspension of work will be allowed.

**4.4 Design Calculations and Construction Plans** For each wall, submit electronically in PDF format for review Construction Plans and Design Calculations prepared by or under the supervision of the Wall Design Engineer and signed by the Wall Design Engineer. Submit in the same format revisions to construction plans and design calculations each time corrections are required. In the design calculations and construction plans, show explicit details sufficient to allow an expeditious review of the proposed design and construction procedures. Hard copies of the reviewed and accepted plans and calculations will required as noted in Section 4.4.2. **Submit this information no later than sixty (60) calendar days after receiving Notice to Begin Work.**

Submit any changes or deviations from the Construction Plans for additional review and acceptance. No adjustments in contract time will be allowed due to incomplete submittals. Revise the drawings when plan dimensions are revised due to field conditions, evaluation of verification or proof test results, or for other reasons. Provide revised design calculations signed by the Wall Design Engineer for all design changes made during construction of the wall.

4.4.1 Design Calculations: As a minimum, include the following items:

1. A written summary report that describes the overall soil nail wall design.
2. Applicable code requirements and design references.
3. Nail wall critical design cross sections geometry including soil/rock strata and location, magnitude, and direction of the design slope or external surcharge loads and piezometric levels.
4. Design criteria including, soil/rock shear strengths (friction angle and cohesion), unit weights, and ground-grout pullout resistances and nail drillhole diameter assumptions for each soil/rock strata.
5. Partial safety factors/strength factors (for Service Load Design) used in the design on the pullout resistance, surcharges, soil/rock unit weights, nail head strengths, and steel, shotcrete, and concrete materials. Minimum required global stability soil factor of safety for SLD design.
6. Seismic design acceleration coefficient.
7. Design calculation sheets with the project number, wall location, designation, date of preparation, initials of designer and checker, and page number at the top of each page. Provide an index page with the design calculations.

8. Design notes including an explanation of any symbols and computer programs used in the design.
  9. Nail wall final design cross-sections geometry including soil/rock strata and location, magnitude, and direction of slope or external surcharge loads and piezometric levels with critical slip surface shown along with minimum calculated Global stability soil factor of safety of SLD design and required nail lengths and strengths (nail bar sizes and grades) for each nail row.
  10. Structural design calculations for wall facings and nail head/facing connections including consideration of facing flexural and punching shear strength, headed studs tensile strength, upper cantilever, minimum reinforcement ratio, cover and splice requirements.
  11. Any other necessary design calculations.
- 4.4.2 Construction Plans As a minimum, include the following items:
1. A natural scale plan view of the wall identifying:
    - a. A reference baseline and north arrow.
    - b. The offset and offset from the construction centerline or baseline to the face of the wall at its base at all changes in horizontal alignment.
    - c. Beginning and end of wall stations and offsets.
    - d. Right-of-way and permanent or temporary construction easement limits, location of all known active and abandoned existing utilities, adjacent structures or other potential interferences. The centerline of any drainage structure or drainage pipe behind, passing through or passing under the wall.
    - e. Limits of longest nails.
    - f. Subsurface exploration locations shown on a plan view of the proposed wall alignment with appropriate references base lines to fix the locations of the explorations relative to the wall.
  2. A natural scale elevation view of the wall identifying:
    - a. The elevation at the top of the wall, at all horizontal and vertical break points, and at least every 25 ft. along the wall.
    - b. Elevations at the wall base and the top of leveling pads for casting CIP facing (if applicable).
    - c. Beginning and end of wall stations and stations of alignment breaks.
    - d. The distance along the face of the wall to all steps in the wall base.
    - e. Wall elevation view showing nail locations and elevations; vertical and horizontal nail spacing; and the location of wall drainage elements and permanent facing expansion/contraction joints (if applicable) along the wall length.
    - f. Existing and finish grade profiles both behind and in front of the

wall.

- g. Elevation Datum
- 3. Design parameters, including ultimate and allowable nail pullout resistance.
- 4. General notes for constructing the wall including construction sequencing or other special construction requirements.
- 5. Horizontal and vertical curve data affecting the wall and wall control points. Match lines or other details to relate wall station to centerline stationing.
- 6. A summary of quantities of each wall showing estimated square feet of wall face.
- 7. Nail wall typical section including staged excavation lifts, wall and excavation face batter, nail spacing and inclination, nail bar sizes, and corrosion protection details.
- 8. A typical detail of production and test nails defining the nail length, minimum drillhole diameter, inclination, test nail bonded and unbonded test lengths and Design Test Loads (DTL's).
- 9. A soil nail schedule including:
  - a. Soil nail numbers
  - b. Soil nail design loads
  - c. Type, size, and number of bars
  - d. Total nail lengths
  - e. Nail hole diameters
  - f. Angle of nail inclination
  - g. Nail locations and spacing
- 10. Details, dimensions, and schedules for all nails, reinforcing steel, wire mesh, bearing plates, headed studs, etc. and/or attachment devices for shotcrete, cast-in-place or prefabricated facings.
- 11. Dimensions and schedules of all reinforcing steel including reinforcing bar bending details.
- 12. Details and dimensions for wall appurtenances such as barriers, coping, drainage gutters, fences, etc.
- 13. Details for constructing wall around drainage facilities.
- 14. Details for terminating wall and adjacent slope construction.
- 15. Facing finishes, color and architectural treatment requirements (if applicable) for permanent wall facing details.

The Department will complete the review within thirty (30) calendar days of each submittal; the Department will not suspend charging working days for this review period. Insufficient design and/or plan details, as judged by the Engineer, will be



cause for withholding acceptance. The Contractor is fully liable for all costs resulting from acceptance being withheld; the Department will not suspend charging working days as the result of not accepting the design, details, or plans. Review and acceptance of the plans by the Engineer is for evidence of work to be performed and does not in any way relieve the Contractor of full responsibility for the design and for successful and satisfactory completion of the work.

After the review is completed and the Engineer accepts the Design Calculations and Construction Plans, furnish the Resident Engineer, ten (10) full sets of accepted Final Construction Plans for the Department's use, and four (4) sets of accepted Final Design Calculations. Submit design calculations and construction plans, stamped and signed by the Soil Nail Wall Design Engineer. Provide a set of the above information electronically in PDF format

**4.5 Construction and Materials Submittals** Submit electronically in PDF format the following. **Submit this information no later than sixty (60) calendar days after receiving Notice to Begin Work and thirty (30) calendar days prior to beginning wall construction.**

1. The proposed start date and proposed wall construction sequence and schedule including:
  - a. Plan describing how surface water will be diverted, controlled and disposed of.
  - b. Proposed methods and equipment for excavating the soil and/or rock to the staged excavation lifts, including the proposed grade elevations for each excavation lift.
  - c. Measures to ensure wall and slope stability during various stages of wall construction and excavation where discontinuous rows of nails will be installed (if applicable); information on space requirements for installation equipment; temporary shoring plans (if applicable); information on provisions for working in the proximity of underground facilities or utilities (if applicable).
  - d. Proposed nail drilling and grouting methods and equipment including drillhole diameter proposed to achieve the required pullout resistance values and any variation of these along the wall alignment.
2. Grout submittal including:
  - a. type of mixer;
  - b. water/cement ratio;
  - c. type of additives;
  - d. design grout pressure;
  - e. type of cement;
  - f. quantity of fly ash;
  - g. mix design;



- h. design strength of grout; and
    - i. mix verification testing;
- 3. Certified mill test results for nail bars and couplers from each heat specifying the ultimate strength, yield strength, elongation and composition.
- 4. Certificates of Compliance for the following materials, if used. Provide certificates stating that the material or assemblies to be provided will fully comply with the contract requirements:
  - a. Nail Centralizers
  - b. Nail Encapsulation
  - c. Bearing Plates
  - c. Nuts
  - d. Portland Cement
  - e. Documentation to support any other requirements in the Materials Section of this Special Note.
- 5. Shotcrete and Drainage submittals including:
  - a. Proposed methods of shotcrete placement and of controlling and maintaining facing alignment and location and shotcrete thickness.
  - b. Shotcrete mix design performed by a certified ACI Level II or KRMCA Level II technician including:
    - Type of Portland cement.
    - Aggregate source and gradation.
    - Proportions of mix by weight and water-cement ratio.
    - Proposed admixtures, manufacturer, dosage, technical literature.
    - If prepackaged shotcrete is used, previous strength test results for the same shotcrete mix from the same manufacturer completed within one year of the start of shotcreting may be submitted for initial verification of the required compressive strengths at start of production work.
  - c. Certificates of Compliance, manufacturers' engineering data and installation instructions for the PVC drain piping, drainage geotextile, geocomposite drain strip, drain grate and accessories.
- 6. Proposed nail testing methods and equipment setup including:
  - a. Details of the jacking frame and appurtenant bracing.
  - b. Details showing methods of isolating test nails during shotcrete application (i.e., methods to prevent bonding of the soil nail bar and the shotcrete facing during testing).

- c. Details showing methods of providing the temporary unbonded length and of grouting the temporary unbonded length of test nails after completion of testing.
  - d. Specific test nail locations including stations and elevations.
  - e. Equipment list.
  - f. Identification number and certified calibration records for each test jack and pressure gauge (calibrated as a unit no more than 12 months prior to use) and load cell to be used.
7. Instrumentation submittals, if required.
  8. Any other documentation required to verify that proposed construction procedures and materials fully comply with all requirements in the contract documents.

The Department will complete the review within thirty (30) calendar days after accepting the Design Calculations and Construction plans or within thirty (30) calendar days after receiving each submittal; the Department will not suspend charging working days for this review period. Unacceptable methods or documentation, as judged by the Engineer, will be cause for withholding acceptance. The Contractor is fully liable for all costs resulting from acceptance being withheld; the Department will not suspend charging working days as the result of not accepting the design, details, or plans. Review and acceptance by the Engineer is for evidence of work to be performed and does not in any way relieve the Contractor of full responsibility for the successful and satisfactory completion of the work.

4.6 Soil Nail Wall Pre-Construction Meeting A Pre-Construction Meeting to discuss soil nail wall construction will be required. This meeting will be held after all soil nail submittals in Sections 4.1, 4.2, 4.3, and 4.4 have been received, reviewed, and accepted by the Department, after the submittals in Section 4.5 have been received by the Department, and at least ten (10) working days prior to the beginning of soil nail construction. The purpose of the meeting is to discuss construction procedures, personnel, and equipment to be used. The following will be expected to attend:

- Representing the Contractor and Subcontractors - Prime Contractor Representative, Soil Nail Wall Design Engineer, Soil Nail Wall Project Engineer, and Soil Nail Wall On-Site Supervisor. Also, representatives of the Excavation Contractor, Shotcreting Contractor, and Surveyor, if different than the Prime or Soil Nail Wall Contractor.
- Representing the Quality Control Team - QCP Manager and Lead Inspector.
- Representing the Department - Section Engineer, Central Office Construction Engineer, Geotechnical Branch Representative and others as deemed appropriate by the Section Engineer.

If the Contractor's key personnel change or if the Contractor proposes a significant revision to soil nail construction procedures, additional Soil Nail Pre- Construction meetings may be required at the discretion of the Engineer.

## 5.0 DESIGN

Design the soil nail wall using the Allowable Stress Design (ASD) method, also known as Service Load Design (SLD). Primary design references include but are not limited to: FHWA Publication FHWA-NHI-14-007, "Geotechnical Engineering Circular No.7, Soil Nail Walls", February 2, 2015; AASHTO Standard Specifications for Highway Bridges, Current Edition, with all interims. Use required partial safety factors, allowable strength factors, and minimum global stability soil factors of safety in accordance with the FHWA GEC No. 7, unless specified otherwise; critical structure requirements apply. Perform structural design of any individual wall elements not covered in FHWA GEC No. 7 by the Service Load Design methods in conformance with appropriate articles of the AASHTO Specifications. Estimated soil/rock design shear strength parameters, slope and external surcharge loads, type of wall facing and facing architectural requirements, soil nail corrosion protection requirements, known utility locations, easements, and right-of-ways will be as shown in the Contract Plans or specified elsewhere in this Special Note.

Refer to the Contract Plans for additional information to be used for the design of the soil nail wall, including: Wall Plan and Elevation Views, Soil Nail Wall Details, and Subsurface Data.

**5.1** Soil Nail Capacity Determine the allowable pullout resistance necessary to develop the required design loads using theoretical and empirical methods, and based on evaluation of the subsurface data in the Contract Plans and/or inspection of the site. Verify the desired soil nail capacities in accordance with the Soil Nail Testing and Acceptance Section of this Special Note.

**5.2** Soil Nail Geometry

- \* Unless specified in the Contract Plans or elsewhere in this Special Note, provide a minimum soil nail length of 10 ft.
- \* Provide a minimum nail hole diameter of 6 inches.
- \* Provide a nail inclination of at least 10° but no more than 20°, unless otherwise specified in the Contract Plans or elsewhere in the Special Note.
- \* Do not extend the nails beyond the right-of-way or easement limits shown in the Contract Plans.

**5.3** Corrosion Protection Provide design and details for Class I Protection in accordance with FHWA GEC No. 7 (Sections C.3 and C.4), except that the required thickness of bar-coating epoxy is 7-12 mils rather than 16 mils.

**5.4** Structural Hardware Design structural hardware in accordance with the current edition of the AISC Steel Construction Manual and the current edition of the AASHTO Standard Specifications for Highway Bridges with interims. Where these conflict, AASHTO Specifications with interims govern.

- 5.5     Temporary Shotcrete and Wall Drainage Design a temporary shotcrete and permanent wall drainage system as shown in the Contract Plans and/or specified elsewhere in this Special Note. The Wall Design Engineer is responsible for providing all necessary details required to successfully construct the temporary shotcrete facing and wall drainage system (including weep drains and/or toe drains as applicable) to satisfy the design intent of the wall. Comply with AASHTO Specifications or the FHWA GEC No. 7 for any specific items that may not be addressed herein or elsewhere in the Contract Documents.
- 5.6     Wall Alignment Ensure that the wall is compatible with the horizontal and vertical alignment indicated in the Contract Plans. Survey control is the front face of the wall.
- 5.7     Permanent Concrete Facing When permanent concrete facing is required, provide cast-in-place concrete facing unless otherwise specified in the plans. Refer to the plans for detail concerning formliners or other architectural treatments that may be required. Design concrete facing for full loads at final condition (in-place facing and complete construction). Provide a minimum facing thickness according to the following:

Cast-in-Place Concrete with 1 Mat of Reinforcement	10 inches
Cast-in-Place Concrete with 2 Mats of Reinforcement	12 inches

The minimum concrete cover over reinforcement is 3 inches against temporary shotcrete and 2 inches on the front face. Provide joints and joint materials as shown in the Contract Plans.

Protrusions beyond the face of the wall are not allowed. Completely fill any voids between the permanent facing and the construction facing with grout.

Include details for formwork connections to the shotcrete facing and/or nails (if applicable), proposed concrete placement method and placement rates, and accompanying structural calculations verifying the structural adequacy of the formwork, connections, and shotcrete facing and/or nails to support the loading induced by the fluid CIP concrete. When anchors embedded into the shotcrete facing will be used to support the 1-sided CIP face form, include calculations illustrating the anchor design load (calculated as the design concrete fluid pressure times the anchor tributary area).

5.8     Surface Drainage Coordinate design of surface drainage above the walls with the wall design.

6.0     **MATERIALS**

Provide materials conforming to the requirements below when the materials are required by the Contract Plans, this Special Note, the Construction Plans, or elsewhere in the Contract Documents.

6.1     Soil Nails

- 6.1.1 Solid Bar Nails AASHTO M31/ASTM A615, Grade 60 or 75, ASTM A722 for Grade 150. Deformed bar, continuous without splices or welds, new, straight, undamaged, and encapsulated. Threaded a minimum of 6 inches on the wall anchorage end to allow proper attachment of bearing plate and nut. Threading may be continuous spiral deformed ribbing provided by the bar deformations (e.g. continuous threadbars) or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, provide the effective area used for design, at no additional cost. Use mechanical splicers only for nails greater than 40 ft. in length.
- 6.1.2 Bar Couplers Bar couplers that develop the full ultimate tensile strength of the bar as certified by the manufacturer.
- 6.1.3 Fusion Bonded Epoxy Coating ASTM A 775, 7-12 mil thickness electrostatically applied. Bend test requirements are waived. Coating at the wall anchorage end of epoxy-coated bars may be omitted over the length provided for threading the nut against the bearing plate.
- 6.1.4 Encapsulation Minimum 40 mils thick corrugated HDPE tube conforming to AASHTO M252 or corrugated PVC tube conforming to ASTM D1784, Class 13464-B.

## **6.2 Soil Nail Appurtenances**

- 6.2.1 Centralizers Manufactured from Schedule 40 PVC pipe or tube, steel or other material not detrimental to the nail steel (do not use wood); securely attached to the nail bar; sized to position the nail bar within 1 inch of the center of the drillhole; sized to allow tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drillhole.
- 6.2.2 Nail Grout Provide Type I or III Portland Cement conforming to ASTM C 150 and Section 801 of the Standard Specifications. Provide fresh cement that does not contain any lumps or other indication of hydration or "pack set." Provide water in the grout that is potable, clean and free of injurious substances, and meets the requirements of Section 803 of the Standard Specifications, except that the chloride content of the water does not exceed 100 ppm.

Provide grout consisting of a pumpable neat mixture of cement and water and is stable (bleed less than 2 percent), fluid, with a minimum 28-day compressive strength of 2000 psi and 1000 psi at 3 days, measured in accordance with ASTM C 109. No later than thirty days prior to beginning grouting operations, submit to the Engineer results of tests performed by an approved laboratory which demonstrate that the proposed grout mixture meets the requirements of this note. Include a graph with this information relating compressive strength of the grout to age covering a range of ages from 24 hours to 28 days.

Add water to the mixer first followed by cement and the admixtures. Mix the grout in mechanical mixing equipment of a type capable of continuous mixing which produce a grout free of lumps and undispersed cement. Auger mixing of the grout is not permitted. Retempering to the grout is not permitted.

Required Grout Physical Properties		
Property	Test Value	Test Method
Water-Cement Ratio	Max. 0.45	-----
28 Day Compressive Strength (Average of 3 cubes)	Min. 2000 psi	ASTM C109
3 Day Compressive Strength (Average of 3 cubes)	Min. 1000 psi	ASTM C109
Expansion	0.5% min 2% max	ASTM C1090

6.2.3 Admixtures Section 802 of the Standard Specifications. Admixtures which control bleed, improve flowability, reduce water content and use retard set in the grout, subject to review and acceptance by the Engineer. Accelerators are not permitted. Expansive admixtures may only be used in grout used for filling sealed encapsulations. Use admixtures compatible with the grout and mixed in accordance with the manufacturer's recommendations.

6.2.4 Film Protection Polyethylene film per AASHTO M171.

### **6.3 Bearing Plates, Nuts, and Welded Stud Shear Connectors**

6.3.1 Bearing Plates ASTM A36

6.3.2 Nuts AASHTO M291, Class B, hexagonal, fitted with beveled washer or spherical seat to provide uniform bearing.

6.3.3 Shear Connectors AASHTO Construction Specifications, Section 11.3.3.1

### **6.4 Temporary Shotcrete and Wall Drainage Materials**

Deliver, store and handle materials to prevent contamination, segregation, corrosion or damage. Store liquid admixtures to prevent evaporation and freezing.

Provide drainage geotextile and geocomposite drain strips in rolls wrapped with a protective covering and stored in a manner which protects the fabric from mud, dirt, dust, debris, and shotcrete rebound. Do not remove protective wrapping until immediately before the geotextile or drain strip is installed. Avoid extended exposure to ultra-violet light. Label each roll of geotextile or drain strip in the shipment to identify the production run.



Cement	Section 801, Type I, II, III or IV
Fine Aggregate	Section 804, Concrete Sand
Coarse Aggregate	Section 805, No. 11
Water	Section 803
Chemical Admixtures:	
Accelerator	Section 802, Fluid type, applied at nozzle
Water-reducer and Superplasticizer	Section 802
Retarders	Section 802
Mineral Admixtures:	
Fly Ash	Section 844, Cement replacement up to 35% by weight of cement
Silica Fume	Section 844, 90% minimum silicon dioxide solids content, not to exceed 12% by weight of cement
Welded Steel Wire Fabric	Section 811/AASHTO M55
Reinforcing Bars for Shotcrete Facing	Section 811, Grade 60, deformed
Bearing Plates	ASTM A36
Nuts	AASHTO M291, Class B, hexagonal, fitted with beveled washer or spherical seat to provide uniform bearing
Prepackaged Shotcrete	ASTM C928
Toe Drain Geotextile	Section 843, Type II
Drainage Aggregate	Section 805.08, with no more than 2% passing the No. 200 sieve
Geocomposite Drain Strip	Amerdrain 500 or approved equal
Film Protection	Polyethylene films per AASHTO M-171
PVC Connector and Drain Pipes:	
Pipe	ASTM 1785 Schedule 40 PVC, solid and perforated wall, cell classification 12454-B or 12354-C, wall thickness SDR 35, with solvent weld or elastomeric gasket joints
Fittings	ASTM D3034, cell classification 12454-B or 12454-C, wall thickness SDR35, with solvent weld or elastomeric gasket joints
Solvent Cement	ASTM D2564
Primer	ASTM F656
<b>Section References are in the Kentucky Standard Specifications, Current Edition</b>	

6.4.1 Shotcrete Mix Design Use shotcrete complying with the requirements of ACI 506.2, "Specifications for Materials, Proportioning and Application of Shotcrete", except as otherwise specified. The Contractor must receive notification from the Engineer that the proposed mix design and method of placement are acceptable before shotcrete placement can begin.

6.4.1.1 Proportioning and Use of Admixtures Proportion the shotcrete to be pumpable with the concrete pump furnished for the work, with a cementing materials content of at least 24.3 lb/cy and water/cement ratio not greater than



0.50. Do not use admixtures unless approved by the Engineer. Thoroughly mix admixtures into the shotcrete at the rate specified by the manufacturer. Use only accelerators compatible with the cement used, non-corrosive to steel, and not promoting other detrimental effects such as cracking or excessive shrinkage. The maximum allowable chloride ion content of all ingredients is 0.10% when tested to AASHTO T260.

6.4.1.2 Air Entrainment Air entrainment is not required for temporary shotcrete construction facings.

6.4.1.3 Strength Requirements Provide shotcrete with a compressive strength of 2000 psi in 3 days and 4000 psi in 28 days. The average compressive strength of each set of three test cores extracted from test panels or wall face must equal or exceed 85 percent of the specified compressive strength, with no individual core less than 75 percent of the specified compressive strength, in accordance with ACI 506.2.

6.4.1.4 Mixing and Batching Batch aggregate and cement by weight or by volume in accordance with the requirements of ASTM C94 or AASHTO M241/ASTM C685. Use mixing equipment that thoroughly blends the materials in sufficient quantity to maintain placing continuity. Produce ready mix shotcrete complying with AASHTO M157. Batch, deliver, and place shotcrete within 90 minutes of mixing. The use of retarding admixtures may extend application time beyond 90 minutes if approved by the Engineer.

Premixed and packaged shotcrete mix may be provided for on-site mixing. Use packages containing materials conforming to the Materials Section. Placing time limit after mixing is per the manufacturers' recommendations.

6.4.2 Field Quality Control Production test panels or test cores from the wall facing are required. Perform shotcreting and coring of test panels using qualified personnel in the presence of the Engineer. Provide equipment, materials, and personnel as necessary to obtain shotcrete cores for testing including construction of test panel boxes, field curing requirements and coring. Shotcrete final acceptance will be based on the 28-day strength.

Begin shotcrete production work only upon initial approval of the design mix and nozzle men and continue if the specified strengths are obtained. The shotcrete work by a crew will be suspended if the test results for their work do not satisfy the strength requirements. Change all or some of the following: the mix, the crew, the equipment, or the procedures. Before resuming work, the crew must shoot additional test panels and demonstrate that the shotcrete in the panels satisfies the specified strength requirements. Provide all work required to obtain satisfactory strength tests at no additional cost to the Department.

6.4.2.1 Production Test Panels Furnish at least one production test panel or, in lieu of production test panels, six 3 inch diameter cores taken from the shotcrete facing, during the first production application of shotcrete and henceforth for every 5000 ft<sup>2</sup> of shotcrete placed. Construct the production test panels simultaneously with the shotcrete facing installation at times designated by the Engineer. Make

production test panels with minimum dimensions of 18x18 inches square and at least 4 inches thick.

#### **6.4.2.2 Test Panel Curing, Test Specimen Extraction and Testing**

Immediately after shooting, field moist cure the test panels by covering and tightly wrapping with a sheet of material meeting the requirements of ASTM C171 until they are delivered to the testing lab or test specimens are extracted. Do not immerse the test panels in water. Do not further disturb test panels for the first 24 hours after shooting. Provide at least six 3 inch diameter core samples cut from each preconstruction test panel and production test panel. Contractor has the option of extracting test specimens from test panels in the field or transporting to another location for extraction. Keep panels in their forms when transported. Do not take cores from the outer 6 inches of test panels measured in from the top outside edges of the panel form. Trim the ends of the cores to provide test cylinders at least 3 inches long. If the Contractor chooses to take cores from the wall face in lieu of making production test panels, the Engineer will designate locations. Clearly mark the cores and container to identify the core locations and whether they are for preconstruction or production testing. If for production testing, mark the section of the wall represented by the cores on the cores and container. Immediately wrap cores in wet burlap or material meeting requirements of ASTM C171 and seal in a plastic bag. Deliver cores to the testing lab within 48 hours of shooting the panels. The remainder of the panels will become the property of the Contractor. Upon delivery to the testing lab, place the samples in the moist room until the time of test. When the test length of a core is less than twice the diameter, apply the correction factors given in AASHTO T24/ASTM C42 to obtain the compressive strength of individual cores. Test three cores will be tested at 3 days and three cores at 28 days in accordance with AASHTO T24/ASTM C42.

Fill core holes in the wall by dry-packing with non-shrink patching mortar after the holes are cleaned and dampened. Do not fill core holes with shotcrete.

### **6.5 Permanent Concrete Facing**

6.5.1 Cast-in-Place Concrete Conform to the Standard Specifications for Class A concrete.

6.5.2 Precast Concrete Panels Conform to the Standard Specifications for Class D or Class D Modified concrete. Obtain panels from an approved Precast Concrete Producer on the KYTC List of Approved Materials.

6.5.3 Reinforcing Steel Conform to the Standard Specifications. Epoxy coating is not required.

**6.6 Materials Handling and Storage** Comply with the Standard Specifications and the items below:

1. Do not move or transport encapsulated nails until the encapsulation grout has reached sufficient strength to resist damage during handling.
2. Handle encapsulated nails in a manner that will prevent large deflections, distortions or damage.

3. Repair encapsulated nails that are damaged or defective in accordance with the manufacturer's recommendations or remove them from the site.

## 7.0 MATERIALS TESTING AND ACCEPTANCE

- 7.1 Materials Sampling and Testing will be in accordance with Section 106 of the Standard Specifications, the Department's current "Kentucky Methods", the current "Manual of Field Sampling and Testing Practices", and other referenced documents.
- 7.2 Use only materials accepted by the Department before use. The Engineer may suspend work on the wall if the Contractor does not have acceptance of materials to be used and there is no other work on the wall that may be done. If work is suspended due to lack of material acceptance, the Contractor is fully liable for additional cost from the suspension of work. No additional contract time resulting from the suspension of work will be allowed.

## 8.0 CONSTRUCTION

Construct the wall(s) according to the Contract Plans, Construction Plans, the Standard Specifications, and the requirements below. In all cases, provide materials conforming to the Materials Section of this Special Note.

- 8.1 Excavation ***Coordinate the work and the excavation so the soil nail wall is safely constructed.*** Perform the wall construction and excavation sequence in accordance with the Construction Plans. Proceed with excavation in stages exposing the minimum amount of soil or rock face that will allow the practical and expeditious application of the shotcrete and the installation of soil nails while assuring stability of the excavated face and minimizing ground movements. Excavate a neatline face to facilitate application of temporary shotcrete and limit excavation in front of walls to 2 ft. below any soil nail until that nail has been completed and tested (if applicable). Leave temporary excavation lifts open no more than 24 hours without the temporary shotcrete facing or nails installed. After temporary shotcrete has been applied, excavate the next lift only after the shotcrete strength reaches 2000 psi.
- 8.2 Drilling Drill holes for soil nails at the locations shown in the Construction Plans. Use drilling methods and soil nail lengths necessary to develop adequate load capacity to satisfy testing acceptance criteria for the design load required, but not less than the lengths and diameters shown on the Construction Plans. It is the Contractor's responsibility to choose drilling methods that will maintain open drill holes and that do not promote mining or loosening of the soil at the perimeter of the drill hole or fracture soil with weak stratification planes by use of high flush volumes and pressures. At the ground surface, locate the drill hole within 6 inches of the location shown on the Construction Plans. At the point of entry, angle the nail within

plus or minus 3° of that shown on the Construction Plans. Do not extend the nails beyond the right-of-way or easement limits shown in the Contract Plans provided in the contract documents.

- 8.3** Nail Installation Place centralizers as shown in the Construction Plans as necessary for corrosion protection.

- 8.4** Grouting Provide grouting equipment capable of continuous mixing and producing a grout free of lumps. Place nails in each drilled hole either prior to grouting or within 15 minutes of the grout injection. Grout until the hole is completely filled with grout and clean grout is seen to run from the top of the hole. Accomplish mortar packing and secondary grouting to the wall face as soon as practical after nail installation. Provide secondary grouting to the small ungrouted zone at the face and place a bearing plate over the bar and dry pack with cement or a cement mortar to provide even bearing against the shotcrete face.

Test grout according to AASHTO T106/ASTM C109 at a frequency of no less than one test every 50 CY of grout placed. Provide grout cube test results to the Engineer within 24 hours of testing.

- 8.5** Temporary Shotcrete and Wall Drainage Shotcrete facing and wall drainage work consists of furnishing all materials and labor required for placing and securing geocomposite drainage material, connection pipes, weepholes and horizontal drains (if required), drainage gutter, reinforcing steel and shotcrete for the temporary shotcrete construction facing and nail head bearing plates and nuts for the soil nail walls. The Work includes any preparatory trimming and cleaning of soil/rock surfaces and shotcrete cold joints to receive new shotcrete.

Use shotcrete complying with the requirements of ACI 506.2, "Specifications for Materials, Proportioning and Application of Shotcrete", except as otherwise specified. Shotcreting consists applying of one or more layers of concrete conveyed through a hose pneumatically projected at a high velocity against a prepared surface.

Produce shotcrete by either a wet-mix or dry-mix process. The wet-mix process consists of thoroughly mixing all the ingredients except accelerating admixtures, but including the mixing water, introducing the mixture into the delivery equipment and delivering it, by positive displacement, to the nozzle. Air jet the wet-mix shotcrete from the nozzle at high velocity onto the surface. The dry-mix process consists of shotcrete without mixing water that is conveyed through the hose pneumatically with the mixing water introduced at the nozzle. For additional descriptive information, refer to the American Concrete Institute ACI 506R "Guide to Shotcrete."

All temporary shotcrete and wall drainage construction is incidental to the Contract Unit Bid Price for "Soil Nail Wall" per "Square Foot".

- 8.6** Wall Drainage Network Install and secure all elements of the wall drainage network as shown in the Construction Plans, specified herein, or as required to suit the site conditions. Install geocomposite drain strips and PVC connection pipes as shown on the Construction Plans. Install all elements of the drainage network prior to

shotcreting. Capture unanticipated subsurface drainage features exposed in the excavation cut face independently of the wall drainage network and mitigate prior to shotcrete application.

- 8.6.1 Geocomposite Drain Strips Install geocomposite drain strips centered between offset nail columns as shown in the Construction Plans. The maximum horizontal spacing between drain strips is 5 feet. Use drain strips at least 12 inches wide and place the geotextile side against the ground. Secure the strips to the excavation face and prevent shotcrete from contaminating the ground side of the geotextile. Install vertically continuous drain strips. Make splices with a 12 inch minimum overlap such that the flow of water is not impeded. Repair damage to the geocomposite drain strip, which may interrupt the flow of water.
- 8.6.2 Toe Drains If required, install toe drains at the bottom of each wall. Wrap the drainage geotextile around the toe drain aggregate and pipe and conform to the dimensions of the trench. Conform to Section 214 of the Standard Specifications for Geotextile Construction. Overlap the drainage geotextile on top of the drainage aggregate as shown in the Construction Plans. Replace or repair damaged or defective drainage geotextile.
- 8.6.3 Connection Pipes and Weepholes Install connection pipes as shown in the Construction Plans. Connection pipes are lengths of solid PVC pipe installed to direct water from the geocomposite drain strips to the exposed face of the wall. Connect the connection pipes to the drain strips using either prefabricated drain grates as shown in the Construction Plans or using the alternate connection method described below. Install the drain grate per the manufacturer's recommendations. Seal the joint between the drain grate and the drain strip and the discharge end of the connector pipe to prevent shotcrete intrusion.

The alternative acceptable method for connection of the connector pipe to the drain strip involves cutting a hole slightly larger than the diameter of the pipe into the strip plastic core but not through the geotextile. Wrap both ends of the connection pipe in geotextile in a manner that prevents migration of fines through the pipe. Tape or seal the inlet end of the pipe where it penetrates the drain strip and the discharge end of the connector pipe in a manner that prevents penetration of shotcrete into the drain strip or pipe. To assure passage of groundwater from the drain strip into the connector pipe, slot the inlet end of the connector pipe at every 45 degrees around the perimeter of the pipe to a depth of ¼ inch.

Provide weepholes, if required, through the construction facing to drain water from behind the facing. Install as shown in the Construction Plans. Use PVC pipe to form the weephole through the shotcrete. Cover the end of the pipe contacting the soil with a drainage geotextile. Prevent shotcrete intrusion into the discharge end of the pipe.

## **8.7 Temporary Shotcrete Construction Facing**

- 8.7.1 Shotcrete Alignment and Thickness Control Ensure that the minimum thickness of shotcrete that shown in the Construction Plans, using shooting wires, thickness control pins, or other devices acceptable to the Engineer. Install thickness control



devices normal to the surface such that they protrude the required shotcrete thickness outside the surface. Ensure that the front face of the shotcrete does not extend beyond the limits shown in the Construction Plans.

- 8.7.2 Surface Preparation Clean the face of the excavation and other surfaces to be shotcreted of loose materials, mud, rebound, overspray or other foreign matter that could prevent or reduce shotcrete bond. Protect adjacent surfaces from overspray during shooting. Avoid loosening, cracking, or shattering the ground during excavation and cleaning. Remove any surface material that is so loosened or damaged, to a sufficient depth to provide a base that is suitable to receive the shotcrete. Remove material that loosens as the shotcrete is applied. The cost of additional shotcrete is incidental to the work. Divert water flow and remove standing water so that shotcrete placement will not be detrimentally affected by standing water. Do not place shotcrete on frozen surfaces.

- 8.7.3 Delivery and Application Maintain a clean, dry, oil-free supply of compressed air sufficient for maintaining adequate nozzle velocity at all times. Use equipment capable of delivering the premixed material accurately, uniformly, and continuously through the delivery hose. Control shotcrete application thickness, nozzle technique, air pressure, and rate of shotcrete placement to prevent sagging or sloughing of freshly-applied shotcrete.

Apply the shotcrete from the lower part of the area upward to prevent accumulation of rebound. Orient nozzle at a distance and approximately perpendicular to the working face so that rebound will be minimal and compaction will be maximized. Pay special attention to encapsulating reinforcement. Do not work rebound back into the construction. Where shotcrete is used to complete the top ungrouted zone of the nail drill hole near the face, position the nozzle into the mouth of the drillhole to completely fill the void.

A clearly defined pattern of continuous horizontal or vertical ridges or depressions at the reinforcing elements after they are covered with shotcrete will be considered an indication of insufficient reinforcement cover or poor nozzle techniques. In this case immediately suspend the application of shotcrete and implement corrective measures before resuming the shotcrete operations. Correct the shotcreting procedure by adjusting the nozzle distance and orientation, by insuring adequate cover over the reinforcement, by adjusting the water content of the shotcrete mix or other means. Adjustment in water content of wet-mix will require requalifying the shotcrete mix.

- 8.7.4 Defective Shotcrete Repair shotcrete surface defects as soon as possible after placement. Remove and replace shotcrete that exhibits segregation, honeycombing, lamination, voids, or sand pockets. In-place shotcrete not meeting the specified strength requirement will be subject to remediation. Possible remediation options include placement of additional shotcrete thickness or removal and replacement, at no additional cost to the Department.
- 8.7.5 Construction Joints Taper construction joints uniformly toward the excavation face over a minimum distance equal to the thickness of the shotcrete layer. Provide a minimum reinforcement overlap at reinforcement splice joints as shown in the



Construction Plans. Clean and wet the surface of a joint before adjacent shotcrete is applied. Where shotcrete is used to complete the top ungrouted zone of the nail drill hole near the face, to the maximum extent practical, clean and dampen the upper grout surface to receive shotcrete, similar to a construction joint.

- 8.7.6 Finish Use either an undisturbed gun finish as applied from the nozzle or a rough screeded finish. Remove shotcrete extending into the CIP finish face section beyond the tolerances specified herein.
- 8.7.7 Attachment of Nail Head Bearing Plate and Nut Attach a bearing plate and nut to each nail head as shown on the Construction Plans. While the shotcrete is still plastic and before its initial set, uniformly seat the plate on the shotcrete by hand wrench tightening the nut. Where uniform contact between the plate and the shotcrete cannot be provided, set the plate in a bed of grout. After grout has set for 24 hours, tighten the nut using a hand wrench. Ensure bearing plates with headed studs are in intimate contact with the construction facing and the studs are located within the tolerances shown in the Construction Plans or specified herein.
- 8.7.8 Weather Limitations Protect the shotcrete if it must be placed when the ambient temperature is below 40°F and falling or when it is likely to be subjected to freezing temperatures before gaining sufficient strength. Maintain cold weather protection until the in-place compressive strength of the shotcrete is greater than 725 psi. Cold weather protection includes blankets, heating under tents, or other means acceptable to the Engineer. Deposit the shotcrete mix at a temperature of not less than 50°F or more than 90°F.  
  
Suspend shotcrete application during high winds and heavy rains unless suitable protective covers, enclosures or wind breaks are installed. Remove and replace newly placed shotcrete exposed to rain that washes out cement or otherwise makes the shotcrete unacceptable. Provide a polyethylene film or equivalent to protect the work from exposure to adverse weather.
- 8.7.9 Curing Curing is not required for temporary construction facings to be covered by a CIP facing or whose service life is less than 36 months.
- 8.7.10 Construction Facing Tolerances

Construction Tolerances for Temporary Shotcrete Construction Facing	
Horizontal Location of Wire Mesh; Rebar; Headed Studs on Bearing Plates, from Plan location	+/- 0.6 inch
Headed studs location on bearing plate, from plan location	0.25 inch
Spacing between reinforcing bars, from plan dimension	1 inch
Reinforcing lap, from specified dimension	1 inch
Thickness of shotcrete	0.4 inch
Nail head bearing plate, deviation from parallel to wall face	10 degrees

- 8.7.11 Safety Requirements Equip nozzlemen and helpers with gloves, eye protection,

and adequate protective clothing during the application of shotcrete. The Contractor is responsible for meeting all federal, state and local safety code requirements.

- 8.8** Backfilling Behind Wall Facing Upper Cantilever If possible, compact backfill within 3 ft. behind the wall facing upper cantilever using light mechanical tampers.

**8.9** CIP Concrete Form or PC Panel Connection to Shotcrete Facing

When mechanical, grouted, or epoxied anchors embedded into the shotcrete facing are used to support a one-sided CIP face form or PC Panel, perform pullout testing of the embedded anchors in accordance with ASTM C900 and as modified herein. Perform pullout testing of installed anchors prior to attachment of the face form. Select test anchor locations to be representative of the full wall surface area to be covered.

For facing areas up to 5000 ft<sup>2</sup>, perform a minimum of three flexure/shear pullout tests with the anchor located approximately mid-span between two adjacent nail heads and with the nail heads or other reaction points located approximately one-half the nail spacing from the anchor. For facing areas in excess of 5000 ft<sup>2</sup>, perform one additional flexure/shear pullout test for each additional 2500 ft<sup>2</sup> of face area. Test these anchors to 1.5 times their required design load (calculated as the design concrete fluid pressure times the anchor tributary area).

Perform local punching shear pullout testing on 2 percent of the installed anchors. Place the load reaction support no closer to the edge of the anchor than the embedment depth of the anchor into the construction facing. Test these anchors to 2.0 times their required design load.

Modify the anchor and/or face form support system if the tested anchors do not meet the above test acceptance criteria. Modified anchor installation will require re-testing in accordance with the above testing criteria. Cost of anchor pullout testing is incidental to the work.

- 8.10** Wall Alignment and Permanent Facing Ensure that the wall is compatible with the horizontal and vertical alignment indicated in the Contract Plans. Survey control is the front face of the wall. Construct the exposed face of the wall to be straight and smooth with no discontinuities. Protrusions beyond the face of the walls are not allowed. Completely fill any voids between the temporary and permanent facing with shotcrete or grout. Provide architectural treatment for concrete facing if shown in the Contract Plans.

- 8.11** Site Drainage Control Provide positive control and discharge of all surface water that will affect construction of the soil nail retaining wall. Maintain all pipes or conduits used to control surface water during construction. Repair damage caused by surface water at no additional cost. Upon substantial completion of the wall, remove surface water control pipes or conduits from the site. Alternatively, with the approval of the Engineer, pipes or conduits that are left in place, may be fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss.

If water is used in the drilling operation, dispose of the water in such a manner that erosion in the vicinity of the wall is minimized. The Contractor is cautioned against the indiscriminate use of water that could create unstable slopes above and/or below the wall. Immediately repair any damage to the site by water or erosion at no cost to the Department.

## **9.0 SOIL NAIL TESTING AND ACCEPTANCE REQUIREMENTS**

**9.1** General Perform both verification and proof testing on designated test nails and record required nail test data. Perform nail testing after the nail grout and shotcrete facing have cured for at least 72 hours and attained at least their specified 3-day compressive strength. Perform testing in less than 72 hours only if compressive strength test results, for tests performed verifies that the nail grout and shotcrete mixes being used will provide the specified 3-day compressive strengths in less time.

Specified test nail locations and/or testing frequencies are provided in an Appendix to this Special Note.

Test each production nail designated for testing within 21 calendar days of installation and provide a written summary of the test results to the Engineer within 7 calendar days after each test; include the following:

1. bonded and unbonded lengths
2. jacking length
3. bar size and area

**Failure to begin testing within the specified time and/or failure to meet the submittal deadlines for nail test results may result in the Engineer suspending soil nail installation.**

The Department will not make separate payment for the testing required in this section. All testing required in this section is included in the price of the wall(s).

**9.2** Testing Equipment Testing equipment includes 2 dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and a reaction frame. The load cell is required only for the creep test portion of the verification test. Provide a description of test setup and jack, pressure gauge and load cell calibration curves in accordance with the submittals section of this Special Note.

Design the testing reaction frame to be sufficiently rigid and of adequate dimensions such that excessive deformation of the testing equipment does not occur. If the reaction frame will bear directly on the shotcrete facing, design it to prevent cracking of the shotcrete. Independently support and center the jack over the nail bar so that the bar does not carry the weight of the testing equipment. Align the jack, bearing plates, and stressing anchorage with the bar such that unloading and repositioning of the equipment will not be required during the test.

Apply and measure the test load with a hydraulic jack and pressure gauge. Use a

pressure gauge graduated in 75 psi increments or less. Use a jack and pressure gauge with a pressure range not exceeding twice the anticipated maximum test pressure. Use a jack with a ram travel no less than 125% of the anticipated maximum movement and sufficient travel to allow the test to be done without resetting the equipment. Monitor the nail load during verification tests with both the pressure gauge and the load cell. Use the load cell to maintain constant load hold during the creep test load hold increment of the verification test.

Measure the nail head movement with a minimum of 2 dial gauges capable of measuring to 0.001 inch. Use a dial gauge with a travel no less than 125% of the anticipated maximum movement and travel sufficient to allow the test to be done without having to reset the gauge. Visually align the gauge to be parallel with the axis of the nail and support the gauge independently from the jack, wall or reaction frame. Use two dial gauges when the test setup requires reaction against a soil cut face.

- 9.3** Verification Testing of Sacrificial Test Nails Perform verification testing of sacrificial test nails to verify the installation methods and design nail pullout resistance. Sacrificial test nails will not be incorporated as production nails. Perform verification tests to failure, or no less than 3.0 times the allowable pullout resistance. Bare bars can be used for the sacrificial verification test nails.

Develop and submit the details of the verification testing arrangement including the method of distributing test load pressures to the excavation surface (reaction frame), test nail bar size, grouted drillhole diameter and reaction frame dimensioning to the Engineer for approval in accordance with the Construction Submittals section. Construct verification test nails using the same equipment, installation methods, nail inclination, and drillhole diameter as planned for the production nails. Changes in the drilling or installation method may require additional verification testing as determined by the Engineer at no additional cost to the Department.

Use test nails with both bonded and temporary unbonded lengths. Prior to testing, grout only the bonded length of the test nail. Use a temporary unbonded length of at least 3 ft. Determine the bonded length of the test nail based on the production nail bar grade and size such that the allowable bar structural load is not exceeded during testing; use a bonded length not less than 10 ft. The maximum allowable bar structural load during testing is 90% of the yield strength for Grade 60 and Grade 75 bars, or 80% of the ultimate strength for Grade 150 bars. Provide larger verification test bar sizes, if required to safely accommodate the 10 ft. minimum test bond length and test to failure, at no additional cost to the Department.

Use the following equation for determining the verification test nail maximum bonded length to be used to avoid structurally overstressing the verification test nail bar size:

$$L_{BV} = (C f_y A_s) / (3 Q_d), \text{ or } 10 \text{ ft.}, \text{ whichever is greater.}$$

$L_{BV}$  = Maximum Verification Test Nail Bonded Length (ft.)

$C$  = 0.9 for Grade 60 and 75 bars and 0.8 for Grade 150 bars

$f_y$  = Bar Yield or Ultimate Stress (ksi)  
( $f_y$  = 60, 75, and 150 ksi, respectively, for Grade 60, 75 and 150 bars)

$A_s$  = Bar Steel Area (in<sup>2</sup>)

3 = Factor of Safety against tensile failure during a Verification Test

$Q_d$  = Allowable pullout resistance (kips/ft., kips per linear foot of grouted nail lengths specified in the Construction Plans)

Determine the Design Test Load (DTL) during verification testing by the following equation:

$$DTL = \text{Design Test Load (kips)} = L_{BV} \times Q_d$$

$L_{BV}$  = As-built bonded test length (ft.)

$Q_d$  = Allowable pullout resistance (kips/ft., kips per linear foot of grouted nail length specified in the Construction Plans)

MTL = 3.0 x DTL = Maximum Test Load (kips)

Incrementally load verification test nails to failure or a maximum test load of 300 percent of the Design Test Load (DTL) in accordance with the following loading schedule. Record the soil nail movements at each load increment.

<b>Verification Test of Sacrificial Nails Loading Schedule</b>		
<b>Step</b>	<b>Load</b>	<b>Hold Time</b>
1	AL (0.05 DTL max.)	1 minute
2	0.25 DTL	10 minutes
3	0.50 DTL	10 minutes
4	0.75 DTL	10 minutes
5	1.00 DTL (Creep Test)	30 minutes
6	1.25 DTL (Creep Test)	60 minutes
7	1.50 DTL (Creep Test)	300 minutes
8	1.75 DTL	10 minutes
9	2.00 DTL	10 minutes
10	2.50 DTL or Failure	10 minutes max.
11	3.00 DTL or Failure	10 minutes max.
12	AL (0.05 DTL max.)	1 minute (record permanent set)
AL – Alignment Load, DTL – Design Test Load		

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the Design Test Load (DTL). Dial gauges should be set to "zero" after the alignment load has been applied. Following application of the maximum test load (3.0 DTL) reduce the load to the alignment load (0.05 DTL maximum) and record the permanent set.

Hold each load increment for at least 10 minutes. Monitor the verification test nail for creep at the 1.00 DTL, 1.25 DTL, and 1.50 DTL load increments. Measure and record nail movements during the creep portion of the test (as applicable) at 1 minute, 2, 3, 5, 6, 10, 15, 20, 25, 30, 45, 60, 75, 90, 100, 150,

180, 210, 240, 270, and 300 minutes. Maintain the load during the creep test within 2 percent of the intended load by use of the load cell.

**9.4** Verification Testing of Production Nails Perform verification testing of production nails using the same procedures as for verification testing of sacrificial nails with the following exceptions:

1. The specified corrosion protection is required (bare bars are not allowed).
2. The Maximum Test Load is 2.00 DTL.
3. Creep testing is required only at a load of 1.50 DTL and the creep portion of the test is 60 minutes.

<b>Verification Test of Production Nails Loading Schedule</b>		
<b>Step</b>	<b>Load</b>	<b>Hold Time</b>
1	AL (0.05 DTL max.)	1 minute
2	0.25 DTL	10 minutes
3	0.50 DTL	10 minutes
4	0.75 DTL	10 minutes
5	1.00 DTL	10 minutes
6	1.25 DTL	10 minutes
7	1.50 DTL (Creep Test)	60 minutes
8	1.75 DTL	10 minutes
9	2.00 DTL	10 minutes
10	AL (0.05 DTL max.)	1 minute (record permanent set)
AL – Alignment Load, DTL – Design Test Load		

Hold each load increment for at least 10 minutes. Monitor the verification test nail for creep at the 1.50 DTL load increment. Measure and record nail movements during the creep portion of the test at 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. Maintain the load during the creep test within 2 percent of the intended load by use of the load cell.

**9.5** Proof Testing of Production Nails Provide temporary unbonded lengths for each test nail. Isolate the test nail bar from the shotcrete facing and/or the reaction frame used during testing. Isolation of a test nail through the shotcrete facing will not affect the location of the reinforcing steel under the bearing plate. Submit the proposed test nail isolation methods, methods for providing an unbonded test length and methods for grouting the unbonded length subsequent to testing to the Engineer in accordance with the Construction Submittals section. Where temporary casing of the unbonded length of test nails is provided, install the casing in a way that prevents any reaction between the casing and the grouted bond length of the nail and/or the stressing apparatus.

Use production proof test nails with both bonded and temporary unbonded lengths. Prior to testing grout only the bonded length of the test nail. The minimum temporary unbonded length of the test nail is 3 ft. Determine the bonded length of the test nail



based on the production nail bar grade and size such that the allowable bar structural load is not exceeded during testing. The maximum allowable bar structural load during testing is 90 percent of the yield strength for Grade 60 and Grade 75 bars, or 80 percent of the ultimate strength for Grade 150 bars.

Use the following equation for sizing the proof test nail bonded length to avoid overstressing the production nail bar size:

$$L_{BP} = (C f_Y A_S) / (1.5 Q_d), \text{ or } 10 \text{ ft.}, \text{ whichever is greater. } *$$

$L_{BP}$  = Maximum Proof Test Nail Bonded Length (ft.)

$C$  = 0.9 for Grade 60 and 75 bars and 0.8 for Grade 150 bars

$f_Y$  = Bar Yield or Ultimate Stress (ksi)

( $f_Y$  = 60, 75, and 150 ksi, respectively, for Grade 60, 75 and 150 bars)

$A_S$  = Bar Steel Area ( $\text{in}^2$ )

1.5 = Factor of Safety against tensile failure during a Proof Test

$Q_d$  = Allowable pullout resistance (kips/ft., kips per linear foot of grouted nail length specified in the Construction Plans)

\* Production proof test nails shorter than 12 ft. in length may be constructed with less than the minimum 10 ft. bond length; however the unbonded length is limited to 3 ft.

Determine the Design Test Load (DTL) during verification testing by the following equation:

$$\text{DTL} = \text{Design Test Load (kips)} = L_{BP} \times Q_d$$

$L_{BP}$  = As-built bonded test length (ft.)

$Q_d$  = Allowable pullout resistance (kips/ft., kips per linear foot of grouted nail length specified in the Construction Plans)

$\text{MTL} = 1.5 \times \text{DTL} = \text{Maximum Test Load (kips)}$

Perform proof tests by incrementally loading the proof test nail to a maximum test load of 150 percent of the Design Test Load (DTL). Measure and record the nail movement at each load in the same manner as for verification tests. Monitor the test load by a jack pressure gauge with a sensitivity and range meeting the requirements of pressure gauges used for verification test nails. At load increments other than maximum test load, hold the load long enough to obtain a stable reading. Apply incrementally loads in accordance with the following loading schedule. Record the soil nail movements at each load increment.

Proof Test Loading Schedule		
Step	Load	Hold Time
1	AL (0.05 DTL max.)	Until Stable
2	0.25 DTL	Until Stable
3	0.50 DTL	Until Stable
4	0.75 DTL	Until Stable
5	1.00 DTL	Until Stable
6	1.25 DTL	Until Stable
7	1.50 DTL (Max Test Load)	Creep Test (See Below)
AL – Alignment Load, DTL – Design Test Load		

The alignment load (AL) should be the minimum load required to align the testing apparatus and should not exceed 5 percent of the Design Test Load (DTL). Dial gauges should be set to "zero" after the alignment load has been applied.

Start the creep tests as soon as the maximum test load (1.50 DTL) is applied. Depending on performance, perform either 10 minute or 60 minute creep tests at the maximum test load (1.50 DTL). Start the creep period as soon as the maximum test load is applied and measure and record the nail movement at 1 minute, 2, 3, 5, 6, and 10 minutes. Where the nail movement between 1 minute and 10 minutes exceeds 0.04 inches, maintain the maximum test load an additional 50 minutes and record movements at 20 minutes, 30, 50, and 60 minutes. Maintain all load increments within 5 percent of the intended load.

**9.6** Test Nail Acceptance Criteria A test nail is considered acceptable when all of the following criteria are met:

1. For verification tests on sacrificial nails, a total creep movement of less than 0.08 inches per log cycle of time over the final log cycle of time of each load increment (between 3 and 30 minutes for 1.00 DTL, 6 and 60 minutes for 1.25 DTL, 30 and 300 minutes for 1.50 DTL) and the creep rate is linear or decreasing throughout the creep test load hold period.
2. For verification tests on production nails, a total creep movement of less than 0.08 inches between the 6 and 60 minute readings is measured during creep testing and the creep rate is linear or decreasing throughout the creep test load hold period.
3. For proof tests, a total creep movement of less than 0.04 inches is measured between the 1 and 10 minute readings, or a total creep movement of less than 0.08 inches is measured between the 6 and 60 minute readings and the creep rate is linear or decreasing throughout the creep test load hold period.
4. For verification tests, the total measured movement at 2.0 x DTL exceeds 80% of the theoretical elastic elongation of the test nail unbonded length.
5. For proof tests, the total measured movement at 1.5 x DTL exceeds 80% of the theoretical elastic elongation of the test nail unbonded length.
6. A pullout failure does not occur prior to or at 2.0 x DTL during verification

testing of sacrificial or production nails or 1.5 x DTL during proof testing.

Pullout failure is defined as the load at which attempts to further increase the test load simply result in continued pullout movement of the test nail. Record the pullout failure load as part of the test data.

Successful verification or proof tested production nails meeting the above test acceptance criteria may be incorporated as production nails, provided that (1) the unbonded length of the test nail drillhole has not collapsed during testing, (2) the minimum required drillhole diameter has been maintained, (3) the specified corrosion protection is provided, and (4) the test nail length is equal to or greater than the scheduled production nail length. Complete test nails meeting these requirements by satisfactorily grouting up the unbonded test length. Maintain the temporary unbonded test length for subsequent grouting. If the unbonded test length of production proof test nails cannot be satisfactorily grouted subsequent to testing, replace with an additional production nail installed at no additional cost.

**9.7 Test Nail Rejection** If a test nail does not satisfy the acceptance criterion, the Engineer will implement the procedures below.

1. For Verification Tests on Sacrificial Nails, the Engineer will evaluate the results of each verification test and will reject installation methods that do not satisfy the nail testing requirements. Propose alternative methods and install replacement verification test nails. Install and test replacement test nails at no additional cost to the Department and with no extension of contract time. The Engineer may require the Contractor to replace some or all of any production nails installed prior to acceptance of Sacrificial Nails; alternatively, the Engineer may require additional verification or proof tests on these production nails.
2. For Verification or Proof Tests on Production Nails, the Engineer may require the Contractor to replace some or all of the installed production nails between a failed test nail and the adjacent passing test nail. Alternatively, the Engineer may require the installation and testing of additional test nails to verify that adjacent previously installed production nails have sufficient load carrying capacity. Contractor modifications may include, but are not limited to: the installation of additional test nails; increasing the drillhole diameter to provide increased capacity; modifying the installation or grouting methods; reducing the production nail spacing from that shown on the Construction Plans and installing more production nails at a reduced capacity; or installing longer production nails if sufficient right-of way is available and the pullout capacity behind the failure surface controls the allowable nail design capacity. The nails may not be lengthened beyond the right-of-way or easement. Installation and testing of additional test nails or installation of additional or modified nails as a result of test nail failure(s) will be at no additional cost to the Department.

## 10.0 RECORDS

Provide the Engineer with the following final records:

1. As-built drawings showing:
  - a. The actual location and orientation of the soil nails, including deviation from specified tolerances.
  - b. Nail capacity, nail type, installed drillhole and bar diameter, designed and installed nail length.
  - c. The type of testing performed for each soil nail and test results.
  - d. The locations of any instrumentation installed and any required instrumentation records.
  - e. Finished ground line elevations behind the wall and finished grade elevations in front of the wall.
2. Other records as required by Section 106 of the Standard Specifications.
3. Structural Steel records required by Section 607 of the Standard Specifications.
4. Record plans conforming to Section 105.03 of the Standard Specifications.
5. Construction Records including:
  - a. Contractor's name
  - b. Drill rig operator's name
  - c. Date and time of start and finish of drilling
  - d. Drilling difficulties
  - e. Caving or sloughing of excavation or drillhole
  - f. Groundwater conditions
  - g. Drill casing requirements
  - h. Grouting records including:

Date, time and method grout was placed  
cement type  
Volume of grout placed  
grout pressure

## 11.0 MEASUREMENT AND PAYMENT

- 11.1** The Department will pay for the accepted quantities of "Soil Nail Wall" at the contract unit bid price per "Square Foot" and will measure quantities as shown in the Contract Plans. This will constitute full compensation for all costs including materials, labor, tools, equipment, and other incidental items required for designing, constructing, and performing nail testing for the permanent soil nail wall(s) as

described herein. This may include but is not limited to the following items: installing sacrificial and production soil nails, providing corrosion protection, shotcrete, concrete facing (if required), wall drainage, toe drainage, surface drainage, anchorage hardware, verification tests, proof tests, all required submittals and records, and other incidental items necessary to provide a complete permanent soil nail wall. Earth moving, backfilling, drainage, any temporary shoring due to phased construction, and any other earthwork necessary to complete these walls and not included in other bid items, is included as an incidental part of this work.

- 11.2 Additional areas of wall, required due to unforeseen foundation conditions or other reasons and approved in writing by the Engineer will be paid at the contract unit prices. In the event a decrease in the area of a wall is required, subject to acceptance by the Department, payment will be reduced due to the decrease in the wall area or length.
- 11.3 All measurement will be based on plan dimensions or dimensions as ordered in writing.
- 11.4 Refer to an Appendix to this Special Note for Project Specific Measurement and Payment information.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
20603ED	Soil Nail Wall	Square Foot

## **SPECIAL NOTE FOR EROSION CONTROL ON HSIP PROJECT**

06-9019.00 Grant KY 22

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### **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



## Erosion Control

### Page 2 of 3

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.

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  $\frac{1}{2}$  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.

Erosion Control  
Page 3 of 3

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 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 STAKING ON HSIP PROJECT**

06-9019.00 Grant KY 22

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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 to provide a consistent superelevation throughout the curves and smooth transitions into and out of the curves. Once the proposed changes 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 mix 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 and entrance pipes 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. 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.

Staking  
Page 2 of 2

Because the sign locations in the proposal are approximate and the location of some signs may need to be adjusted due to conflicts, during staking operations the Contractor shall refer to and utilize the information in the Manual on Uniform on Traffic Control Devices (MUTCD), current edition. 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 of 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.

5. 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.
6. Produce and furnish to the Engineer "As-Built" information for the Soil Nail Walls. Refer to the Special Note for Soil Nail Walls – Section 10.0 RECORDS for the final records information that is to be provided to the Engineer.
7. Using paint marks on the pavement, and/or any other means approved by the Engineer, the Contractor shall layout and pre-mark the proposed striping, pavement markings, etc. Adjust as necessary to accommodate the existing site conditions and to provide proper alignment of the proposed thru and turning lanes. Obtain approval of the pre-marked layout from the Engineer and/or District Traffic Engineer prior to installing the striping and/or pavement markings.
8. Prior to incorporating into the work, obtain the Engineers approval of all revisions determined by the Contractor.
9. Perform any and all other staking operations required to control and construct the work.

**SPECIAL NOTE FOR SHOULDER MILLING/TRENCHING  
ON HSIP PROJECT**

06-9019.00 Grant KY 22

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Trench shoulders as shown on the Curve #5 Curb and Gutter Typical Section. Trench existing earth shoulder for construction of curb and gutter from Sta. 357+00 to Sta. 359+50 (LT). If trenching is achieved by means other than milling, saw cut the pavement 12 inches deep to create a smooth edge prior to excavating the shoulder trench. Excavate the material from the shoulder and maintain the proposed cross-slope as shown on the Typical Sections. The intent is to mill, or excavate, the entire trench so that the proposed shoulder slope is retained at the end of the paving operation. Reshape and compact excavated material from the trench on the outside edge of the newly paved shoulder as shown on the Typical Section.

Retain possession of excess materials and/or materials the Engineer deems unsuitable for reuse and waste the materials off the right-of-way at sites obtained by the Contractor at no additional cost to the Department. See Special Provision for Waste and Borrow.

Accept payment at the contract unit price per square yard for SHOULDER MILLING/TRENCHING as full compensation for all labor, materials, equipment, and incidentals for excavating the shoulder trench and reuse and/or disposal of the excavated material.

## **SPECIAL NOTE FOR SIGNAGE ON HSIP PROJECT**

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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 ON HSIP PROJECT**

06-9019.00 Grant KY 22

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### **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.

Signing  
Page 2 of 6

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 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)

Signing  
Page 3 of 6

inches below existing ground line and backfill the disturbed area to the existing ground line.

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

Signing  
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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.

**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.

#### 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.

Signing  
Page 6 of 6

## **V. BASIS OF PAYMENT**

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

**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.



December 5, 2018

## **SPECIAL NOTE FOR FIBER REINFORCEMENT OF ASPHALT**

### **ON HSIP PROJECT 06-9019.00 Grant KY 22**

#### **PART 1 – GENERAL**

##### **1.1 DESCRIPTION**

This Section includes specifications for furnishing all materials, equipment, labor, and incidentals for mixing aramid fiber reinforcements to hot mix asphalt.

##### **1.2 DEFINITIONS**

- A. HMA- hot mix asphalt, without aramid fiber.
- B. WMA- warm mix asphalt, without aramid fiber.
- C. Reinforced HMA - hot mix asphalt including aramid fibers properly proportioned, uniformly mixed and coated with asphalt.
- D. Aramid fiber - pure aramid fiber meeting the material properties of this specification, without additive materials.
- E. Delivery material(s) - the material(s) combined with the pure aramid fiber to facilitate Aramid fiber and HMA/WMA proportioning, uniform mixing with the HMA/WMA, and asphalt coating of the aramid fibers.
- F. Aramid product - the aramid supplier's mixture of pure aramid fiber and delivery material(s).
- G. Manufacturer - the company that produces the aramid fiber from raw materials.
- H. Supplier - the company that offers an aramid product.

#### **PART 2 – PRODUCT**

##### **2.1 MATERIALS**

Meet the following aramid fiber properties.

<b>Property</b>	<b>Measure</b>	<b>Standard</b>
Material	Aramid	ASTM D276
Form	Monofilament fibers	Manufacturer Certification
Length	0.75-1.50 inches (+/- 10%)	Manufacturer Cert.
Specific Gravity	1.44	ASTM D276
Minimum Tensile Strength	400,000 psi	ASTM D3379
Maximum Tensile Elongation	1.8 %	ASTM D3379
Degradation Temperature	800 degrees F	ASTM D276
Acid and Alkali Resistance	Inert	Manufacturer Cert.

##### **2.2 SUBMITTALS**

Submit the following.

- A. Identify the mixing plant.
- B. Provide a specification sheet from the aramid fiber manufacturer.
- C. Provide the following from the aramid product supplier at least three weeks prior to HMA/WMA

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production.

1. The supplier's specified mix rate for the aramid product.
2. Certification that the amount of aramid fiber in the aramid product will be between 2.1 and 4.0 ounces of pure aramid fiber for each ton of hot mix asphalt.
3. Evidence showing how many times, if any, the supplier's fiber product has been successfully produced at the asphalt plant to be used for the project.
4. Proven method of introducing the aramid fibers into the hot mix asphalt which will not cause the aramid fibers to become airborne.

## **2.3 JOB MIX FORMULA**

When aramid fiber is required as a mixture ingredient, modification to the job mix formula is not required.

## **PART 3 – EXECUTION**

### **3.1 CONSTRUCTION REQUIREMENTS**

Store aramid product in a dry environment and do not allow them to be in contact with moisture.

Mix 3.0 ounces (+/- 1.0 ounces) of aramid fibers per ton of asphalt. The weight applied is for pure aramid fibers only, weight of any delivery materials is not considered.

Have a fiber supplier's representative on site during the first day of production mixing. This requirement can be waived if fiber supplier and HMA/WMA producer can supply evidence of supplier's brand of fiber product being successfully produced by the HMA/WMA producer. The fiber supplier's representative may be on site for additional days as requested by the Engineer.

Introduce the aramid product as follows:

#### **1. Batch Plant**

When a batch type plant is used, add the aramid product dosage to the aggregate in the weigh hopper. This may be done with loose fibers and a fiber metering device, or may be done by using manual dosing equipment. If necessary, increase the batch dry mixing time to ensure the aramid fibers are uniformly distributed prior to the injection of asphalt cement into the mixer.

#### **2. Drum Plant**

When a continuous or drier-drum type plant is used, add the aramid product to the RAP material to uniformly disperse with the aggregate and injected asphalt. Use a separate aramid product metering device feed system to proportion by weight of total mix, the required percentage of fiber reinforcement into the mixture. Control the aramid product metering system with a proportioning device to meet the dosing requirements.

When a continuous or drier-drum type plant is used for limited production volumes, the addition of the aramid product may be done by using manual measuring tools or equipment and adding them directly onto the RAP belt or into

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the RAP opening on the plant. Because this is not an automated process, a written protocol must be supplied by the producer to demonstrate how they will attain the dosage requirement, and documentation must be supplied by the material manufacturer assuring this method will produce the desired uniform aramid fiber distribution.

Mix the aramid fiber with the aggregate longer, if needed, to allow thorough distribution of aramid fibers at the end of the mixing process and to promote asphalt coating of individual strands of aramid fiber. At the start of any fiber mixing, visually observe the reinforced HMA/WMA at the plant and in first three trucks at the point of discharge and prior to delivery to the job site. Observation shall include using a shovel or other device. Look for proper distribution of aramid fibers and make mixing adjustments if needed.

WMA: Use of a feeder system will be required for both Drum and Batch plants when producing Warm Mix Asphalt to ensure correct distribution and coating of the aramid fibers. This requirement maybe waved if the asphalt producer can demonstrate complete melting of the delivery material and proper incorporation of the aramid fibers into the WMA.

3.2 ACCEPTANCE

Acceptance of the reinforced HMA/WMA will include the following factors:

- 1. Aramid fiber is properly proportioned based on documentation comparing fiber feed to HMA/WMA mix production. A log of the total amount of aramid fibers applied certified by fiber manufacturer/supplier shall be required daily.
- 2. By visual inspection at the end of the mixing process, there is no clumping of aramid fiber or aramid delivery product and the aramid fibers are uniformly distributed.
- 3. All other mixture and density requirement of the asphalt as detailed in the Standard Specifications, current edition, shall apply.

PART 4 - MEASUREMENT AND PAYMENT

The Department will measure the quantity of Fiber Reinforcement for HMA/WMA as ton of asphalt placed with fibers. Each ton of asphalt placed with the aramid fibers according to this special note will be measured and paid for at the contract unit bid price per ton, and shall include full compensation for furnishing all labor, tools, equipment, and incidentals for doing all the work involved in adding the fibers to HMA/WMA.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24785EC	Fiber Reinforcement for HMA	Tons

SPECIAL NOTE FOR SPRAY APPLIED THERMOPLASTIC  
PAVEMENT MARKING MATERIALS  
ON HSIP PROJECT

06-9019.00   Grant   KY 22

I.      DESCRIPTION

Except as provided herein, all work shall be performed in accordance with the Department’s Standard Specifications, Interim Supplemental Specifications, applicable Standard and Sepia Drawings, applicable Special Provisions and Special Notes, 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)   Spray applied thermoplastic pavement marking materials with reflectorized glass beads for permanent applications

II.     MATERIALS

- A.   **DROP ON BEADS.** Use beads that will ensure the pavement marking material will meet retroreflectivity requirements. The Department will evaluate the beads as part of the marking system through retroreflectivity readings.
- B.   **APPROVAL.** Select materials that conform to the composition and physical characteristic requirements below when evaluated in accordance with AASHTO T-250 or other test methods as cited. The Department will sample and evaluate for approval each lot of thermoplastic material delivered for use per contract prior to installation of the thermoplastic material. Do not allow the installation of thermoplastic material until it has been approved by the Division of Materials. Allow the Department a minimum of 10 working days to evaluate and approve thermoplastic material from the date sampled.
- C.   **Composition.** Use a maleic-modified glycerol ester resin (alkyd binder) to formulate the thermoplastic material. Ensure the pigment, pre-mix beads, and filler are uniformly dispersed in the resin. Use material that is free from all dirt and foreign material. Provide independent analysis data and certification for each formulation stating the total concentration of each heavy metal present, the test method used for each determination, and compliance to 40 CFR 261 for leachable heavy metals content.

COMPOSITION (Percentage by Weight)		
Component	White	Yellow
Binder, <sup>(1)</sup>	26.0 min.	26.0 min.
Glass Beads (Premixed)	30 - 40	30 - 40
Titanium Dioxide (Rutile, Type II)	10.0 min.	—
Calcium Carbonate & Inert Fillers <sup>(2)</sup>	42.0 max.	50.0 max.
Heavy Metals Content	Comply with 40 CFR 261	Comply with 40 CFR 261

<sup>(1)</sup>Use a binder that consists of a mixture of synthetic resins, at least one being solid at room temperature, and high boiling point plasticizers. Ensure that at least one-third of the binder composition is solid maleic-modified glycerol ester resin and is not less than 8 percent by weight of the entire material formulation. Do not use alkyd binder that contains petroleum based hydrocarbon resins.

*(2)The manufacturer may choose the amount of calcium carbonate and inert fillers, providing all other requirements of this section are met.*

**D. Physical Characteristics.** For thermoplastic material heated for 4 hours at 425°F under agitation, conform to the following requirements.

**a) Color.** As determined with a spectrophotometer using D65 illuminant with a 45 degree entrance angle and 0 degree observation angle geometry.

CIELAB Color Coordinates		
	Yellow	White
Daytime Color (CIELAB) Spectrophotometer using illuminant D65 at 45° illumination and 0° viewing with a 2° observer	L* 81.76 a* 19.79 b* 89.89 Maximum allowable variation 6.0ΔE*	L* 93.51 a* -1.01 b* 0.70 Maximum allowable variation 6.0ΔE*
Nighttime Color (CIELAB) Spectrophotometer using illuminant A at 45° illumination and 0° viewing with a 2° observer	L* 86.90 a* 24.80 b* 95.45 Maximum allowable variation 6.0ΔE*	L* 93.45 a* -0.79 b* 0.43 Maximum allowable variation 6.0ΔE*

**b) Set Time.** Use material that, when applied at a temperature range of 375 ± 25 °F and thickness of 60 ± 10 mils, sets to bear traffic in not more than 2 minutes when the air and road surface temperature is approximately ≥ 50 ± 3 °F, and not more than 10 minutes when the air and road surface temperature is approximately < 50 ± 3 °F.

**c) Softening Point.** Ensure that the thermoplastic material has a softening point of 180 ± 15 °F.

**d) Bond Strength.** Ensure that the bond strength of the thermoplastic material to concrete exceeds 180 psi.

**e) Cracking Resistance at Low Temperature.** Ensure that the thermoplastic material shows no cracks when observed from a distance exceeding one foot.

**f) Impact Resistance.** Ensure the impact resistance of the thermoplastic material is a minimum of 50 inch-pounds.

**g) Flash Point.** Use thermoplastic material that has a flash point not less than 475 °F.

**E. PACKAGING.** Package thermoplastic material in suitable 50 pound containers to which the material shall not adhere during shipment or storage. Include a label stating that the thermoplastic material is to be maintained with a temperature range of 350 – 400°F during application. Provide the thermoplastic material in granular form.

**F. SHELF LIFE.** Ensure that the thermoplastic material conforms to this section for a period of one year. Replace any thermoplastic material not conforming to the above requirements.

**G. MANUFACTURER’S TESTING.** Perform testing in accordance with AASHTO T-250 on a minimum of one composite sample per 10,000 pounds, or portion thereof, per lot of thermoplastic produced.

**H. CERTIFICATION.** Submit manufacturer’s certification stating conformance to the requirements of this section for each lot of extruded thermoplastic delivered for use on projects. Clearly state the manufacture,

formulation identification, product name, color, date of manufacturer, total quantity of lot produced, actual quantity of thermoplastic material represented, sampling method utilized to obtain the samples, and required manufacturer’s testing data for each composite sample tested to represent each lot produced.

III. CONSTRUCTION METHODS

- A. **SURFACE PREPARATION.** The contractor will be required to sweep all pavement surfaces prior to striping and maintain the cleaning operation far enough in advance of the striping operation to prevent any dust from the cleaning operation from mixing with the paint. The sweeper must maintain contact with the roadway. When the Engineer determines abnormal amounts of debris or other material have accumulated beyond the capability of the required sweeping unit which will require shoveling or other means to remove, the Engineer will make arrangements, prior to painting, to have the material removed by the Department.
- B. **INSTALLATION.** Install thermoplastic materials in accordance with Section 714, Durable Pavement Striping, and the following exceptions:
  - Install the thermoplastic materials at a minimum thickness of 60 mils.
  - Ensure the material temperature is maintained between 350 and 400°F.
  - Do not allow the material temperature to exceed 400°F.
  - Removal of existing stripe on asphalt surfaces is not required.
- C. **RETROREFLECTIVITY.** The Department will evaluate installed markings in accordance with Section 714.03.06, Proving Period for Durable Markings.

IV. METHOD OF MEASUREMENT

- A. **ACCEPTANCE AND PAYMENT.** The Department will accept spray applied thermoplastic materials based on compliance of the manufacturer’s certification and conformance of test results obtained by the Department to the requirements of this special note.

Contrary to Section 714.03.08, Acceptance of Non-Specification Thermoplastic Markings, the Department will not accept non-specification compliant markings. Remove non-specification compliant markings by water blasting. The Department will perform random thickness tests on applied markings to determine compliance to thickness requirements

IV. BASIS OF 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>
24995EC	PAVE STRIPING-SPRAY THERMO-6 IN W	LF
24996EC	PAVE STRIPING-SPRAY THERMO-6 IN Y	LF

The Department will consider payment as full compensation for furnishing all labor, materials, equipment, and incidentals required to construct spray applied thermoplastic pavement markings.



**SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND  
LIQUIDATED DAMAGES ON BRIDGE REPAIR CONTRACTS  
041B00011N Grant County 06-10010.00**

**I. COMPLETION DATE.**

Upon Notice to Proceed, the Contractor has the option of selecting the Begin Work date. Once selected, notify the Department in writing of the date selected at least two weeks prior to beginning work and provide a proposed project schedule. All work is to be completed by the specified contract completion date. The Contractor has until May 30, 2020 once the bridge is closed to complete all work to safely reopen the structure with no lane closures. At a minimum, prior to reopening the bridge to traffic, all strength requirements and curing for materials used shall be completed per Division 600 of the Standard Specifications. Guardrail shall be installed to the satisfaction of the Engineer prior to reopening the bridge to traffic unless prior approval is obtained from the engineer for use of temporary railing.

The Engineer will begin charging calendar days for a structure on the day the Contractor closes the structure to traffic, regardless of holidays or seasonal weather limitations.

**II. LIQUIDATED DAMAGES.**

Liquidated damages will be assessed to the Contractor in accordance with the Transportation Cabinet, Department of Highway's current Standard Specifications for Road and Bridge Construction, Section 108.09, when either the allotted number of calendar days or the specified completion date is exceeded.

Contrary to the Standard Specifications, liquidated damages will be assessed to the Contractor during the months of December, January, February and March when the contract time has expired on any individual bridge. Contract time will be charged during these months. All construction must be completed in accordance with the weather limitations specified in Section 606 and/or Section 601 as applicable. No extension of Contract time will be granted due to inclement weather or temperature limitations that occur due to starting work on the Contract or a structure late in the construction season.

Any approval of cold weather plans or allowance of construction operations to occur outside Section 606 and/or Section 601 does not alleviate the May 30, 2020 completion date. In the event the closure lasts longer May 30, 2020 as specified, liquidated damages will apply to all excess days regardless of weather limitations.

## **SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND LIQUIDATED DAMAGES ON BRIDGE REPAIR CONTRACTS**

**041B00013N Grant County 06-10002.10**

**041B00014N Grant County 06-10002.00**

### **I. COMPLETION DATE.**

Upon Notice to Proceed, the Contractor has the option of selecting the Begin Work date. Once selected, notify the Department in writing of the date selected at least two weeks prior to beginning work and provide a proposed project schedule. All work is to be completed by the specified contract completion date. The Contractor is allowed to close both 041B00013N and 041B00014N concurrently. The Contractor is allotted 135 calendar days once the bridges are closed to complete all work to safely reopen the structures with no lane closures. At a minimum, prior to reopening either bridge to traffic, all strength requirements and curing for materials used shall be completed per Division 600 of the Standard Specifications. Guardrail shall be installed to the satisfaction of the Engineer prior to reopening the bridge to traffic unless prior approval is obtained from the engineer for use of temporary railing.

The Engineer will begin charging calendar days for a structure on the day the Contractor closes the structure to traffic, regardless of holidays or seasonal weather limitations.

### **II. LIQUIDATED DAMAGES.**

Liquidated damages will be assessed to the Contractor in accordance with the Transportation Cabinet, Department of Highway's current Standard Specifications for Road and Bridge Construction, Section 108.09, when either the allotted number of calendar days or the specified completion date is exceeded.

Contrary to the Standard Specifications, liquidated damages will be assessed to the Contractor during the months of December, January, February and March when the contract time has expired on any individual bridge. Contract time will be charged during these months. All construction must be completed in accordance with the weather limitations specified in Section 606 and/or Section 601 as applicable. No extension of Contract time will be granted due to inclement weather or temperature limitations that occur due to starting work on the Contract or a structure late in the construction season.

Any approval of cold weather plans or allowance of construction operations to occur outside Section 606 and/or Section 601 does not alleviate the 135 day maximum bridge closure. In the event the closure lasts longer than 135 calendar days as specified, liquidated damages will apply to all excess days regardless of weather limitations.

## **SPECIAL NOTES FOR COMPLETION DATES & LIQUIDATED DAMAGES ON HSIP PROJECT**

06-9019.00 Grant KY 22

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The ultimate fixed completion date for the HSIP Project will be November 30, 2020. In addition to the ultimate fixed completion date, there will be a fixed milestone date. The Soil Nail Walls and Base Failure Repairs shall be completed by the fixed milestone date of May 30, 2020. Liquidated Damages for failure to complete the project or any portion, by the Specified Milestone or Completion Date, shall be assessed following Section 108.09.

In addition to the requirements of Section 108.09, the Department will assess Liquidated Damages in the amount of \$1,000 per hour for each hour, or fraction of an hour, for any and all lane closures that are in place beyond the time frame(s) noted in the Traffic Control Plan and approved by the Engineer.

Trees and/or bushes that are 3 inches or greater (diameter at breast height) shall not be cut or trimmed between June 1<sup>ST</sup> and July 31<sup>ST</sup>. Any trees and/or bushes that are cut or trimmed between June 1<sup>ST</sup> and July 31<sup>ST</sup> will NOT receive payment at the contract unit price. Furthermore, failure to adhere to these restrictions shall result in Liquidated Damages in the amount of \$287 per affected tree as mitigation to the Indiana Bat Conservation Fund for the loss of habitat. 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.

Contrary to Section 108.09, Liquidated Damages will be assessed for the months of December through March.

Contrary to Section 108.09, Liquidated Damages will be assessed regardless of whether seasonal limitations prohibit the Contractor from performing work on the controlling operation.

All liquidated damages will be applied accumulatively.

All other applicable portions of Section 108 apply.

***SPECIAL NOTE***

**Tree Clearing Restriction**

**Grant County**

**Item No. 6-10010.00**

**Bridge No. 041B00011N**

DUE TO THE RECOVEREY PLAN FOR ENDANGERED BATS, NO TREE  
CLEARING IS PERMITTED FROM JUNE 1 THROUGH JULY 31.

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

## ***SPECIAL NOTE***

### **Tree Clearing Restriction**

DUE TO THE RECOVEREY PLAN FOR ENDANGERED BATS, NO TREE  
CLEARING IS PERMITTED FROM JUNE 1 THROUGH JULY 31.

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

## ***SPECIAL NOTE***

### **Tree Clearing Restriction**

DUE TO THE RECOVEREY PLAN FOR ENDANGERED BATS, NO TREE  
CLEARING IS PERMITTED FROM JUNE 1 THROUGH JULY 31,  
INCLUDING SPECIFIC DISTURBANCE LIMITS SHOWN ON  
ATTACHMENT.

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



## **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 ON HSIP PROJECT**

06-9019.00 Grant KY 22

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.

### **COORDINATION WITH PROJECT 6-10010**

KY 22 Bridge over Clarks Creek and Baton Rouge Road is being replaced with the Bridging Kentucky Project 6-10010. This will require closure of KY 22 for the bridge replacement. All bridge replacement work is to be completed by August 7, 2020. The 6-9019 HSIP project will tie into the Bridging KY project at approximate Sta. 346+86 with a proposed superelevation improvement of 4%. The Bridging KY project will replace the guardrail strands following the bridge replacement. Paving operations will begin at approximate Sta. 352+00 and tie into the Bridging KY westbound approach.

1-3193 Coordination Contracts  
01/02/2012

## **SPECIAL NOTE FOR DOUBLE ASPHALT SEAL COAT**

Use RS-2 or RS-2C asphalt material that is compatible with the seal aggregate. Apply the first course of asphalt seal coat at the rate of 3.2 lbs/sy of asphalt and 30 lbs/sy of size #78 seal coat aggregate. Apply the second course at 2.8 lbs/sy of asphalt and 20 lbs/sy of size #9M seal coat aggregate. The Engineer may adjust the rate of application as conditions warrant. Use caution in applying liquid asphalt material to avoid over spray getting on curbs, gutter, barrier walls, bridges, guardrail, and other roadway appurtenances.

The Department will not measure any surface preparation required prior to applying the asphalt seal coat, but shall be incidental to “Asphalt Material for Asphalt Seal Coat”.

1-3215 Double Asphalt Seal Coat  
01/02/2012

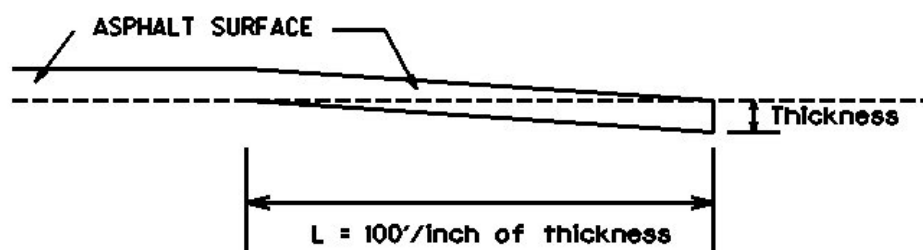
## **SPECIAL NOTE FOR EDGE KEY ON HSIP PROJECT**

06-9019.00 GRANT KY 22

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Construct Edge Keys at the beginning of project, end of project, at railroad crossings, and at 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 make payment for this work at the Contract unit price per ton for Asphalt Pavement Milling and Texturing, 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.

### **EDGE KEY**



**Thickness = 1.25 Inches**

**L = 125 LF**

**L = Length of Edge Key**

## **SPECIAL NOTES FOR GUARDRAIL ON HSIP PROJECT**

06-9019.00 Grant KY 22

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### **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

Guardrail  
Page 2 of 4

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 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. 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 utilities to be relocated and/or adjusted, the utility



Guardrail  
Page 3 of 4

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.

- 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

Guardrail  
Page 4 of 4

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Guardrail, End Treatments, Bridge End Connectors, Terminal Sections, and Remove 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 NOTES FOR BASE FAILURE REPAIR ON HSIP PROJECT**

06-9019.00 Grant KY 22

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Repair locations listed on the summary are approximate only. The Engineer will determine actual repair locations and dimensions at the time of construction. Prior to milling and/or resurfacing, saw cut the existing pavement, asphalt surface, base, DGA, and PCC pavement (if present). Excavate to an approximate depth of 13 inches below the existing pavement surface level. Use all possible care to avoid damaging existing culvert pipes and any existing underground utilities. Repair or restore any damaged items at no additional cost to the Department. Waste all removed materials 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.

On the same day trench is excavated, backfill the excavated area with 4 inches of Crushed Limestone Size No. 23, wrapped on the bottom and sides in Type 3 Geotextile Fabric, and 9 inches of Class 2 Asphalt Base 1.00D PG64-22 with fiber reinforcement, in 3 inch maximum courses, up to the existing pavement surface. Compact the asphalt base to the proper compaction as required by Section 403. Seal the asphalt base with leveling and wedging. If asphalt base layer is deeper than 9", crushed aggregate is to be omitted. Construct crushed aggregate if in DGA base layer. Perform all base failure repairs in such a manner that removal and replacement are completed on the same day. Do this work as one of the Contractor's first operations in order to allow further compaction by traffic. Do not mill or place new asphalt surface over repaired base failure areas until a minimum of 14 calendar days have elapsed after placement of the final course of asphalt base. After the 14 calendar day waiting period, and/or when the Engineer determines the base failure repair areas have sufficiently stabilized, begin milling and/or resurfacing operations. Prior to milling and/or constructing the new asphalt surface, level and wedge any settlement of the repair areas.

The bidder must draw his or her own conclusions as to the conditions to be encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation of the materials encountered that are not in accord with the classification shown.

Pavement failure repair locations may encounter unsuitable material. Included in the proposal are bid items associated with Undercutting to remove and dispose of unsuitable material. Undercutting has been estimated at 20% of all pavement failure repair location limits at 2' in depth. A quantity of 495 cuyd of Roadway Excavation – Special, 1,025 ton of Crushed Aggregate Size No 2, and 1,485 sqyd of Fabric-Geotextile TY IV has been included on the General Summary at the discretion of the engineer. The location and depth of undercutting is at the discretion of the engineer. Remove unsuitable material and install Crushed Aggregate Size No 2 wrapped in Fabric-Geotextile TY IV.

Accept payment at the Contract unit prices per ton for Crushed Limestone, Asphalt Base, and Leveling and Wedging as full compensation for all labor, materials, equipment, and incidentals for saw cutting pavement and excavating and disposing of all materials; furnishing and placing crushed limestone stone wrapped in geotextile fabric; furnishing and placing asphalt base up to the existing pavement boundary; leveling and wedging until the repair areas stabilize; and all other items necessary to complete the work according to these notes to the satisfaction of the Engineer. The Department will not measure pavement removal, excavation, and geotextile fabric, but shall be incidental to Crushed Limestone and Asphalt Base as applicable.

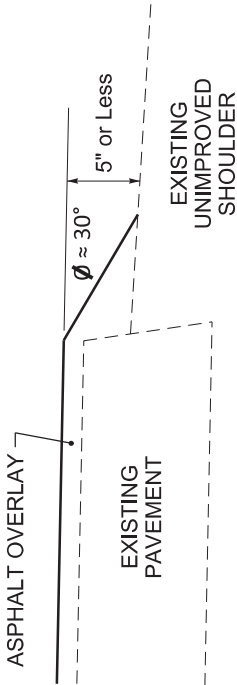
### **SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS**

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

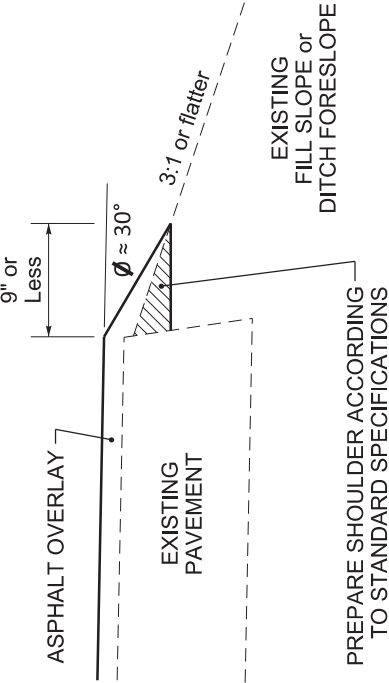
DURABLE PAVEMENT EDGE DETAIL

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



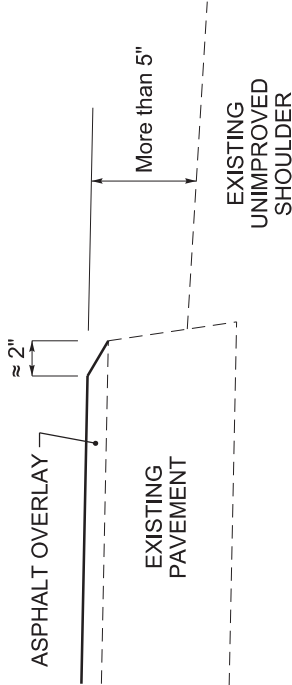
DURABLE PAVEMENT EDGE DETAIL

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



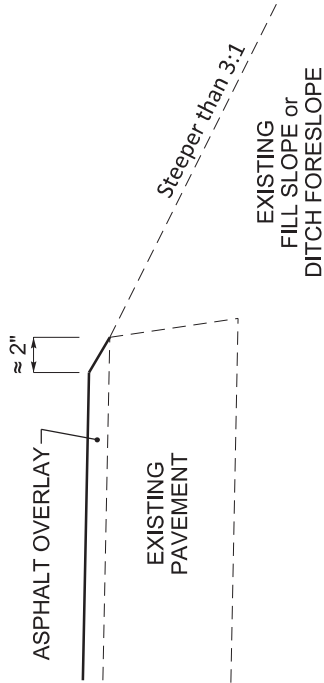
DURABLE PAVEMENT EDGE DETAIL

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



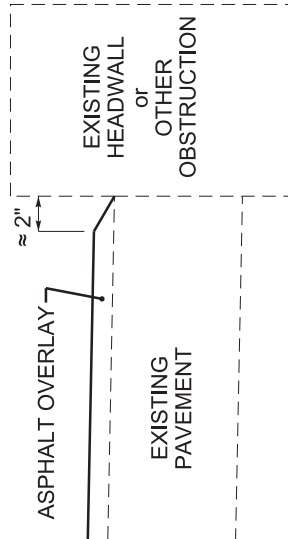
DURABLE PAVEMENT EDGE DETAIL

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



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

### **Special Note for Bridge Demolition, Renovation and Asbestos Abatement**

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

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





## Asbestos Inspection Report

To: Tom Springer, QK4, Inc.

Date: November 30, 2018

Conducted By: Russell H. Brooks, LFI, Inc.  
Kentucky Accredited Asbestos Inspector #118-06-9270

---

### Project and Structure Identification

Project: Grant County: Item No. 6-10010

Structure ID: # 041B00011N

Structure Location: KY 22 over Clarks Creek and Baton Rouge River, Grant County, Kentucky

Sample Description: Expansion Joint Board

Inspection Date: November 21, 2018

### Results and Recommendations

The asbestos inspection was performed in accordance with current United States Environmental Protection Agency (US EPA) regulations, specifically 40 CFR Part 61, Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) revision, final rule effective November 20, 1990.

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

No suspect asbestos containing (ACM) were observed.



**MRS, INC.**

MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u># 1128 B</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 A</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
		Analyzed:	<u>28-Nov-18 - Point Count -</u>
	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By : Russell Brooks

Facility/Location: Grant County - Item # 6 - 10010

Field Description: Expansion Joint Board

Laboratory Description:

Thick Black Material

Asbestos Materials:

Chrysotile = 1/400 = 0.25 % ( < 1 % ) Sample Is Negative

Non-Asbestos Fibrous Materials :

Cellulose 0.25 %

Binders 99.50 %

Remarks: The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.

Analyst: Winterford Mensah

Reviewed By:   
Signature

AIHA #102459

/

AIHA #102459

/

AIHA #102459

**MRS, INC.**

MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u># 1128 B</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 B</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
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	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By : Russell Brooks

Facility/Location: Grant County - Item # 6 - 10010

Field Description: Expansion Joint Board

Laboratory Description:

Thick Black Material

Asbestos Materials:

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Non-Asbestos Fibrous Materials :

Cellulose 0.25 %

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Remarks: The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.

Analyst: Winterford Mensah

Reviewed By:

Winterford Mensah  
Signature

AIHA #102459

/

AIHA #102459

/

AIHA #102459

MRS, Inc.  
P.O. Box 19424  
Louisville, Kentucky 40259-0424

Phon (502) 495 - 1212  
Fax (502) 491 - 7111

Client : Linebach Funkhouser, Inc.  
Project : LFI Project # 168-18

## CHAIN OF CUSTODY RECORD

PROJECT:	<u>Grant County Item 6-10010</u>
LOCATION:	<u></u>
SAMPLED BY:	<u>R. Brooks</u>
DATE:	<u>11/21/2018</u>

COMMENTS AND/OR INSTRUCTIONS:
<u>Stop First Positive</u>
<u>Point Count &lt;4%</u>
<u></u>
<u></u>

SAMPLE NUMBER	LOCATION	MATRIX	COLOR	SIZE	COMMENTS	T/L W/C	PLM
1 A/B	Expansion Joint Board						x
2 A/B							x
3 A/B							x
4 A/B							x
5 A/B							x
6 A/B							x
7 A/B							x
8 A/B							x
9 A/B							x
10 A/B							x
11 A/B							x
12 A/B							x
13 A/B							
14 A/B							
15 A/B							

Relinquished By: (Signature) <u>Russell A. Brooks</u>	Date <u>11/27/2018</u>	Time	Received By: (Signature) <u>Therese A. Brooks</u>
Relinquished By: (Signature)	Date	Time	Received By: (Signature)

**Commonwealth of Kentucky**  
**Department for Environmental Protection**  
**Division for Air Quality**

**Russell Henry Brooks**

*Has met the requirements of 401 KAR 58.005 and is accredited as an:*

**Asbestos  
Inspector**

**Accreditation Number: 118-06-9270**

**Issue Date: 6/12/2018**

**Expiration Date: 6/5/2019**





## Asbestos Inspection Report

To: Tom Springer, QK4, Inc.

Date: November 30, 2018

Conducted By: Russell H. Brooks, LFI, Inc.  
Kentucky Accredited Asbestos Inspector #I18-06-9270

---

### Project and Structure Identification

Project: Grant County: Item No. 6-10002

Structure ID: # 041B00013N

Structure Location: KY 22 over Rattlesnake Creek, Grant County, Kentucky

Sample Description: Tar/mastic Expansion Joint

Inspection Date: November 21, 2018

### Results and Recommendations

The asbestos inspection was performed in accordance with current United States Environmental Protection Agency (US EPA) regulations, specifically 40 CFR Part 61, Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) revision, final rule effective November 20, 1990.

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

No suspect asbestos containing (ACM) were observed.

AJHA #1 02459

**MRS, INC.**


MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u>1128 C</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 A</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
		Analyzed:	<u>28-Nov-18 - Point Count -</u>
	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By	:	<u>Russell Brooks</u>
Facility/Location:		<u>Grant County - Item 6 - 10002 041 B00013N</u>
Field Description:		<u>Joint Mastic</u>
Laboratory Description:		<u>Thick Black Material</u>
Asbestos Materials:		<u>Chrysotile = 1/400 = 0.25 % ( &lt; 1 % ) Sample Is Negative</u>
Non-Asbestos Fibrous Materials :		
	Cellulose	<u>0.25 %</u>
	Binders	<u>99.50 %</u>
Remarks:	<p>The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.</p>	
Analyst:	<u>Winterford Mensah</u>	Reviewed By: <u> Signature</u>

AIHA #102459

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AIHA #102459

/

AIHA #102459

**MRS, INC.**


MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u>1128 C</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 B</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
		Analyzed:	<u>28-Nov-18 - Point Count -</u>
	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By	:	<u>Russell Brooks</u>
Facility/Location:		<u>Grant County - Item 6 - 10002 041 B00013N</u>
Field Description:		<u>Joint Mastic</u>
Laboratory Description:		<u>Thick Black Material</u>
Asbestos Materials:		<u>Chrysotile = 1/400 = 0.25 % ( &lt; 1 % ) Sample Is Negative</u>
Non-Asbestos Fibrous Materials :		
	Cellulose	<u>0.25 %</u>
	Binders	<u>99.50 %</u>
Remarks:	<p>The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.</p>	
Analyst:	<u>Winterford Mensah</u>	Reviewed By: <u> Signature</u>

AIHA #102459

/

AIHA #102459

/

AIHA #102459

MRS, Inc.  
P.O. Box 19424  
Louisville, Kentucky 40259-0424

Phon (502) 495 - 1212  
Fax (502) 491 - 7111

Client : Linebach Funkhouser, Inc.  
Project : LFI Project # 168-18

## CHAIN OF CUSTODY RECORD

PROJECT: Grant County Item 6-10002  
LOCATION: 041B00013N  
SAMPLED BY: R. Brooks  
DATE: 11/21/2018

## COMMENTS AND/OR INSTRUCTIONS:

Stop First Positive

Point Count <4%

SAMPLE NUMBER	LOCATION	MATRIX	COLOR	SIZE	COMMENTS	T/L W/C	PLM
1 A/B		Joint Mastic					X
2 A/B							x
3 A/B							x
4 A/B							x
5 A/B							x
6 A/B							x
7 A/B							X
8 A/B							X
9 A/B							X
10 A/B							X
11 A/B							X
12 A/B							X
13 A/B							
14 A/B							
15 A/B							

Relinquished By: (Signature) <i>Russell A. Brooks</i>	Date 11/27/2018	Time	Received By: (Signature) <i>Theresa S. Henry</i>
Relinquished By: (Signature)	Date	Time	Received By: (Signature)

**Commonwealth of Kentucky**  
**Department for Environmental Protection**  
**Division for Air Quality**

**Russell Henry Brooks**

*Has met the requirements of 401 KAR 58.005 and is accredited as an:*

**Asbestos  
Inspector**

**Accreditation Number: 118-06-9270**

**Issue Date: 6/12/2018**

**Expiration Date: 6/5/2019**





## Asbestos Inspection Report

To: Tom Springer, QK4, Inc.

Date: November 30, 2018

Conducted By: Russell H. Brooks, LFI, Inc.  
Kentucky Accredited Asbestos Inspector #I18-06-9270

---

### Project and Structure Identification

Project: Grant County: Item No. 6-10002

Structure ID: # 041B00014N

Structure Location: KY 22 over Eagle Creek, Grant County, Kentucky

Sample Description: Tar/Mastic in Joint

Inspection Date: November 6, 2018

### Results and Recommendations

The asbestos inspection was performed in accordance with current United States Environmental Protection Agency (US EPA) regulations, specifically 40 CFR Part 61, Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) revision, final rule effective November 20, 1990.

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

No suspect asbestos containing (ACM) were observed.

*MRS, Inc. Analytical Laboratory Division*

(502) 495-1212  
Fax: (502) 491-7111

Analysis N #	# 1128 D	Address:	Grant County - Item 6-10002
Client Name:	L F I		041 B00014N
Sampled By:	Russell Brooks		

[illegible]

Date Analyzed : 28-Nov-18  
Analyst : Winterford Mensah

Reviewed By:

Wintgers Mendez  
Signature

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

**MRS, INC.**


MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u># 1128 D</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 A</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
		Analyzed:	<u>28-Nov-18 - Point Count -</u>
	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By	:	<u>Russell Brooks</u>
Facility/Location:		<u>Grant County - Item 6 - 10002 041 B00014N</u>
Field Description:		<u>Joint Mastic</u>
Laboratory Description:		<u>Thick Black Material</u>
Asbestos Materials:		<u>Chrysotile = 1/400 = 0.25 % ( &lt; 1 % ) Sample Is Negative</u>
Non-Asbestos Fibrous Materials :		
	Cellulose	<u>0.25 %</u>
	Binders	<u>99.50 %</u>
Remarks:	<p>The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.</p>	
Analyst:	<u>Winterford Mensah</u>	Reviewed By: <u> Signature</u>

AIHA #102459

/

AIHA #102459

/

AIHA #102459

**MRS, INC.**


MRS, Inc. Analytical Laboratory Division

332 West Broadway / Suite # 902  
Louisville, Kentucky - 40202 - 2133

Phone # : (502) 495-1212  
E-Mail Address: CEOMRSInc@AOL.Com

Client:	<u>L F I</u>	Project No:	<u># 1128 D</u>
Address:	<u>114 Fairfax Avenue</u>	Sample ID:	<u># 1 B</u>
	<u>Louisville, KY</u>	Sampled:	<u>21-Nov-18</u>
	<u>40207</u>	Received:	<u>27-Nov-18</u>
		Analyzed:	<u>28-Nov-18 - Point Count -</u>
	<u>Attention : Russell Brooks</u>		

**Bulk Sample Analysis**

Sampled By :	<u>Russell Brooks</u>
Facility/Location:	<u>Grant County - Item 6 - 10002 041 B00014N</u>
Field Description:	<u>Joint Mastic</u>
Laboratory Description:	<u>Thick Black Material</u>
Asbestos Materials:	<u>Chrysotile = 1/400 = 0.25 % ( &lt; 1 % ) Sample Is Negative</u>
Non-Asbestos Fibrous Materials :	
	<u>Cellulose 0.25 %</u>
	<u>Binders 99.50 %</u>
Remarks:	<p>The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.</p>
Analyst:	<u>Winterford Mensah</u>
Reviewed By:	<u> Signature</u>

AIHA #102459

/

AIHA #102459

/

AIHA #102459

MRS, Inc.  
P.O. Box 19424  
Louisville, Kentucky 40259-0424

Phon (502) 495 - 1212  
Fax (502) 491 - 7111

Client : Linebach Funkhouser, Inc.  
Project : LFI Project # 168-18

## CHAIN OF CUSTODY RECORD

PROJECT:	<u>Grant County Item 6-10002</u>
LOCATION:	<u>041B00014N</u>
SAMPLED BY:	<u>R. Brooks</u>
DATE:	<u>11/21/2018</u>

## COMMENTS AND/OR INSTRUCTIONS:

Stop First Positive  
Point Count <4%  
   
 

SAMPLE NUMBER	LOCATION	MATRIX	COLOR	SIZE	COMMENTS	T/L	W/C	PLM
1 A/B		Joint Mastic						X
2 A/B								x
3 A/B								x
4 A/B								x
5 A/B								x
6 A/B								x
7 A/B								x
8 A/B								x
9 A/B								x
10 A/B								x
11 A/B								x
12 A/B								x
13 A/B								
14 A/B								
15 A/B								

Relinquished By: (Signature) <i>Russell A. Brooks</i>	Date 11/27/2018	Time	Received By: (Signature) <i>Theresa R. Rouse</i>
Relinquished By: (Signature)	Date	Time	Received By: (Signature)

**Commonwealth of Kentucky**  
**Department for Environmental Protection**  
**Division for Air Quality**

**Russell Henry Brooks**

*Has met the requirements of 401 KAR 58.005 and is accredited as an:*

**Asbestos  
Inspector**

**Accreditation Number: 118-06-9270**

**Issue Date: 6/12/2018**

**Expiration Date: 6/5/2019**



KENTUCKY TRANSPORTATION CABINET  
Department of Highways  
DIVISION OF RIGHT OF WAY & UTILITIES  
**RIGHT OF WAY CERTIFICATION**TC 62-226  
Rev. 01/2016  
Page 1 of 1

<input checked="" type="checkbox"/> Original	<input type="checkbox"/> Re-Certification	<b>RIGHT OF WAY CERTIFICATION</b>	
<b>ITEM #</b>	<b>COUNTY</b>	<b>PROJECT # (STATE)</b>	<b>PROJECT # (FEDERAL)</b>
6-10002.00	Grant	1100 FD04 121 9414001R	
<b>PROJECT DESCRIPTION</b>			
Ky-22 Over Eagle Creek (041800014N)			
<input checked="" type="checkbox"/> <b>No Additional Right of Way Required</b>			
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.			
<input type="checkbox"/> <b>Condition # 1 (Additional Right of Way Required and Cleared)</b>			
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.			
<input type="checkbox"/> <b>Condition # 2 (Additional Right of Way Required with Exception)</b>			
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			
<input type="checkbox"/> <b>Condition # 3 (Additional Right of Way Required with Exception)</b>			
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	0	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed	0		
Condemnation	0		
Signed ROE	0		
Notes/ Comments (Use Additional Sheet if necessary)			
<b>LPA RW Project Manager</b>		<b>Right of Way Supervisor</b>	
Printed Name	Keith Hembree, Project Manager	Printed Name	Mark C. Askin, P.E.
Signature	<i>Keith Hembree</i> 1/24/2019	Signature	<i>Mark C. Askin</i>
Date	1/24/2019	Date	1-28-19
<b>Right of Way Director</b>		<b>FHWA</b>	
Printed Name	Dean M. Loy	Printed Name	
Signature	<i>Dean M. Loy</i>	Signature	
Date	30 JAN 2019	Date	

KENTUCKY TRANSPORTATION CABINET  
Department of Highways  
DIVISION OF RIGHT OF WAY & UTILITIES  
RIGHT OF WAY CERTIFICATIONTC 62-226  
Rev. 01/2016  
Page 1 of 1

<input checked="" type="checkbox"/> Original	<input type="checkbox"/> Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
6-10002.10	GRANT	1100 FD04 121 9414001R	
PROJECT DESCRIPTION			
BRIDGING KENTUCKY PROJECT - REHAB BRIDGE ON KY 22 OVER RATTLESNALE CREEK (041B00013N).			
<input checked="" type="checkbox"/> 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.			
<input type="checkbox"/> 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.			
<input type="checkbox"/> 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			
<input type="checkbox"/> 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	0	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed	0		
Condemnation	0		
Signed ROE	0		
Notes/ Comments (Use Additional Sheet if necessary)			
LPA RW Project Manager		Right of Way Supervisor	
Printed Name	Keith Hembree, Project Manager	Printed Name	Mark C. Askin, P.E.
Signature		Signature	
Date	02/01/19	Date	02/01/19
Right of Way Director		FHWA	
Printed Name	Dean M. Loy	Printed Name	
Signature	DM Loy	Signature	
Date	2019.02.01 09:46:16 -05'00'	Date	



KENTUCKY TRANSPORTATION CABINET  
Department of Highways  
DIVISION OF RIGHT OF WAY & UTILITIES  
RIGHT OF WAY CERTIFICATIONTC 62-226  
Rev. 01/2016  
Page 1 of 1

<input checked="" type="checkbox"/> Original	<input type="checkbox"/> Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
6-10010.00	Grant	1100 FD04 121 9414001R	
PROJECT DESCRIPTION			
Ky-22 Over Clarks Crk + Baton Rouge R (041B00011N)			
<input checked="" type="checkbox"/> 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.			
<input type="checkbox"/> 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.			
<input type="checkbox"/> 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			
<input type="checkbox"/> 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	0	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed	0		
Condemnation	0		
Signed ROE	0		
Notes/ Comments (Use Additional Sheet if necessary)			
LPA RW Project Manager		Right of Way Supervisor	
Printed Name	Keith Hembree, Project Manager	Printed Name	Mark C. Askin, P.E.
Signature		Signature	
Date	1/24/2019	Date	1-29-19
Right of Way Director		FHWA	
Printed Name	Dean M. Loy	Printed Name	
Signature		Signature	
Date	32 JAN 2019	Date	

	<b>KENTUCKY TRANSPORTATION CABINET</b> Department of Highways <b>DIVISION OF RIGHT OF WAY &amp; UTILITIES</b>	TC 62-226 Rev. 01/2016 Page 1 of 1
<b>RIGHT OF WAY CERTIFICATION</b>		

<input checked="" type="checkbox"/>	<b>Original</b>	<input type="checkbox"/>	<b>Re-Certification</b>	<b>RIGHT OF WAY CERTIFICATION</b>	
<b>ITEM #</b>		<b>COUNTY</b>		<b>PROJECT # (STATE)</b>	<b>PROJECT # (FEDERAL)</b>
6-9019		Grant		FD52 041 0022 005-011	HSIP 5140 (041)
<b>PROJECT DESCRIPTION</b>					
Safety Improvements along KY 22 from MP 5.758 to 10.630					
<input checked="" type="checkbox"/> <b>No Additional Right of Way Required</b>					
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.					
<input type="checkbox"/> <b>Condition # 1 (Additional Right of Way Required and Cleared)</b>					
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.					
<input type="checkbox"/> <b>Condition # 2 (Additional Right of Way Required with Exception)</b>					
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					
<input type="checkbox"/> <b>Condition # 3 (Additional Right of Way Required with Exception)</b>					
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		EXCEPTION (S) Parcel #		ANTICIPATED DATE OF POSSESSION WITH EXPLANATION	
Number of Parcels That Have Been Acquired					
Signed Deed					
Condemnation					
Signed ROE					
<b>Notes/ Comments (Use Additional Sheet if necessary)</b>					
<b>LPA RW Project Manager</b>			<b>Right of Way Supervisor</b>		
Printed Name			Printed Name	Date: 2019.09.13 13:31:50 -04'00'	
Signature			Signature		
Date			Date		
<b>Right of Way Director</b>			<b>FHWA</b>		
Printed Name			Printed Name	No Signature Required as per FHWA-KYTC Current Stewardship Agreement	
Signature			Signature		
Date			Date		

## UTILITIES AND RAIL CERTIFICATION NOTE

**Grant County**  
**ADDRESS DEFICIENCIES OF KY 22 BRIDGE OVER CLARKS CRK+BATON ROUGE R. (041B00011N)**  
**ITEM NUMBER: 06-10010.00**

### 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 than ten (10) business days prior to excavation. The contractor shall submit Excavation Locate

## UTILITIES AND RAIL CERTIFICATION NOTE

**Grant County**  
**ADDRESS DEFICIENCIES OF KY 22 BRIDGE OVER CLARKS CRK+BATON ROUGE R. (041B00011N)**  
**ITEM NUMBER: 06-10010.00**

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.

Utility coordination efforts determined that no significant utility relocation work is required to complete the project. Any work pertaining to these utility facilities is defined in the bid package and is to be carried out as instructed by the Kentucky Transportation Cabinet. The contractor will be responsible for any coordination or adjustments that are discussed or quantified in the proposal.

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

Owen Electric Cooperative - Electric

Cincinnati Bell Telephone (Overhead) – Telephone

City of Williamstown-Water

**\*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**

Cincinnati Bell Telephone (Overhead) – Telephone will relocate their line LT 201+40 and will be complete by November 30, 2019. The line below the existing bridge has been removed for construction.

UTILITIES AND RAIL CERTIFICATION NOTE

<p>Grant County</p> <p>ADDRESS DEFICIENCIES OF KY 22 BRIDGE OVER CLARKS CRK+BATON ROUGE R. (041B00011N)</p> <p>ITEM NUMBER: 06-10010.00</p>
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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

Grant County

ADDRESS DEFICIENCIES OF KY 22 BRIDGE OVER CLARKS CRK+BATON ROUGE R. (041B00011N)

ITEM NUMBER: 06-10010.00

AREA FACILITY OWNER CONTACT LIST

Facility Owner	Address	Contact Name	Phone	Email
Cincinnati Bell Telephone (Overhead) - Telephone	221 East Fourth Street Cincinnati OH 45202	Dan Springelmeyer	5133977165	dan.springelmeyer@cinbell.com
Williamstown Water	PO Box 147 400 N Main St Williamstown, KY 41097	Steve Harris	8593934426	
Owen Electric Cooperative - Electric	PO Box 400 Owenton KY 40359	Lucas McNally	8593939450	lmcnally@owenelectric.com

## UTILITIES AND RAIL CERTIFICATION NOTE

**GRANT COUNTY/ FD04 041 0022 B00013N**  
**KY 22-TAFT HWY/ BRIDGE REHABILITATION**  
SYP 6-10002.10

*Utility coordination efforts conducted by the project sponsor have determined that no significant utility relocation work is required to complete the project. Any work pertaining to these utility facilities is defined in the bid package and is to be carried out as instructed by the Kentucky Transportation Cabinet. The contractor will be responsible for any coordination or adjustments that are discussed or quantified in the proposal.*

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

☒ **No Rail Involved**    ☐ **Minimal Rail Involved (See Below)**    ☐ **Rail Involved (See Below)**

### UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG

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 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.

### SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

The contractor will be responsible for contacting all utility facility owners on the subject project to coordinate his activities. The contractor will coordinate his activities to minimize and, where possible, avoid conflicts with utility facilities. Due to the nature of the work proposed, it is unlikely to conflict with the existing utilities beyond minor facility adjustments. Where conflicts with utility facilities are unavoidable, the contractor will coordinate any necessary relocation work with the facility owner and Resident Engineer. The

Kentucky Transportation Cabinet maintains the right to remove or alter portions of this contract if a utility conflict occurs.

UTILITIES AND RAIL CERTIFICATION NOTE

GRANT COUNTY/ FD04 041 0022 B00013N  
KY 22-TAFT HWY/ BRIDGE REHABILITATION  
SYP 6-10002.10

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.

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

AREA UTILITIES CONTACT LIST AS PROVIDED BY KY 811

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
<u>Bullock Pen Water</u>	<u>Brian Simpson</u>	<u>(859) 393 7305</u>
<u>Cincinnati Bell</u>	<u>Dan Springelmeyer</u>	<u>(513) 397-7165</u>

## UTILITIES AND RAIL CERTIFICATION NOTE

**GRANT COUNTY/ FD04 041 0022 B00014N  
KY 22-TAFT HWY/ BRIDGE REHABILITATION  
SYP 06-10002.00**

*Utility coordination efforts conducted by the project sponsor have determined that no significant utility relocation work is required to complete the project. Any work pertaining to these utility facilities is defined in the bid package and is to be carried out as instructed by the Kentucky Transportation Cabinet. The contractor will be responsible for any coordination or adjustments that are discussed or quantified in the proposal.*

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

☒ No Rail Involved    ☐ Minimal Rail Involved (See Below)    ☐ Rail Involved (See Below)

### UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG

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 than ten (10) business days prior to excavation.

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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.

UTILITIES AND RAIL CERTIFICATION NOTE

GRANT COUNTY/ FD04 041 0022 B00014N  
KY 22-TAFT HWY/ BRIDGE REHABILITATION  
SYP 06-10002.00

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.

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

AREA UTILITIES CONTACT LIST AS PROVIDED BY KY 811

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
<b><u>Bullock Pen Water</u></b>	<b><u>Brian Simpson</u></b>	<b><u>(859) 393 7305</u></b>

UTILITIES AND RAIL CERTIFICATION NOTE

Grant County - HSIP 5140 (041)  
FD52 041 0022 005-011  
Safety Improvement along KY 22  
Item No. 6-9019.00

GENERAL PROJECT NOTE ON UTILITY PROTECTION

Utility coordination efforts determined that no significant utility relocation work is required to complete the project. Any work pertaining to these utility facilities is defined in the bid package and is to be carried out as instructed by the Kentucky Transportation Cabinet. The contractor will be responsible for any coordination or adjustments that are discussed or quantified in the proposal.

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

The following utility facilities are present and are not to be disturbed during construction activities.

- POWER POLE / OVERHEAD ELECTRIC / OVERHEAD TELEPHONE**  
Owen Electric Power Poles are located on both left and right sides throughout project limits.
- VARIOUS WATER MAINS / SANITARY SEWER**  
6" WATER MAINS AND SANITARY SEWER are located on both left and right sides throughout project limits. Utility owners include City of Dry Ridge, City of Williamstown, and Bullock Pen Water District.  
NOTE: DO NOT DISTURB EXISTING MANHOLES AT STA. 505+70 (17' LT) AND STA. 506+62 (17' LT)
- UNDERGROUND FIBER**  
Cincinnati Bell owns underground fiber on the LT side of the road in the area of Superelevation Improvement leading up to the Bridge over Clarks Creek.
- UNDERGROUND COMMUNICATIONS**  
Cincinnati Bell owns underground communications on the RT side of the road at the beginning of the project. There is a pipe extension at Sta. 307+03 that has proposed Slope & Mitered Headwall overtop existing underground communications. Do Not Disturb Underground Communications during construction of pipe extension and headwall.
- GAS MAIN**  
Duke Energy owns an underground gas main towards the end of the job on the LT side of the road. The gas main begins at Ellen Kay Drive and goes through the end of project.

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

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

N/A

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

N/A

**UTILITIES AND RAIL CERTIFICATION NOTE**

**Grant County - HSIP 5140 (041)  
FD52 041 0022 005-011  
Safety Improvement along KY 22  
Item No. 6-9019.00**

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

N/A

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

- ☒ No Rail Involved      ☐ Minimal Rail Involved (See Below)      ☐ Rail Involved (See Below)



## UTILITIES AND RAIL CERTIFICATION NOTE

**Grant County - HSIP 5140 (041)**  
**FD52 041 0022 005-011**  
**Safety Improvement along KY 22**  
**Item No. 6-9019.00**

### **UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG**

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 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.

### **SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES**

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

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

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

**UTILITIES AND RAIL CERTIFICATION NOTE**

**Grant County - HSIP 5140 (041)  
FD52 041 0022 005-011  
Safety Improvement along KY 22  
Item No. 6-9019.00**

AREA UTILITIES CONTACT LIST

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
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CONTACT INFORMATION WILL BE PROVIDED AT THE PRECONSTRUCTION MEETING

Kentucky Transportation  
Cabinet Project:

# ***N O T I C E***

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**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**

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**PROJECT DESCRIPTION: Bridge Rehabilitation  
KY 22 over Clark's Creek and Baton Rouge Road  
Grant County, KY  
KYTC Item No. 6-10010**

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The Sections 404 and 401 activities for this project have previously been permitted under the authority of the Department of the Army, Section 404 Nationwide Permit Number 3, *Maintenance Projects* (with additional *Kentucky Regional General Conditions*), and the Kentucky Division of Water, Section 401 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 Permit Number 3 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.

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Kentucky Transportation  
Cabinet Project:

Locations Impacting Water Quality

Station-Location	Description
Bridge ID: <b>041B00011N</b>	<b>Bridge 041B00011N (KY 22 over Clark’s Creek and Baton Rouge Road)</b> project will entail rehabilitating the existing bridge with the same current geometrics (bridge width, length, hydraulic opening, etc.). The project may involve the removal of debris and/or sediment.

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 3 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 and sufficient pipe to allow stream flow to continue, unimpeded. Other conditions may be found under the heading, *General Certification—Nationwide Permit # 3 Maintenance Projects*.

In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Permit Number 3 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 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.

Terms for Nationwide Permit No. 3 – Maintenance Projects

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. 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. After conducting the maintenance activity, 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.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act section 404(f) exemption for maintenance.



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 # 3  
Maintenance**

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.

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 3, namely Maintenance, 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.
4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth.

**General Certification--Nationwide Permit # 3**  
**Maintenance**  
**Page 2**

5. 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.
6. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
7. 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.
  - 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, 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 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.



**General Certification--Nationwide Permit # 3**  
**Maintenance**  
**Page 3**

- 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 Kentucky Division of Water 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.



**US Army Corps  
of Engineers®**

Louisville District

# 2017 Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by NWP to be valid:

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the US 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.

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 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 that 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 activity may impair 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 section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on the 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 (PCN) 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 PCN 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 work. 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 PCN. 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 the proposed activities will have "no effect" on listed species or critical habitat, or until 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 Corps.

(d) As a result of formal or informal consultation with the USFWS or NMFS the district engineer may add species-specific permit conditions to the NWP's.

(e) Authorization of an activity by a 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 USFWS 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 review the ESA section 10(a)(1)(B) permit, and if he or she determines that it covers the proposed NWP activity, including any incidental take of listed species that might occur as a result of conducting the proposed NWP activity, the district engineer does not need to conduct a separate 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 PCN 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 USFWS 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/pz/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 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 an effect 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, and adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and 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 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 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 US are not authorized by NWP's 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 NWP's 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 effects of the proposed activity are minimal, and provides a project-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 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 the 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 environmental on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP's, 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 if the use of mitigation bank or in-lieu fee program credits is not appropriate and practicable.

(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.

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP's. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project 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 minimal impact requirement for the NWP's.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate 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 compensatory 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 USEPA 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 work 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(i)(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 work 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 the 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 (PCN). (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. 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 in the vicinity of the project, 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 NWPs 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 pre-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 water 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 project 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 project, or if the project is located in designated critical habitat, for non-Federal applicants 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 may be affected by the proposed activity. For any NWP activity that requires 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. 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 PCN 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 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 project's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require preconstruction 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 or ordinary high water mark.

(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 PCN notifications to expedite agency coordination.

#### Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Kentucky Transportation  
Cabinet Project:

# ***N O T I C E***

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**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**

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**PROJECT DESCRIPTION: Bridge Rehabilitation**  
**KY 22 over Rattlesnake Creek**  
**Grant County, KY**  
**KYTC Item No. 6-10002.10**

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The Sections 404 and 401 activities for this project have previously been permitted under the authority of the Department of the Army, Section 404 Nationwide Permit Number 3, *Maintenance Projects* (with additional *Kentucky Regional General Conditions*), and the Kentucky Division of Water, Section 401 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 Permit Number 3 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.

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Kentucky Transportation  
Cabinet Project:

Locations Impacting Water Quality

Station-Location	Description
Bridge ID: <b>041B00013N</b>	<b>Bridge 041B00013N (KY 22 over Rattlesnake Creek)</b> project will entail rehabilitating the existing bridge with the same current geometrics (bridge width, length, hydraulic opening, etc.). The project may involve the removal of debris and/or sediment.

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 3 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 and sufficient pipe to allow stream flow to continue, unimpeded. Other conditions may be found under the heading, *General Certification—Nationwide Permit # 3 Maintenance Projects*.

In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Permit Number 3 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 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.

Terms for Nationwide Permit No. 3 – Maintenance Projects

- (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.
- (b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.
- (c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. 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. After conducting the maintenance activity, 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.
- (d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act section 404(f) exemption for maintenance.



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 # 3  
Maintenance**

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.

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 3, namely Maintenance, 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.
4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth.

**General Certification--Nationwide Permit # 3**  
**Maintenance**  
**Page 2**

5. 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.
6. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
7. 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.
  - 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, 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 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.

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- 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 Kentucky Division of Water 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.



**US Army Corps  
of Engineers®**

Louisville District

# 2017 Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by NWP to be valid:

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the US 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.

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 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 activity may impair 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 section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on the 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 (PCN) 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 PCN 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 work. 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 PCN. 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 the proposed activities will have "no effect" on listed species or critical habitat, or until 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 Corps.

(d) As a result of formal or informal consultation with the USFWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

(e) Authorization of an activity by a 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 USFWS 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 review the ESA section 10(a)(1)(B) permit, and if he or she determines that it covers the proposed NWP activity, including any incidental take of listed species that might occur as a result of conducting the proposed NWP activity, the district engineer does not need to conduct a separate 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 PCN 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 USFWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/pac> and <http://www.nmfs.noaa.gov/pz/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 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 an effect 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, and adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and 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 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 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 US are not authorized by NWP's 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 NWP's 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 effects of the proposed activity are minimal, and provides a project-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 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 the 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 environmental on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP's, 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 if the use of mitigation bank or in-lieu fee program credits is not appropriate and practicable.

(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.

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP's. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project 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 minimal impact requirement for the NWP's.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate 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 compensatory 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 USEPA 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 work 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(i)(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 work 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 the 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 (PCN). (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. 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 in the vicinity of the project, 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 (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 NWPs 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 any 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 water 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 project 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 project, or if the project is located in designated critical habitat, for non-Federal applicants 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 may be affected by the proposed activity. For any NWP activity that requires 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. 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 PCN 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 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 project's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require preconstruction 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 or ordinary high water mark.

(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 PCN notifications to expedite agency coordination.

#### Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

Kentucky Transportation  
Cabinet Project:

# ***N O T I C E***

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**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**

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**PROJECT DESCRIPTION: Bridge Superstructure Replacement  
KY 22 over Eagle Creek  
Grant County, KY  
KYTC Item No. 6-10002**

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The Sections 404 and 401 activities for this project have previously been permitted under the authority of the Department of the Army, Section 404 Nationwide Permit Number 3, *Maintenance Projects* (with additional *Kentucky Regional General Conditions*), and the Kentucky Division of Water, Section 401 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 Permit Number 3 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.

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Kentucky Transportation  
Cabinet Project:

Locations Impacting Water Quality

Station-Location	Description
Bridge ID: <b>041B00014N</b>	<b>Bridge 041B00014N (KY 22 over Eagle Creek)</b> project will entail rehabilitating the existing bridge with the same current geometrics (bridge width, length, hydraulic opening, etc.). The project may involve the removal of debris and/or sediment.

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 3 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 and sufficient pipe to allow stream flow to continue, unimpeded. Other conditions may be found under the heading, *General Certification—Nationwide Permit # 3 Maintenance Projects*.

In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Permit Number 3 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 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.

Terms for Nationwide Permit No. 3 – Maintenance Projects

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. 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. After conducting the maintenance activity, 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.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act section 404(f) exemption for maintenance.



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 # 3  
Maintenance**

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.

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 3, namely Maintenance, 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.
4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth.



**General Certification--Nationwide Permit # 3**  
**Maintenance**  
**Page 2**

5. 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.
6. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
7. 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.
  - 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, 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 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.

**General Certification--Nationwide Permit # 3**  
**Maintenance**  
**Page 3**

- 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 Kentucky Division of Water 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.



**US Army Corps  
of Engineers®**

Louisville District

# 2017 Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by NWP to be valid:

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the US 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.

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 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 activity may impair 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 section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on the 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 (PCN) 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 PCN 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 work. 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 PCN. 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 the proposed activities will have "no effect" on listed species or critical habitat, or until 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 Corps.

(d) As a result of formal or informal consultation with the USFWS or NMFS the district engineer may add species-specific permit conditions to the NWP's.

(e) Authorization of an activity by a 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 USFWS 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 review the ESA section 10(a)(1)(B) permit, and if he or she determines that it covers the proposed NWP activity, including any incidental take of listed species that might occur as a result of conducting the proposed NWP activity, the district engineer does not need to conduct a separate 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 PCN 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 USFWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/pac> and <http://www.nmfs.noaa.gov/pz/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 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 an effect 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, and adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and 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 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 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 US are not authorized by NWP's 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 NWP's 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 effects of the proposed activity are minimal, and provides a project-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 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 the 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 environmental on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWP's, 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 if the use of mitigation bank or in-lieu fee program credits is not appropriate and practicable.

(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.

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP's. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project 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 minimal impact requirement for the NWP's.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate 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 compensatory 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 USEPA 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 work 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(i)(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 work 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 the 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 (PCN). (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. 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 in the vicinity of the project, 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 (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 NWPs 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 any 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 pre-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 water 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 project 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 project, or if the project is located in designated critical habitat, for non-Federal applicants 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 may be affected by the proposed activity. For any NWP activity that requires 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. 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 PCN 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 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 project's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require preconstruction 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 or ordinary high water mark.

(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 PCN notifications to expedite agency coordination.

#### Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).



# *N O T I C E*

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**DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS  
NATIONWIDE PERMIT AUTHORIZATION  
KENTUCKY DIVISION OF WATER 401 WQC**

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**PROJECT:** Grant County, Item No. 6-9019  
Highway safety improvements on KY 22.

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The Section 404 & 401 activities for this project have been previously permitted under the authority of the Department of the Army Nationwide Permit No. 14 “Linear Transportation Projects” & Division of Water General Water Quality Certification. In order for these authorizations to be valid, the attached conditions must be followed. The contractor shall post a copy of this Nationwide Permit & General WQC in a conspicuous location at the project site for the duration of construction and comply with the general conditions as required.

Station 310+46 Mile point 5.88	Extend the headwall on a 24 inch culvert. The <b>ephemeral</b> stream a UT to Clarks Creek will have impacts below the normal high water mark. The estimated area of impact is <b>8 linear feet</b> and <b>0.0004 acres</b> .
Station 328+77 Mile point 6.23	Extend the headwall on a 24 inch culvert. The <b>ephemeral</b> stream a UT to Clarks Creek will have impacts below the normal high water mark. The estimated area of impact is <b>7 linear feet</b> and <b>0.0003 acres</b> .
Station 334+03 Mile point 6.33	Extend the headwall on a 24 inch culvert. The <b>ephemeral</b> stream a UT to Clarks Creek will have impacts below the normal high water mark. The estimated area of impact is <b>8 linear feet</b> and <b>0.0004 acres</b> .

This project involves work near and/or within Jurisdictional Waters of the United States as defined by the United States Army Corps of Engineers and therefore requires a Nationwide 14 General 404 Permit. The Division of Water certified this General Permit with several conditions (See attached). One that should be brought to your attention is regarding the use of heavy equipment in the stream channel. If there is need to cross the stream channel with heavy equipment or conduct work from within the stream channel a working platform or temporary crossing is authorized. This should be constructed with clean rock and sufficient pipe to allow stream flow to continue unimpeded (see attached typical drawing).

In order for this authorization to be valid, the attached conditions must be followed. The

contractor shall post a copy of this Nationwide Approval in a conspicuous location at the project site for the duration of construction and comply with the general conditions as required.

To more readily expedite construction, the contractor may elect to alter the design or perform the work in a manner different from what was originally proposed and specified. Prior to commencing such alternative work, the contractor shall obtain **written** permission from the Division of Construction and the Division of Environmental Analysis. If such changes necessitate further permitting then the contractor will be responsible for applying to the Army Corps of Engineers and the Kentucky Division of Water (KDOW). A copy of any request to the Corps of Engineers or the KDOW 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.



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.

## **2017 Nationwide Permits Regional and Permit-Specific Conditions COMMONWEALTH OF KENTUCKY**

These regional conditions are in addition to, but do not supersede, the requirements in the Federal Register (Volume 82, No. 4 of January 6, 2017, pp 1860).

Notifications for all Nationwide Permits (NWP) shall be in accordance with General Condition No. 32.

1. For activities that would impact Outstanding State or National Resource Waters (OSNRWs), Exceptional Waters (EWs), Coldwater Aquatic Habitat Waters (CAHs) under the Endangered Species Act for the NWP listed below, a Pre-Construction Notification (PCN) will be required to the Corps. The Corps will coordinate with the appropriate resource agencies (see attached list) on these NWP (Section 404 activities), for impacts to these waters.

NWP 3 (Maintenance)

NWP 4 (Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities)

NWP 5 (Scientific Measurement Devices)

NWP 6 (Survey Activities)

NWP 7 (Outfall Structures and Associated Intake Structures)

NWP 12 (Utility Line Activities)

NWP 13 (Bank Stabilization)

NWP 14 (Linear Transportation Projects)

NWP 15 (U.S. Coast Guard Approved Bridges)

NWP 16 (Return Water from Upland Contained Disposal Areas)

NWP 17 (Hydropower Projects)

NWP 18 (Minor Discharges)

NWP 19 (Minor Dredging)

NWP 20 (Response Operations for Oil or Hazardous Substances)

NWP 21 (Surface Coal Mining Activities)

NWP 22 (Removal of Vessels)

NWP 23 (Approved Categorical Exclusions)

NWP 25 (Structural Discharges)

NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities)

NWP 29 (Residential Developments)

NWP 30 (Moist Soil Management for Wildlife)

NWP 31 (Maintenance of Existing Flood Control Facilities)

NWP 32 (Completed Enforcement Actions)

NWP 33 (Temporary Construction, Access, and Dewatering)

NWP 34 (Cranberry Production Activities)

NWP 36 (Boat Ramps)

NWP 37 (Emergency Watershed Protection and Rehabilitation)

NWP 38 (Cleanup of Hazardous and Toxic Waste)

NWP 39 (Commercial and Institutional Developments)

NWP 40 (Agricultural Activities)

- NWP 41 (Reshaping Existing Drainage Ditches)
  - NWP 42 (Recreational Facilities)
  - NWP 43 (Stormwater Management Facilities)
  - NWP 44 (Mining Activities)
  - NWP 45 (Repair of Uplands Damaged by Discrete Events)
  - NWP 46 (Discharges in Ditches)
  - NWP 48 (Commercial Shellfish Aquaculture Activities)
  - NWP 49 (Coal Remining Activities)
  - NWP 50 (Underground Coal Mining Activities)
  - NWP 51 (Land-Based Renewable Energy Generation Facilities)
  - NWP 52 (Water-Based Renewable Energy Generation Pilot Projects)
  - NWP 53 (Removal of Low-Head Dams)
  - NWP 54 (Living Shorelines)
2. In addition to the notification and agency coordination requirements in the 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).

- (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).

**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, 3<sup>rd</sup> Floor  
Frankfort, KY 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, KY 40601

Terms for Nationwide Permit No. 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).

## **Report of Geotechnical Exploration**

041B00011N  
Bridge over Clarks Creek and  
Baton Rouge Road  
Grant County, Kentucky



Prepared by:  
Stantec Consulting Services Inc.  
Lexington, Kentucky

August 23, 2019



**Stantec Consulting Services Inc.**  
3052 Beaumont Centre Circle, Lexington KY 40513-1703

August 23, 2019  
File: rpt\_001\_let\_178568003

**Attention: Mr. Brian Meade, PE**  
Bridging Kentucky Area 4 Team Lead  
AECOM  
Suite 1600  
Louisville, Kentucky 40202

**Reference: Report of Geotechnical Exploration**  
**041B00011N**  
**Bridge over Clarks Creek and Baton Rouge Road**  
**Grant County, Kentucky**

Dear Mr. Meade,

Stantec Consulting Services Inc. (Stantec) is submitting the geotechnical engineering report for the referenced structure with this letter. This report presents results of the field exploration along with our recommendations for the design and construction for the referenced bridge. As always, we enjoy working with your staff and if we can be of further assistance, please contact our office.

Sincerely,

**STANTEC CONSULTING SERVICES INC.**



Donald L. Blanton, PE  
Senior Associate  
Phone: (859) 422-3033  
Fax: (859) 422-3100  
Donald.Blanton@stantec.com

/rws

REPORT OF GEOTECHNICAL EXPLORATION

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### 1.0 INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) has initiated the Bridging Kentucky program. The purpose of the program is to rehabilitate or replace over 1,000 bridges across the state. Bridges that have been identified to be a part of the program are structures that because of their deteriorating conditions and resulting low load ratings are limiting the movement of people and freight across the state.

This report addresses the geotechnical considerations for Bridge 041B00011N, Bridge over Clarks Creek and Baton Rouge Road which is in Grant County, Kentucky. The bridge location is presented on Figure 1 below.

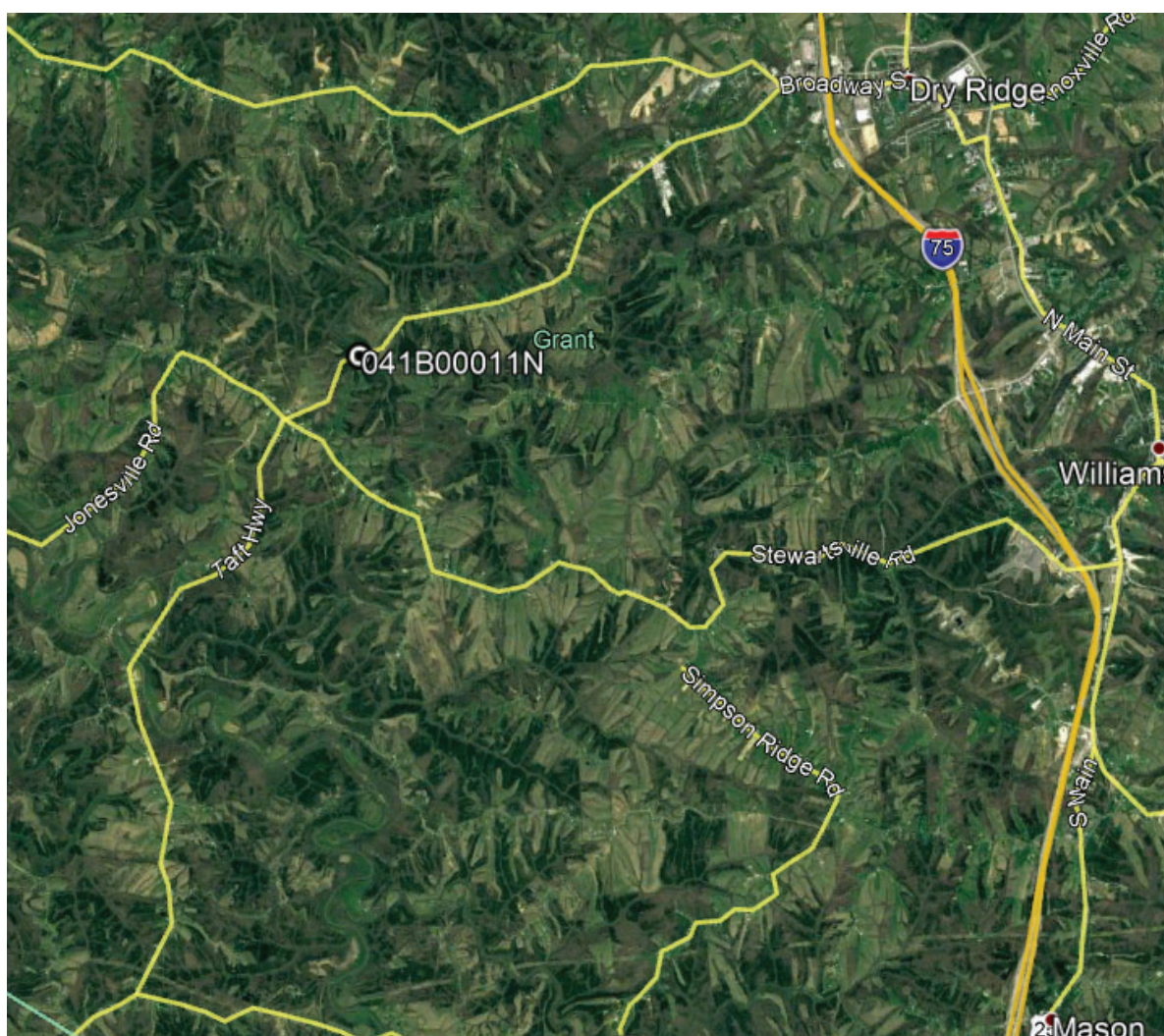


Figure 1. Google Image Showing Project Site.



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## 2.0 SITE TOPOGRAPHY AND GEOLOGIC CONDITIONS

The project site is situated on the Geologic Map of the Elliston Quadrangle, Grant County, Kentucky (GQ-994). Based on the review of this geologic map, the project is underlain by alluvium. The alluvium consists of clay, silt and gravel. Based on the mapping the alluvial deposits vary in thickness up to approximately 25 feet.

The Kope Formation, of the Upper Ordovician geologic period, underlies the alluvium. The Kope Formation consists of shale and limestone. The shale is medium gray, weathers light gray to yellowish gray, silty, calcareous; sparsely fossiliferous. The limestone is medium gray, weathers light gray and yellowish gray, evenly bedded. Limestone commonly occurs as single beds separated by a few inches to several feet of shale; limestone content estimated to be 10 to 20 percent, at some exposures may be as high as 50 percent.

No detrimental geologic features are noted by the available mapping within the immediate vicinity of the proposed bridge.

## 3.0 FIELD INVESTIGATION

A geotechnical exploration was conducted in July of 2019 which consisted of three subsurface borings, designated herein as 041B00011N-2, 041B00011N-3 and 041B00011N-4. A fourth boring 041B00011N-1 was not drilled. The boring locations and surface elevations were obtained by the Bridging Kentucky TEAM and are presented in Appendix A. Table 1 provides a summary of the locations, elevations, and depths of the borings drilled for the proposed bridge.

**Table 1. Bridge over Clarks Creek and Baton Rouge Road – Summary of Borings**

Hole No.	Latitude	Longitude	Surface Elevation (ft.) MSL	Top of Rock/Refusal		Begin Core		Bottom of Hole	
				Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL
041B00011N-2	38.658905	-84.672098	662.9	16.5	646.4	16.5	646.4	46.5	616.4
041B00011N-3	38.658891	-84.672442	660.5	10.0	650.5	10.0	650.5	41.5	619.0
041B00011N-4	38.658774	-84.672637	681.6	10.5	671.1	10.5	671.1	23.0	658.6

Based on existing drawings, bedrock at the end bent near 041B00011N-4 could be near elevation 648.9 feet. Bedrock in this area may be sloping toward the north-northwest based on boring 041B00011N-4 and the existing drawings.

The drill crew operated a track-mounted drill rig equipped with hollow-stem and flight augers as well as wire line coring tools. The field personnel generally performed soil sampling at five-foot intervals of depth to obtain in situ strength data and specimens for subsequent laboratory

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strength and/or classification testing. Standard penetration testing (SPT) was conducted at the boring locations.

### 4.0 SUBSURFACE CONDITIONS

In general, the subsurface materials observed in the sample borings consist primarily of brown clay that was moist, and very soft to medium stiff. Clayey gravel materials were encountered in boring 041B00011N-4. Standard penetration test blowcounts (N) in soil material ranged from 4 to 17 blows per foot. The soil thickness encountered was found to range from 10.0 feet to 16.5 feet at the bridge location.

Bedrock was encountered at a high Elevation of 671.1 feet at boring 041B00011N-4 and at a low elevation of 646.4 feet at the boring 041B00011N-2. Bedrock specimens recovered from coring operations consist of limestone and shale. The limestone is described as being light gray, calcareous, zones argillaceous with shale streaks. The shale is described as medium gray and laminated. Detailed logs of the borings are presented in Appendix B.

Observation wells were not installed. Groundwater can be expected to be encountered at the level of Clarks Creek. Groundwater levels and/or conditions may vary considerably, with time, according to the prevailing climate, rainfall or other factors.

### 5.0 LABORATORY TESTING AND RESULTS

Stantec performed laboratory testing on soil samples from the borings. All laboratory tests were performed in accordance with the applicable AASHTO or Kentucky Methods soil and rock testing specifications. Laboratory testing consisted of natural moisture content, grain size-sieve analyses (silt plus clay determinations), and soil classification index testing. Unconfined compression testing was performed on select rock specimens in addition to Slake Durability Index (SDI) and Jar Slakes (JS) were conducted on bedrock samples.

The SPT soil samples tested classify as CL and GC according to USCS and A-7-6 and A-6 on the AASHTO classification system. Results of the soil and rock laboratory testing are also presented in Appendix C.

### 6.0 ENGINEERING ANALYSES

#### 6.1 GENERAL

This project will consist of replacing the existing bridge. No significant grading efforts are planned, as such, embankment stability or settlement analyses have been not performed. Any grading requirements or material placement that may be needed should be placed at 2H:1V slopes or flatter. Based on a combination of existing conditions and anticipated grades,



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recommendations for spread footings, H-piles bearing on rock and drilled shafts are being provided for support of the end bents and piers of the subject structure.

### 6.2 BEARING CAPACITY FOR SPREAD FOOTINGS ON BEDROCK

Upon review of the boring logs, spread footings are an option. Based on a review of the rock core logs and the quality of the bedrock encountered, a presumptive bearing resistance of 20,000 psf on unweathered bedrock is being recommended at the substructure locations in accordance with NAVFAC DM 7.2, page 7.2-142 for spread footings bearing on sedimentary rock at the service limit state.

Additional evaluation will be necessary if the designer's analyses of the nominal bearing resistance indicate the strength or extreme limit states control the footing design.

### 6.3 STEEL H-PILE ANALYSES

#### 6.3.1 Pile Capacity

Based upon depths to top of rock, steel H-piles driven to bedrock could be used. As noted in Sections 3 and 4 of this report, existing foundation soils at the end bent locations are on the order of 10 feet. Due to the nature of the soil deposits and the subsurface conditions observed at the site, an axial resistance factor ( $\phi_c$ ) of 0.6 is recommended for good driving conditions as outlined in Section 6.5.4.2 of the current LRFD Design Specifications. Using  $\phi_c = 0.6$ , the estimated total factored axial resistance for 12x53 H-piles is 465.0 kips.

#### 6.3.2 Hammer Energy

Static pile analyses were conducted to estimate the ultimate driving resistance that 12-inch steel H-piles would experience during the installation process. Drivability analyses were performed at the End Bent locations. The analyses were performed using guidelines presented in the FHWA "Soils and Foundations Workshop Manual".

The soil column contributing to driving resistance at the End Bent locations includes existing embankment material and foundation soils down to rock. The pile is estimated to be clay and silty sand down to bedrock. The results of FHWA research and other literature regarding pile installation indicate that significant reductions in skin resistances occur during pile driving, primarily due to the dynamics of the installation process. Soils are remolded and pore water pressures apparently increase, causing reductions in shear strengths. The driving resistances were estimated under the condition that no interruptions, and therefore no pile "set" characteristics would be experienced during the driving process.

The drivability analyses were conducted using the GRLWEAP (Version 2010) computer program for steel H-piles driven to bedrock. To perform the drivability analyses, two situations were modeled. The first one involved determining the minimum hammer energy which would drive the H-piles to refusal on bedrock without excessive blows, and which would achieve the



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maximum allowable pile capacity. This condition would show the minimum hammer energy necessary to seat the piles on bedrock. The second part of the analyses would determine what the maximum hammer energy can be to drive the piles to refusal, and one which would not damage the pile upon achieving refusal on bedrock. The FHWA publication title "Soils and Foundations Workshop Manual-Second Edition" defines a reasonable range of hammer blows to be between 30 and 144 blows per foot for a steel H-pile. The results of the driveability analyses indicate that a hammer with a minimum energy of 10.5 foot-kips and a maximum energy of 20.1 foot-kips will be required to drive 12x53 steel H-piles to practical refusal without encountering excessive blow counts or damaging the piles.

6.4 DRILLED SHAFT ANALYSES

Drilled shaft options have been evaluated as an alternate foundation type for the pier locations. A geotechnical engineer performed axial analyses for 4- and 5-foot diameter shafts (3.5-foot and 4.5-foot diameter rock sockets) at the pier locations. Stantec utilized the procedures outlined in the Federal Highway Administration Publication No. FHWA-IF-99-025 and 2017 AASHTO LRFD Bridge Design Specifications to estimate axial capacities of drilled shafts.

The selection of LRFD resistance factors for drilled shaft capacities involves an evaluation of the type of loading (axial compression versus uplift) and the variability and reliability of models or methodologies used to determine nominal resistance capacities. Table 2 summarizes the applicable analysis methodologies as well as the resistance factors recommended by the 2017 Edition of the AASHTO LRFD Bridge Design Specifications.

Table 2. LRFD Resistance Factors for Drilled Shaft Analyses

Loading Condition	Resistance Mechanism	Analysis Methodology	Resistance Factor <sup>a</sup> (φ)
Nominal Axial Compressive Resistance of Single Drilled Shaft	Side Resistance in Rock	O'Neill and Reese, 1999	0.55
	End Bearing in Rock	O'Neill and Reese, 1999	0.50
Uplift Resistance of Single Drilled Shafts	Rock	Carter and Kulhway, 1988	0.40
Horizontal Geotechnical Resistance of Single Shaft or Shaft Group	All Material		1.0

a. 2017 Edition of the AASHTO LRFD Bridge Design Specifications, portion of Table 10.5.5.2.4-1.

6.4.1 End Bearing and Side Resistance of Shafts in Bedrock

Stantec utilized the procedures outlined in the Federal Highway Administration Publication No. FHWA-IF-99-025 and 2017 AASHTO LRFD Bridge Design Specifications to estimate axial capacities of drilled shafts. Refer to Appendix D for drilled shaft nominal axial estimates for Pier locations.



## REPORT OF GEOTECHNICAL EXPLORATION

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### 6.4.2 Strength Limit State

Bearing capacities were calculated for the strength limit state by deriving nominal end bearing and side resistance of drilled shafts in bedrock based on the results of the drilling, sampling, and laboratory testing programs conducted. The methodology used to calculate the nominal end bearing ( $q_p$ ) and side resistance ( $q_s$ ) of drilled shafts in bedrock is presented in the 2017 Edition of the AASHTO LRFD Bridge Design Specifications, Section 10.8.3.5.4. Using the referenced procedures and design unconfined compressive strength of 3,500 psi for concrete, the nominal end bearing resistance ( $q_p$ ) and nominal side resistance ( $q_s$ ) were determined for underlying bedrock at the pier locations. A resistance factor as indicated in Table 2 was then applied to the nominal axial capacity to arrive at the total factored axial resistance. Refer to the drilled shaft capacity tables presented in Appendix D.

### 6.4.3 Service Limit State

Capacity values were also determined for the service limit state using the same procedures outlined above except a Factor of Safety (FS) of 3.0 was applied to the nominal axial capacity in order to arrive at the service limit state total allowable bearing capacity. The Service Limit State capacities will be used by the Designer for the evaluation of lateral deflection.

### 6.4.4 Extreme Limit State

Stantec also determined capacity values for the extreme limit state using the same procedures outlined above except a resistance factor of 1.0 (2017 Edition of the AASHTO LRFD Bridge Design Specifications, Section 10.5.5.3.2) was applied to the nominal axial capacity in order to arrive at the extreme limit state total factored axial resistance. Refer to the drilled shaft capacity tables presented in Appendix D for specific capacities with respect to depth.

### 6.4.5 Lateral Analyses of Shafts

The lateral analyses for the drilled shafts are being performed by the Designer. Appendix E provides Idealized Subsurface Profiles that outline the recommended soil and rock parameters for use in lateral load analyses.

### 6.4.6 Uplift

Uplift analyses were determined for the strength limit state and utilized a resistance factor of 0.4 as described in Table 2. In accordance with AASHTO, the resistance factor used for the socket friction for uplift loading was 0.4, corresponding to uplift resistance of single-drilled shafts. Uplift analysis was also determined for the extreme limit state and utilized a resistance factor of 0.8 (2017 Edition of the AASHTO LRFD Bridge Design Specifications, Section 10.5.5.3.2). Refer to Appendix D for tables showing the total factored uplift resistance.

## REPORT OF GEOTECHNICAL EXPLORATION

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### 7.0 FOUNDATION SYSTEM RECOMMENDATIONS

Stantec developed the following recommendations based upon reviews of available data, information obtained during the field exploration, results of laboratory testing and engineering analyses, and discussions with TEAM personnel.

#### 7.1 GENERAL

7.1.1. Based on a review of the existing subsurface conditions and anticipated structural loads, it is recommended that rock bearing foundation systems be used for all bridge substructure elements. The following table provides possible foundation alternates using the following notations.

1. = Spread Footings
2. = Steel H-Piles
3. = Drilled Shafts

The foundation alternates shown below are those Stantec considers being most practical. However, other structural and/or economic considerations may dictate which option is most preferable.

Boring No.	Latitude	Longitude	Foundation Alternate	Top of Rock Elevation (feet)
041B00011N-2	38.658905	-84.672098	1,3	646.4
041B00011N-3	38.658891	-84.672442	1,3	650.5
041B00011N-4	38.658774	-84.672637	1,2	671.1

7.1.2. Foundation excavations should be properly braced/shored to provide adequate safety to people working in or around the excavations. Bracing should be performed in accordance with applicable federal, state and local guidelines.

7.1.3. **A plan note should be included by the designer** that indicates that temporary shoring, sheeting, cofferdams, and/or dewatering methods may be required to facilitate foundation construction. It should be anticipated that groundwater will be encountered at foundation locations within the flood plain.

#### 7.2 SPREAD FOOTING FOUNDATIONS

7.2.1. Rock-bearing spread footing options are being provided for substructure elements. Foundation excavations for footings at the structure locations should be level and free of loose, water softened material, etc. Additional rock excavation to achieve suitable bearing conditions may be required depending upon topography and bedrock weathering conditions.



## REPORT OF GEOTECHNICAL EXPLORATION

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7.2.2. **A plan note should be included by the designer** that indicates that solid rock excavation will be required for installation of the substructure's spread footings. The contractor shall take care during blasting and other excavation methods to avoid over-breakage and damage to the bedrock beneath the footings.

7.2.3. **A plan note should be included by the designer** that indicates that the bearing elevation of footings may be adjusted at the discretion of the Engineer if competent, unweathered bedrock is found at a higher elevation than specified for the respective substructure element. The top of new spread footings should be fully embedded into unweathered bedrock. The plan note should also state that the base of new footings must be placed on unweathered bedrock.

7.2.4. Prior to placement of any concrete or reinforcing steel in a foundation excavation, the excavation bottom should be clean and all soft, wet, or loose materials should be removed. In no case should concrete be placed upon compressible or water-softened materials.

7.2.5. **A plan note should be included by the designer** indicating that footings should be placed as soon as practical after completion of the footing excavation. If the bedrock becomes softened at bearing elevation, the softened material should be undercut to unweathered material prior to placement of reinforcing steel and concrete. Seasonal groundwater fluctuations may cause groundwater infiltration into the footing excavation, and a dewatering method may be necessary.

7.2.6. Any clay seams or suspect weak materials at or near the bearing elevation will need to be undercut and replaced with mass concrete.

7.2.7. Mass concrete shall be placed in the footing excavations from the top of footing to the bedrock surface where the footing does not extend to the bedrock surface.

## 7.3 STEEL H-PILE FOUNDATIONS

7.3.1. The following notes provides recommendations applicable at the substructure element locations. It is estimated that pre-drilled 12x53 H-pile foundations are being planned for use in supporting the new bridge substructure elements.

7.3.2. **A plan note should be included by the designer** which states the following hammer criteria: At the End Bent locations, a diesel pile driving hammer with a rated energy between 10.5 foot-kips and 20.1 foot-kips will be required to drive 12x53 steel H-piles to practical refusal without encountering excessive blow counts or damaging the piles. The Contractor shall submit the proposed pile driving system to the Engineer for approval prior to the installation of the first pile. Approval of the pile driving system by the Engineer will be subject to satisfactory field performance of the pile driving procedures.

7.3.3. Stantec understands that end bearing piles are being driven to a practical refusal. **A plan note should be included by the designer** which indicates: For this project, minimum blow requirements may be reached after total penetration becomes 1/2 inch or less for ten consecutive blows, practical refusal is obtained after the pile is struck an additional ten blows





## REPORT OF GEOTECHNICAL EXPLORATION

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with total penetration of 1/2 inch or less. Advance the production piling to the driving resistances specified above and to depths determined by test pile(s) and subsurface data sheet(s). Immediately cease driving operations if the pile visibly yields or becomes damaged during driving.

If hard driving is encountered because of dense strata or an obstruction, such as a boulder before the pile is advanced to the depth anticipated, the Engineer will determine if more blows than the average driving resistance specified for practical refusal is required to further advance the pile. Drive additional production and test piles if directed by the Engineer

7.3.4. **A plan note should be included by the designer** to address the potential for pre-drilling for piles to the estimated bearing elevation because of sloping bedrock at the southwest end bent. Where pre-drilling is necessary for pile installation, holes shall be drilled into solid rock. Pre-drilling shall extend below any soft zones and/or known coal seams. A minimum pile length of 10 feet is required below the pile bent/pile cap. Backfill the holes with sand or pea gravel after the pile is placed in the hole. A temporary casing may be required to prevent collapse of the hole. If used, remove the casing as the hole is being backfilled. Drive piles to refusal after backfill operations are complete. Include the cost of all materials, labor, and equipment needed to pre-drill, backfill the holes, and drive the piles to refusal in the price per linear foot for "Pre-drilling for Piles".

7.3.5. The design and installation of the pile foundations should conform to current AASHTO LRFD Bridge Design Specifications, and Section 604 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction.

7.3.6. The Kentucky Transportation Cabinet recommends that protective pile points be used on end bearing piles to allow for embedment into the top of bedrock. Use of reinforced pile points capable of penetrating boulders and hard layers which may be encountered is recommended. Installation of pile points should be in accordance with Section 604 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

7.3.7. The AASHTO LRFD Bridge Design Specifications recommend a resistance factor for horizontal geotechnical resistance of a single pile or pile group of 1.0 for lateral capacity analyses.

7.3.8. The 2014 AASHTO LRFD Bridge Design Specifications recommends axial resistance factors based on pile driving conditions (good or severe driving conditions). Based on the general subsurface conditions encountered across the project, it is anticipated that there will be good pile driving conditions. Therefore, it is recommended that the axial resistance of piles in compression ( $\phi_c$ ) used in design be 0.60. Further, the combined axial and flexural resistance factors for design should be  $\phi_c = 0.70$  and  $\phi_f = 1.00$  as noted in Section 6.5.4.2 of the referenced AASHTO specifications.

## REPORT OF GEOTECHNICAL EXPLORATION

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### 7.4 DRILLED SHAFT FOUNDATIONS

7.4.1. The Contractor shall use a permanent casing from the top of shaft to the top of unweathered bedrock and use an uncased rock socket which is 6 inches smaller than the inside diameter of the permanent casing. **A plan note should be included by the designer** which indicates: Permanent casing shall be incidental to the unit bid price for Drilled Shaft - Common or Drilled Shaft - Solid Rock, as applicable.

7.4.2. Unless otherwise specified, it is recommended that construction methods and materials used for drilled shaft installations be in accordance with the current KYTC "Special Note for Drilled Shafts".

7.4.3. A minimum rebar cover of 6-inches is required in the uncased rock sockets.

7.4.4. For Load & Resistance Factor Design (LRFD), evaluate the total factored axial resistances using the attached Drilled Shaft Axial Capacity Tables considering the capacity developed in the uncased rock sockets. Note that the axial capacities provided ignore the upper one shaft diameter. The factored resistances must exceed the factored loads at the strength limit state. The shaft tips shall extend a minimum depth into the bedrock, which satisfies both axial and lateral load design criteria.

7.4.5. Design the shafts neglecting any lateral resistance above the upper one shaft diameter. Perform lateral load analysis using the geotechnical parameters provided in the attached Idealized Soil and Bedrock Profile. These parameters may be used to perform analyses using LPILE Plus or other similar software.

7.4.6. Additional drilling will be required at each drilled shaft location as noted in Section 3.5, Subsurface Exploration of the KYTC's Special Note for Drilled Shafts. Estimates of the amount of Rockline Sounding may be made by taking the difference between the ground surface and the rockline at each shaft location. For estimating the amount of Rock Coring at this location, it is recommended that the subsurface exploration extend a minimum depth of three (3) shaft diameters (but no less than 10 feet) below the bottom of the anticipated tip elevation of each drilled shaft.

7.4.7. **A plan note should be included by the Designer** that states The Contractor will be responsible for providing subsurface exploration drilling during construction to finalize the drilled shaft tip elevations. Additional drilling will be required at each drilled shaft location in accordance with the Special Note for Drilled Shafts, current edition.

### 8.0 CLOSING

8.1. The conclusions and recommendations presented herein are based on data and subsurface conditions from the borings drilled during previous geotechnical exploration using that degree of care and skill ordinarily exercised under similar circumstances by competent



## REPORT OF GEOTECHNICAL EXPLORATION

August 23, 2019

members of the engineering profession. No warranties can be made regarding the continuity of conditions between borings.

8.2. General soil and rock descriptions and indicated boundaries are based on an engineering interpretation of all available subsurface information and may not necessarily reflect the actual variation in subsurface conditions between borings and samples.

8.3. The observed water levels and/or conditions indicated on the boring logs are as recorded at the time of exploration. These water levels and/or conditions may vary considerably, with time, according to the prevailing climate, rainfall, tail water elevations or other factors and are otherwise dependent on the duration of and methods used in the exploration program.

8.4. Stantec exercised sound engineering judgment in preparing the subsurface information presented herein. This information has been prepared and is intended for design and estimating purposes. Its presentation on the plans or elsewhere is for the purpose of providing intended users with access to the same information. This subsurface information interpretation is presented in good faith and is not intended as a substitute for independent interpretations or judgments of the Contractor.

8.5. All structure details shown herein are for illustrative purposes only and may not be indicative of the final design conditions shown in the contract plans.

# **APPENDIX A SITE MAP**



PLOT DATE: 08/05/2019 USER: SAMS, BRIAN  
V:\1785\ACTIVE\178568003\GEOTECHNICAL\041B00011N\041B00011N.DWG



GRAPHIC SCALE: <b>1" = 50'</b>		BRIDGING KENTUCKY	
DATE: 08/02/2019	BRIDGE: 041B00011N		PAGE NO. -
DRAWN BY: BFS	CKD. BY: DLB	SHEET: BRIDGE OVER CLARKS CREEK AND BATON ROUGE ROAD GRANT COUNTY, KY	FIG. NO. -
STANTEC JOB NO.: 178568003	FILE NAME:		

# **APPENDIX B TYPED BORING LOGS**

DRILLER'S SUBSURFACE LOG

GRANT COUNTY  
041GR19D067-STP&HSIP  
Drilling Firm: Stantec  
For: Division of Structural Design  
Geotechnical Branch

Project ID: <u>178568003</u>		<u>Statewide - Various</u>			Project Type: <u>Structure Bridge</u>			
Item Number: <u>Statewide</u>					Project Manager: <u>  </u>			
Hole Number <u>041B00011N-2</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/10/2019</u>		Hole Type <u>core and sample</u>		
Surface Elevation <u>662.9'</u>		Static Water Depth <u>NA</u>		End Date <u>07/10/2019</u>		Rig_Number <u>45Track</u>		
Total Depth <u>46.5'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.658905</u>				
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.672098</u>				
Lithology		Overburden	Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks
Elevation	Depth	Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	SDI (JS)	
5 657.9	5.0	Loose, gravel with clay.	1	2.0-3.5	0.3	1-3-2	SPT	5
			2	5.0-6.5	1.5	2-3-3	SPT	
			3	10.0-11.5	1.5	2-3-5	SPT	
10 652.9	10.0	Medium stiff, brown, damp, lean clay.	4	15.0-16.5	1.5	4-7-8	SPT	10
			0 / 0	2.0	1.5	75	18.5	
15 646.4	16.5	Medium stiff to stiff, brown and gray, damp, clay with gravel.  (Begin Core)	0 / 0	3.0	2.9	97	21.5	
			20 / 8	5.0	5.0	100	25	
			30 / 10	5.0	5.0	100	30	
			10 / 10	5.0	5.0	100	35	
			34 / 24	5.0	5.0	100	40	
			44 / 30	5.0	5.0	100	45	
			46.5					46.5
50		(Bottom of Hole 46.5')						50



Page 1 of 1

Project ID: <u>178568003</u>		<u>Statewide - Various</u>				Project Type: <u>Structure Bridge</u>				
Item Number: <u>Statewide</u>						Project Manager: <u>  </u>				
Hole Number <u>041B00011N-3</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/09/2019</u>		Hole Type <u>core and sample</u>				
Surface Elevation <u>660.5'</u>		Static Water Depth <u>NA</u>		End Date <u>07/09/2019</u>		Rig_Number <u>45Track</u>				
Total Depth <u>41.5'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.658891</u>						
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.672442</u>						
Lithology		Overburden		Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks	
Elevation	Depth	Description		Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)		SDI (JS)
5		Soft to medium stiff, light brown, damp, lean clay.								5
				1	2.0-3.5	1.5	2-2-3	SPT		
				2	5.0-6.5	1.5	2-2-2	SPT		
10	650.5	10.0	(Begin Core)						10	
15  20  25  30  35  40		Limestone with shale, (Limestone (50), light gray, calcareous, zones argillaceous with shale streaks. Shale (50), medium gray, laminated).		0 / 0	1.5	1.5	100		11.5	
				0 / 0	5.0	2.0	40		15	
									16.5	
				36 / 20	5.0	5.0	100		20	
									21.5	
				0 / 0	5.0	5.0	100		25	
									26.5	
				24 / 16	5.0	5.0	100		30	
					31.5					
								35		
									36.5	
									40	
	619.0	41.5							41.5	
45			(Bottom of Hole 41.5')						45	
50									50	

Printed: 8/2/19

Page 1 of 1

Project ID: <u>178568003</u>		<u>Statewide - Various</u>			Project Type: <u>Structure Bridge</u>						
Item Number: <u>Statewide</u>					Project Manager: <u>  </u>						
Hole Number <u>041B00011N-4</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/10/2019</u>		Hole Type <u>core and sample</u>					
Surface Elevation <u>681.6'</u>		Static Water Depth <u>NA</u>		End Date <u>07/10/2019</u>		Rig_Number <u>45Track</u>					
Total Depth <u>23.0'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.658774</u>							
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.672637</u>							
Lithology		Overburden		Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks		
Elevation	Depth	Description Rock Core		Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	SDI (JS)			
5		Very stiff to stiff, brown, dry, clayey gravel with sand.		1	2.0-3.5	1.0	5-6-11	SPT			
				2	5.0-6.5	0.7	6-6-8	SPT			
10	671.6			10.0	(Begin Core)						
	671.1			10.5	Stiff, brown, dry, clayey gravel.		3	10.0-10.5		0.5	50/0.50'
15		Shale with limestone, (Shale (90) brown and medium gray, laminated. Limestone (10), light gray, calcareous).		32 / 0	2.5	2.5	100		13.0		
				0 / 0	5.0	5.0	100				
20				10 / 0	5.0	3.0	60				
	658.6	23.0							23.0		
25		(Bottom of Hole 23.0')									
30											
35											
40											
45											
50											

# **APPENDIX C**

## **LABORATORY DATA SHEETS**



## Summary of Soil Tests

Project Name Bridging KY - 041B00011N Project Number 178568003  
Source 041B00011N-2, 5.0'-6.5', 10.0'-11.5' Lab ID 562

Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed  
Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90  
Prepared: Dry  
Liquid Limit: 44  
Plastic Limit: 22  
Plasticity Index: 22  
Activity Index: 0.7

#### Particle Size Analysis

Preparation Method: AASHTO T 87  
Gradation Method: AASHTO T 88  
Hydrometer Method: AASHTO T 88

Particle Size		% Passing
Sieve Size	(mm)	
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.2
No. 4	4.75	99.0
No. 10	2	98.5
No. 40	0.425	96.9
No. 200	0.075	93.8
	0.02	68.1
	0.005	42.0
	0.002	32.0
estimated	0.001	25.5

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	1.0	1.5
Coarse Sand	0.5	1.6
Medium Sand	1.6	---
Fine Sand	3.1	3.1
Silt	51.8	61.8
Clay	42.0	32.0

#### Moisture-Density Relationship

Test Not Performed  
Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed  
Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100  
Prepared: Dry  
Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.72

#### Classification

Unified Group Symbol: CL  
Group Name: Lean clay  
AASHTO Classification: A-7-6 ( 22 )

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Reviewed By RJ



Project Number 178568003  
Lab ID 562

No. 40	96.9
No. 200	93.8
0.02 mm	68.1
0.005 mm	42.0
0.002 mm	32.0
0.001 mm	25.5

Reported By: RJ  
Report Date: 07/30/2019



ATTERBERG LIMITS

Project  
Source

Bridging KY - 041B00011N  
041B00011N-2, 5.0'-6.5', 10.0'-11.5'

Project No.  
Lab ID  
% + No. 40  
Date Received

178568003  
562  
3  
07-12-2019

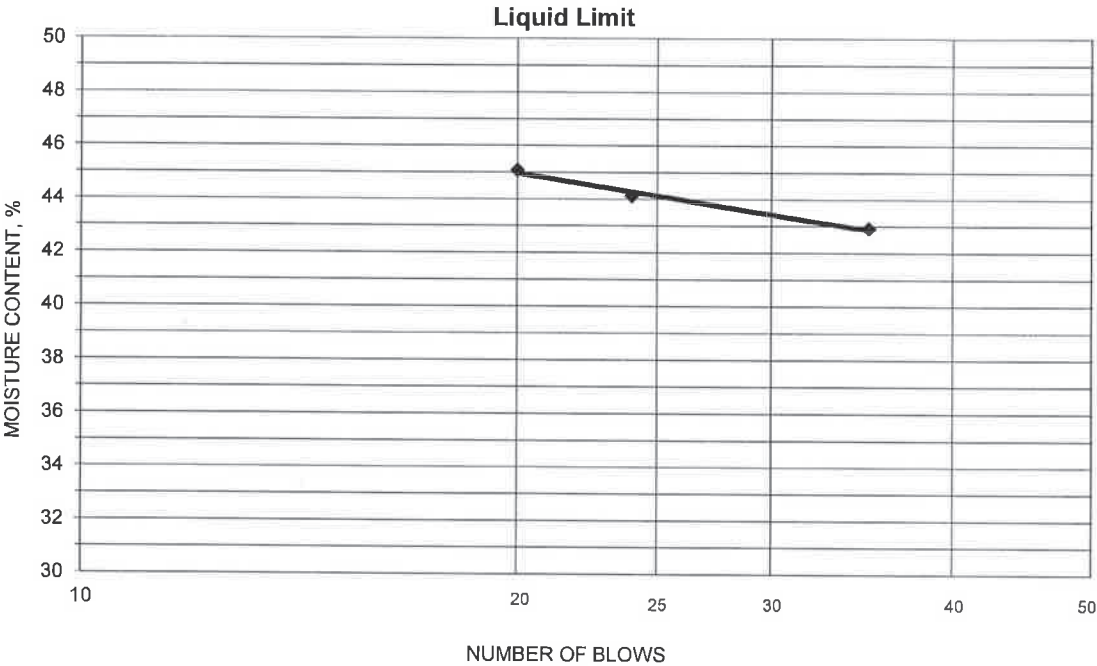
Tested By  
Test Date

KWS  
07-25-2019

Test Method  
Prepared

AASHTO T 89 & T 90  
Dry

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.85	15.74	11.06	20	45.1	44
16.72	14.92	10.84	24	44.1	
18.12	16.06	11.26	35	42.9	



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.62	16.48	11.34	22.2	22	22
17.41	16.28	11.17	22.1		

Remarks:

Reviewed By:



Gradation Analysis  
AASHTO T 88

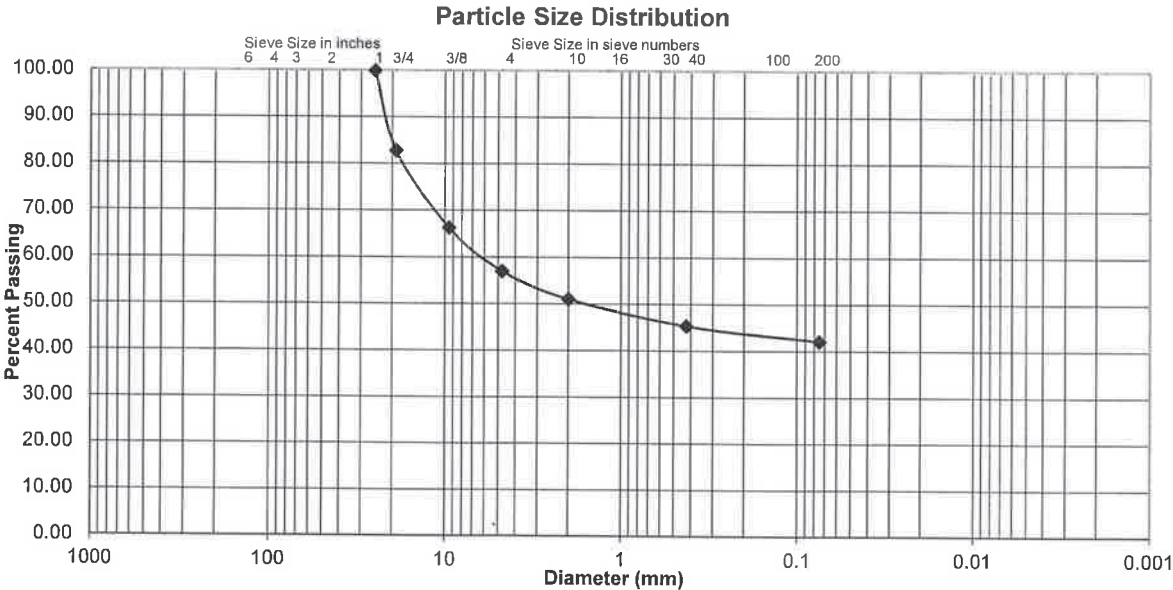
Project Name Bridging KY - 041B00011N  
Source 041B00011N-2, 15.0'-16.5'  
Preparation Method AASHTO T 11 Method A  
Soak Time (min) 240  
Particle Shape Angular  
Particle Hardness Hard and Durable  
Sample Dry Mass (g) 283.53  
Moisture Content (%) 11.4

Project Number 178568003  
Lab ID 565  
Date Received 07-12-2019  
Preparation Date 07-18-2019  
Test Date 07-24-2019

Analysis based on total sample.

Sieve Size	Grams Retained	% Retained	% Passing
1"	0.00	0.0	100.0
3/4"	49.02	17.3	82.7
3/8"	46.61	16.4	66.3
No. 4	26.32	9.3	57.0
No. 10	16.88	6.0	51.0
No. 40	16.10	5.7	45.4
No. 200	9.24	3.3	42.1
Pan	119.36	42.1	---

% Gravel 49.0  
% Sand 8.9  
% Fines 42.1  
Fines Classification N/A  
  
D<sub>10</sub> (mm) N/A  
D<sub>30</sub> (mm) N/A  
D<sub>60</sub> (mm) N/A  
  
Cu N/A  
Cc N/A



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By RJ





## Summary of Soil Tests

Project Name Bridging KY - 041B00011N Project Number 178568003  
Source 041B00011N-3, 2.0'-3.5', 5.0'-6.5' Lab ID 566  
Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed  
Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90  
Prepared: Dry  
Liquid Limit: 38  
Plastic Limit: 22  
Plasticity Index: 16  
Activity Index: 0.6

#### Particle Size Analysis

Preparation Method: AASHTO T 87  
Gradation Method: AASHTO T 88  
Hydrometer Method: AASHTO T 88

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.6
No. 40	0.425	98.8
No. 200	0.075	96.7
	0.02	67.3
	0.005	36.8
	0.002	26.6
estimated	0.001	19.6

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	0.0	0.4
Coarse Sand	0.4	0.8
Medium Sand	0.8	---
Fine Sand	2.1	2.1
Silt	59.9	70.1
Clay	36.8	26.6

#### Moisture-Density Relationship

Test Not Performed  
Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed  
Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100  
Prepared: Dry  
Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.69

#### Classification

Unified Group Symbol: CL  
Group Name: Lean clay  
AASHTO Classification: A-6 ( 17 )

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By RJ



Particle-Size Analysis of Soils  
AASHTO T 88

Project Name  
Source

Bridging KY - 041B00011N  
041B00011N-3, 2.0'-3.5', 5.0'-6.5'

Project Number  
Lab ID

178568003  
566

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method  
Prepared using

AASHTO T 88  
AASHTO T 87

Particle Shape  
Particle Hardness:

Angular  
Hard and Durable

Tested By  
Test Date  
Date Received

AB  
07-23-2019  
07-12-2019

Sieve Size	% Passing
No. 4	100.0
No. 10	99.6

Maximum Particle size: No. 4 Sieve

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity

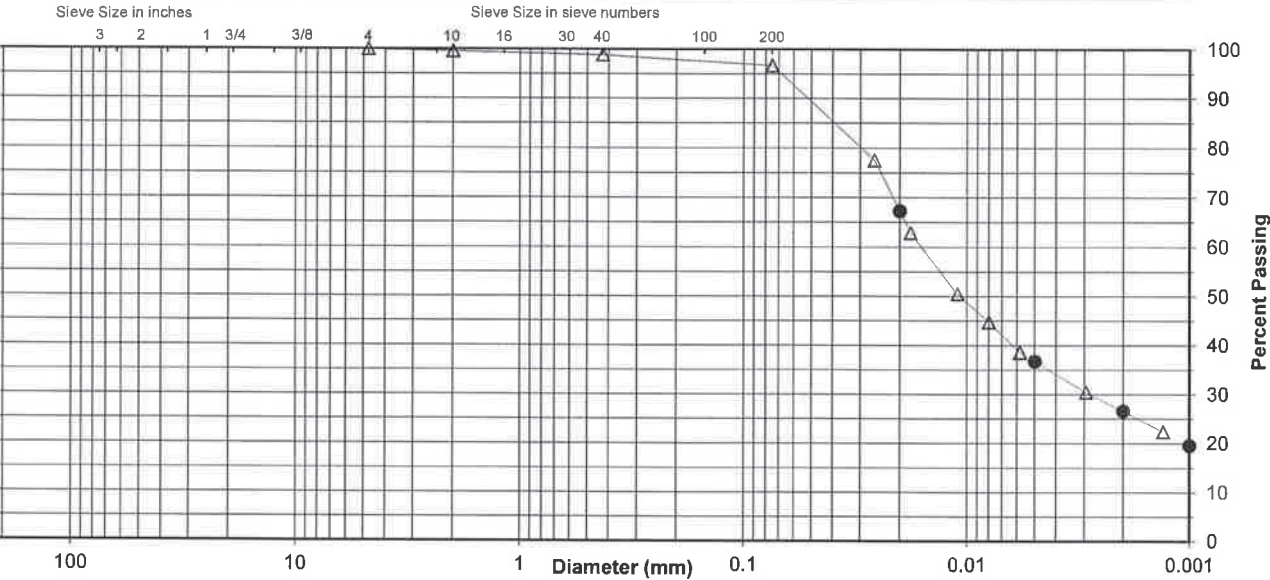
2.69

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	98.8
No. 200	96.7
0.02 mm	67.3
0.005 mm	36.8
0.002 mm	26.6
0.001 mm	19.6

Particle Size Distribution

ASTM	Coarse Gravel 0.0	Fine Gravel 0.0	C. Sand 0.4	Medium Sand 0.8	Fine Sand 2.1	Silt 59.9	Clay 36.8
AASHTO	Gravel 0.4			Coarse Sand 0.8	Fine Sand 2.1	Silt 70.1	Clay 26.6



Comments \_\_\_\_\_

Reviewed By RJ



ATTERBERG LIMITS

Project  
Source

Bridging KY - 041B00011N  
041B00011N-3, 2.0'-3.5', 5.0'-6.5'

Project No.  
Lab ID  
% + No. 40  
Date Received

178568003  
566  
1  
07-12-2019

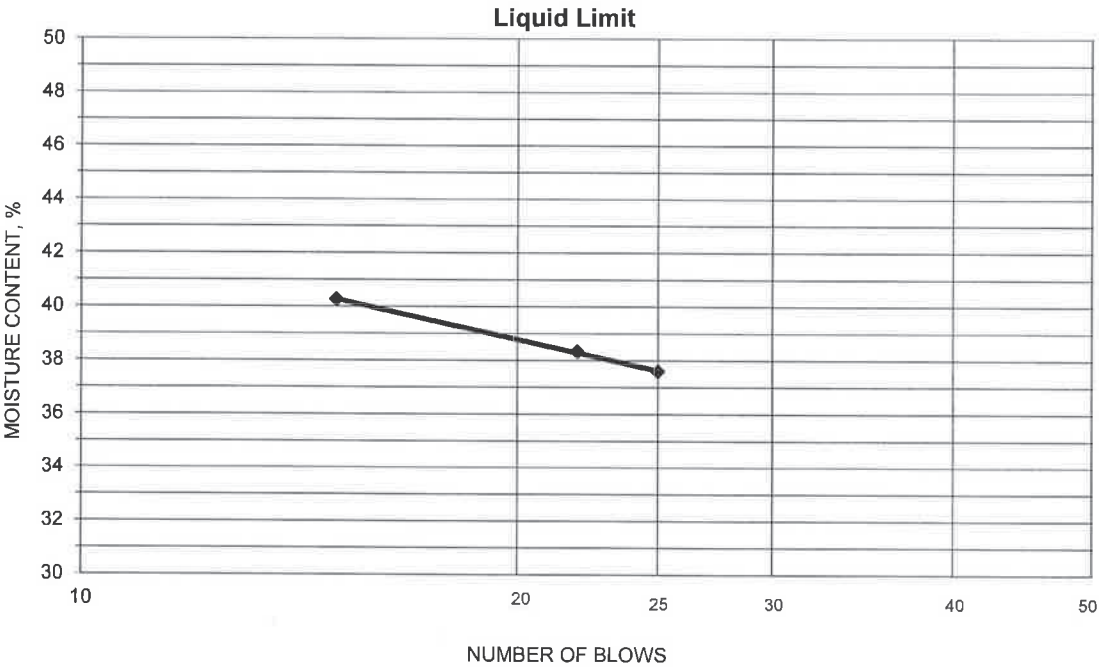
Tested By  
Test Date

KWS  
07-25-2019

Test Method  
Prepared

AASHTO T 89 & T 90  
Dry

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.64	16.49	11.15	15	40.3	38
17.79	15.90	10.97	22	38.3	
17.90	16.02	11.02	25	37.6	



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.44	16.26	10.85	21.8	22	16
18.55	17.33	11.72	21.7		

Remarks: \_\_\_\_\_

Reviewed By: RJ



## Summary of Soil Tests

Project Name Bridging KY - 041B00011N Project Number 178568003  
Source 041B00011N-4, 2.0'-3.5', 5.0'-6.5' Lab ID 569  
Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed  
Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90  
Prepared: Dry  
Liquid Limit: 41  
Plastic Limit: 21  
Plasticity Index: 20  
Activity Index: 1.0

#### Particle Size Analysis

Preparation Method: AASHTO T 87  
Gradation Method: AASHTO T 88  
Hydrometer Method: AASHTO T 88

Particle Size		% Passing
Sieve Size	(mm)	
	N/A	
	N/A	
2"	50	100.0
1"	25	92.4
3/4"	19	85.1
3/8"	9.5	76.7
No. 4	4.75	68.8
No. 10	2	58.8
No. 40	0.425	52.0
No. 200	0.075	48.2
	0.02	39.1
	0.005	25.5
	0.002	19.3
estimated	0.001	15.2

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	31.2	41.2
Coarse Sand	10.0	6.8
Medium Sand	6.8	---
Fine Sand	3.8	3.8
Silt	22.7	28.9
Clay	25.5	19.3

#### Moisture-Density Relationship

Test Not Performed  
Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed  
Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100  
Prepared: Dry  
Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.73

#### Classification

Unified Group Symbol: GC  
Group Name: Clayey gravel with sand  
AASHTO Classification: A-7-6 (6)

Comments:

Reviewed By RJ



Particle-Size Analysis of Soils  
AASHTO T 88

Project Name  
Source

Bridging KY - 041B00011N  
041B00011N-4, 2.0'-3.5', 5.0'-6.5'

Project Number  
Lab ID

178568003  
569

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method  
Prepared using

AASHTO T 88  
AASHTO T 87

Particle Shape  
Particle Hardness:

Angular  
Hard and Durable

Tested By  
Test Date  
Date Received

DB  
07-22-2019  
07-12-2019

Sieve Size	% Passing
2"	100.0
1"	92.4
3/4"	85.1
3/8"	76.7
No. 4	68.8
No. 10	58.8

Maximum Particle size: 2" Sieve

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity

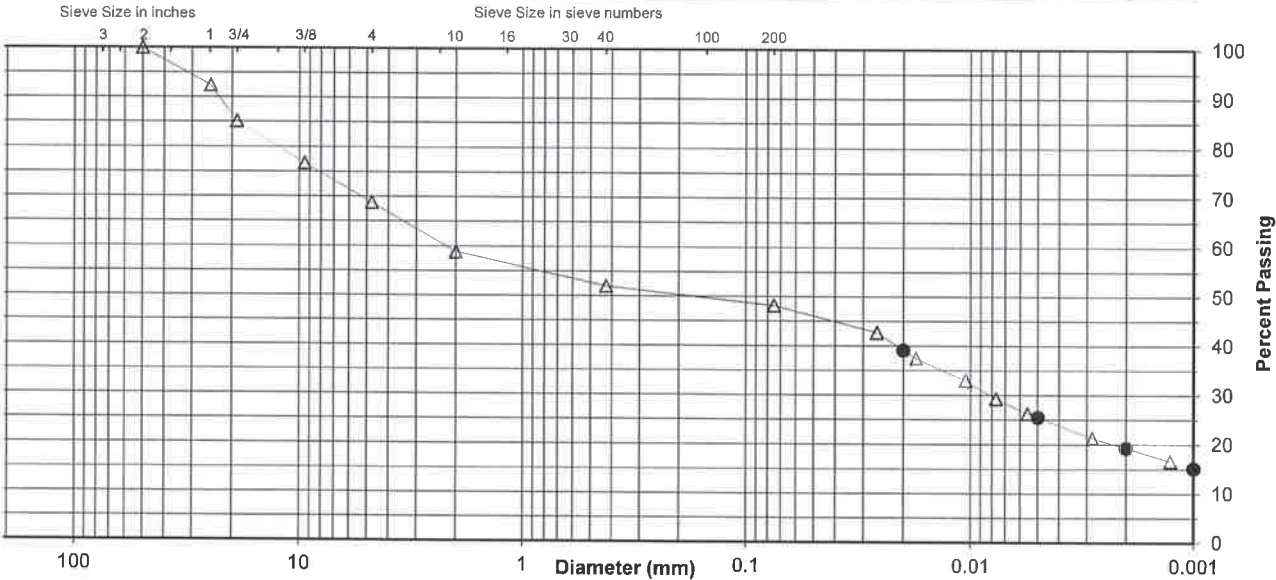
2.73

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	52.0
No. 200	48.2
0.02 mm	39.1
0.005 mm	25.5
0.002 mm	19.3
0.001 mm	15.2

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	14.9	16.3	10.0	6.8	3.8	22.7	25.5
AASHTO	Gravel		Coarse Sand		Fine Sand	Silt	Clay
	41.2		6.8		3.8	28.9	19.3



Comments \_\_\_\_\_

Reviewed By RJ





ATTERBERG LIMITS

Project  
Source

Bridging KY - 041B00011N  
041B00011N-4, 2.0'-3.5', 5.0'-6.5'

Project No.  
Lab ID  
% + No. 40  
Date Received

178568003  
569  
48  
07-12-2019

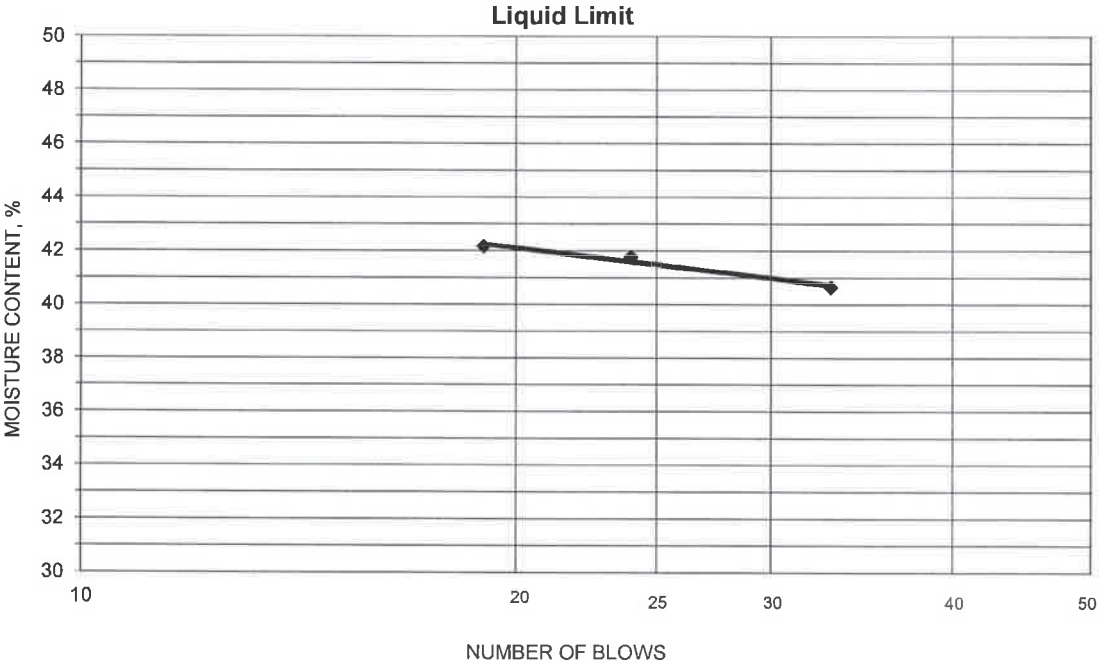
Tested By  
Test Date

KWS  
07-26-2019

Test Method  
Prepared

AASHTO T 89 & T 90  
Dry

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.73	17.20	11.20	19	42.2	41
19.39	17.13	11.72	24	41.8	
18.47	16.25	10.79	33	40.7	



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.59	16.47	11.03	20.6	21	20
17.59	16.47	11.07	20.7		

Remarks:

Reviewed By



Gradation Analysis  
AASHTO T 88

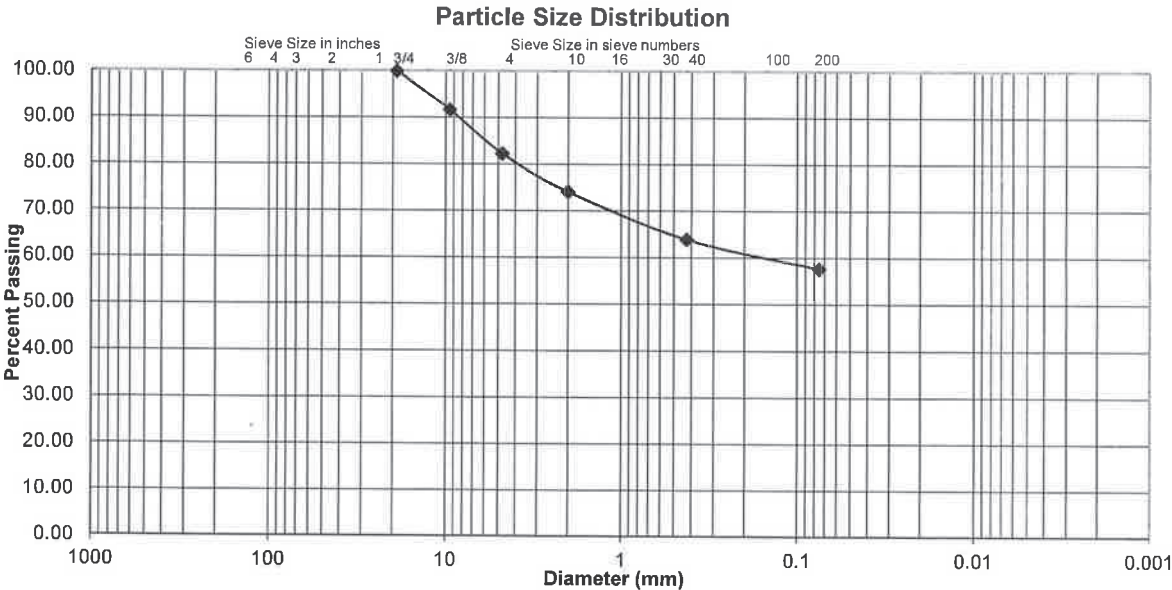
Project Name Bridging KY - 041B00011N  
Source 041B00011N-4, 10.0'-11.5'  
Preparation Method AASHTO T 11 Method A  
Soak Time (min) 250  
Particle Shape Angular  
Particle Hardness Hard and Durable  
Sample Dry Mass (g) 199.52  
Moisture Content (%) 10.5

Project Number 178568003  
Lab ID 572  
Date Received 07-12-2019  
Preparation Date 07-18-2019  
Test Date 07-24-2019

Analysis based on total sample.

Sieve Size	Grams Retained	% Retained	% Passing
3/4"	0.00	0.0	100.0
3/8"	16.48	8.3	91.7
No. 4	18.84	9.4	82.3
No. 10	16.37	8.2	74.1
No. 40	20.40	10.2	63.9
No. 200	12.45	6.2	57.6
Pan	114.98	57.6	---

% Gravel 25.9  
% Sand 16.5  
% Fines 57.6  
Fines Classification N/A  
  
D<sub>10</sub> (mm) N/A  
D<sub>30</sub> (mm) N/A  
D<sub>60</sub> (mm) N/A  
  
Cu N/A  
Cc N/A



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By RJ





Moisture Content of Soil  
AASHTO T 265

Project Name Bridging KY - 041B00011N

Project Number 178568003  
Tested By HE

Test Method AASHTO

Maximum Particle Size in Sample	No. 40	No. 4	1/2"	1"	2"
Recommended Minimum Mass (g)	10	100	300	500	1,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Size	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & Can Weight (g)	Moisture Content (%)
041B00011N-2, 2.0'-3.5'	561	7/18/19	Dist	1/2"			No	30.98	58.18	57.46	2.7
041B00011N-2, 5.0'-6.5'	563	7/18/19	Dist	No. 4			No	21.04	78.62	65.97	28.2
041B00011N-2, 10.0'-11.5'	564	7/18/19	Dist	No. 4			No	20.83	79.61	68.68	22.8
041B00011N-2, 15.0'-16.5'	565	7/18/19	Dist	1"			No	311.99	627.85	595.52	11.4
041B00011N-3, 2.0'-3.5'	567	7/18/19	Dist	No. 4			No	21.00	84.40	71.86	24.7
041B00011N-3, 5.0'-6.5'	568	7/18/19	Dist	No. 4			No	20.99	85.12	68.74	34.3
041B00011N-4, 2.0'-3.5'	570	7/18/19	Dist	1"			No	21.11	79.07	73.11	11.5
041B00011N-4, 5.0'-6.5'	571	7/18/19	Dist	1/2"			No	20.92	80.79	73.87	13.1
041B00011N-4, 10.0'-11.5'	572	7/18/19	Dist	1"			No	303.56	524.01	503.08	10.5

Comments

Reviewed By

RJ



**Slake Durability Index**  
KM 64 - 513

Project Name Bridging KY

Project Number 178568003

Lab ID	Source	Depth	Material Description	Fragment Description	Testing Dates	Initial Dry Wt. (g)	Final Dry Wt. (g)	SDI (%)	Jar Slake
548	041B00011N-2	22.4'-23.2'	Shale, gray, highly weathered	Type III	07/17/2019 - 07/24/2019	482.36	114.01	23.6	1
550	041B00011N-2	42.2'-42.9'	Shale, gray, hard	Type II	07/17/2019 - 07/24/2019	500.95	350.30	69.9	2
553	041B00011N-3	23.4'-24.2'	Shale, gray, hard	Type II	07/17/2019 - 07/24/2019	481.92	340.39	70.6	3
554	041B00011N-4	10.9'-11.6'	Shale, gray and light brown	Type II	07/17/2019 - 07/24/2019	496.91	258.41	52.0	5



**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00011N Project Number 178568003  
Lithology Shale, dark gray, soft, calcarious Lab ID UCR-549  
Hole Number 041B00011N-2 Depth (ft) 29.7'-30.2' Date Received 07-12-2019

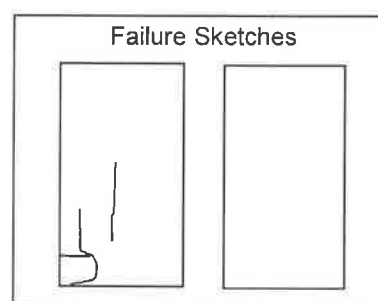
Temperature (°C) 20 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.505</u>	Wet Unit Weight (pcf)	<u>160.2</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.983</u>	Dry Unit Weight (pcf)	<u>128.9</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.087</u>	Moisture Content <sup>1</sup> (%)	<u>24.2</u>
		Height/Diameter Ratio	<u>2.272</u>	Weight (lb)	<u>1.289</u>

Loading Rate (lbf/sec) 19  
Peak Load (lbf) 3157

Failure Type Undetermined

Compressive Strength (psi) 1020  
Compressive Strength (psf) 146880  
Compressive Strength (tsf) 74



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ

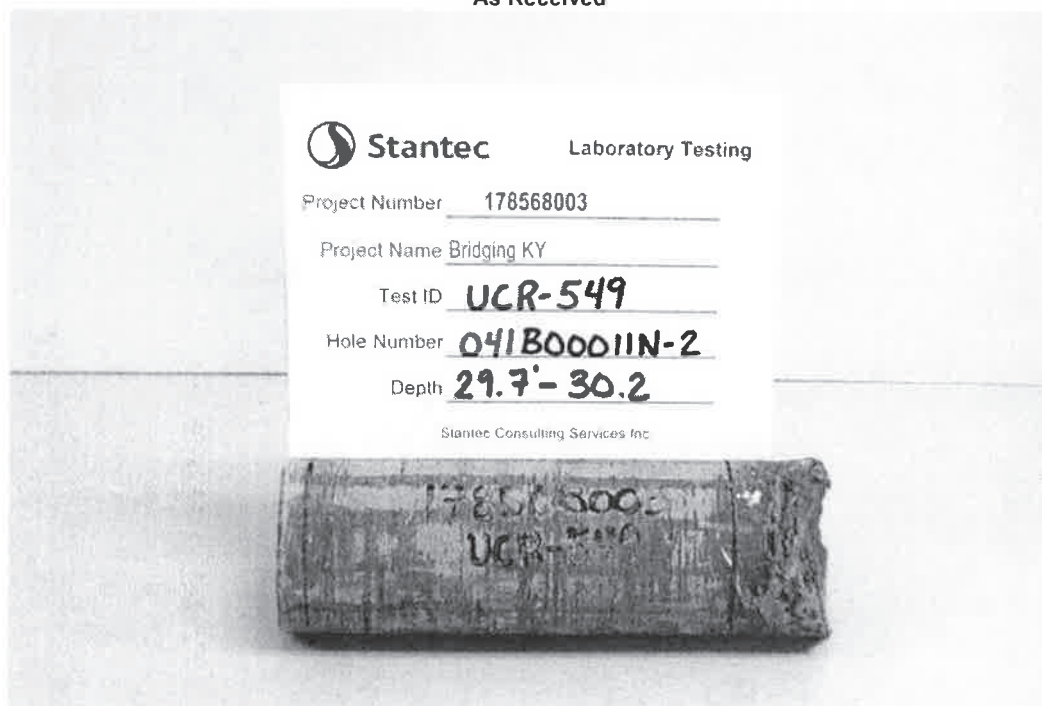


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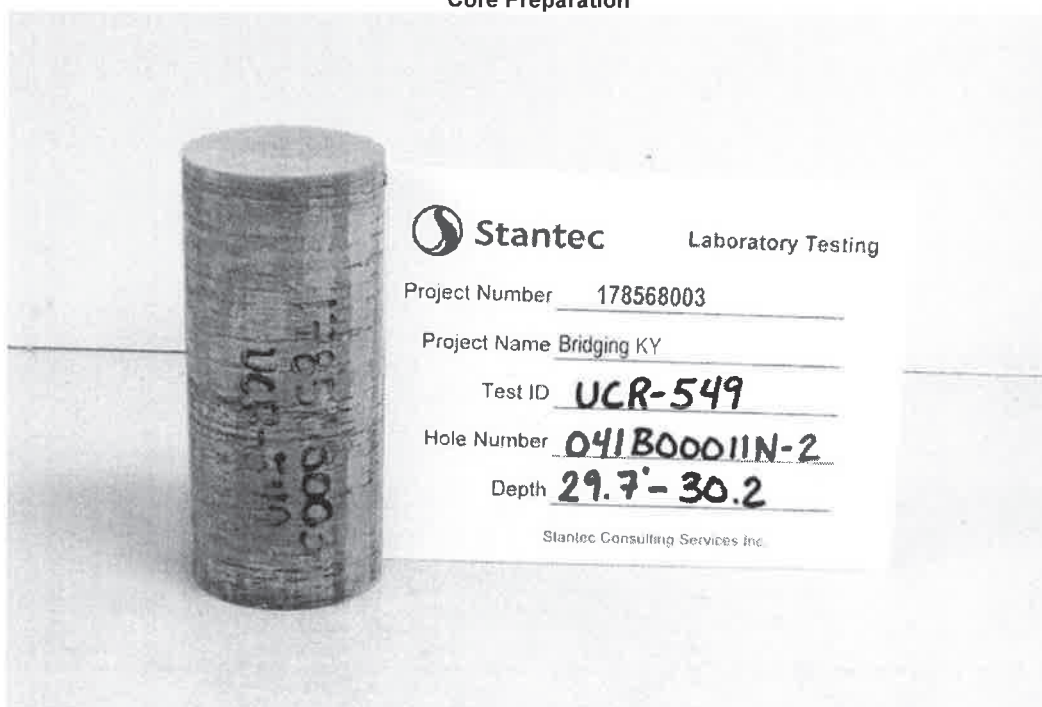
Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcareous  
Hole Number 041B00011N-2 Depth (ft) 29.7'-30.2'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-549

As Received



Core Preparation



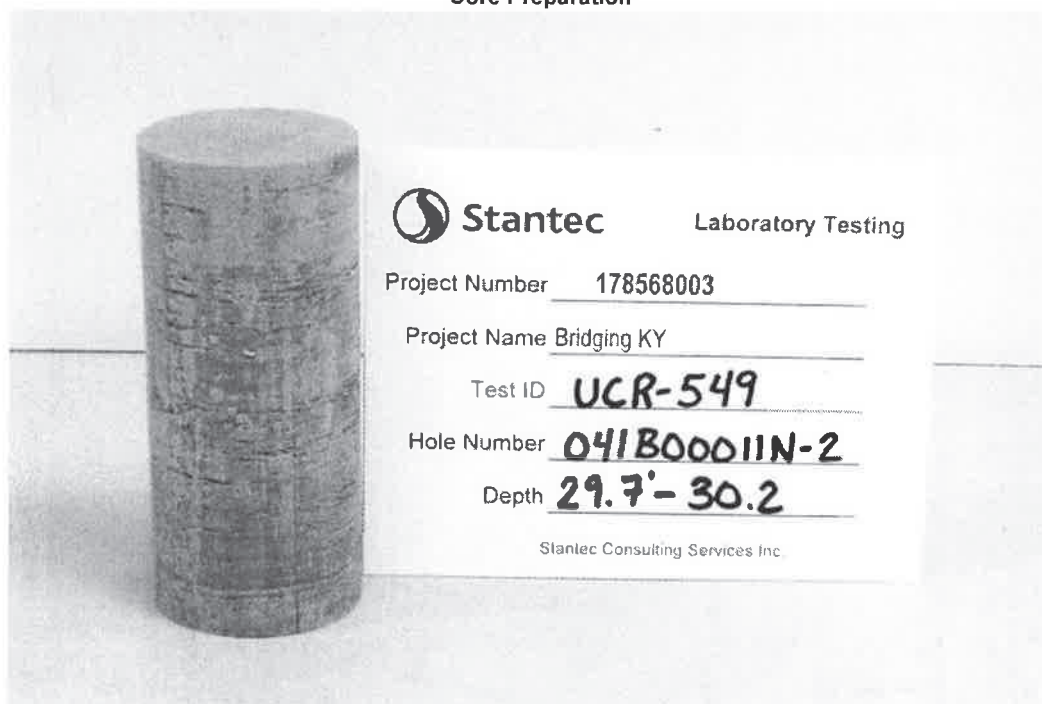


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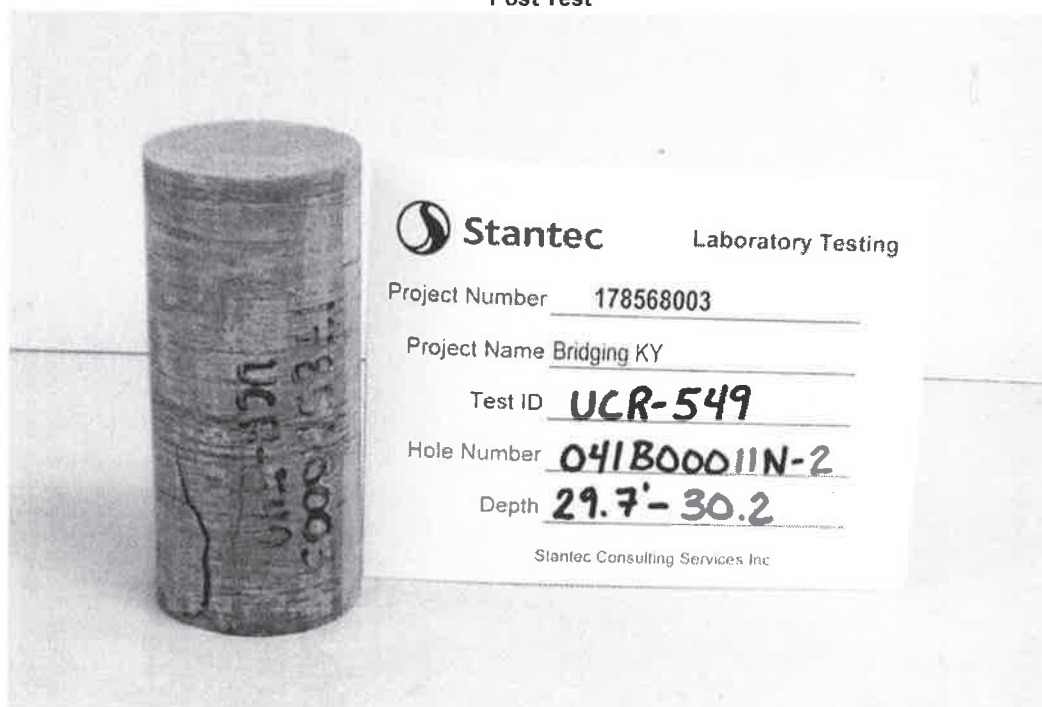
Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcareous  
Hole Number 041B00011N-2 Depth (ft) 29.7'-30.2'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-549

### Core Preparation



### Post Test



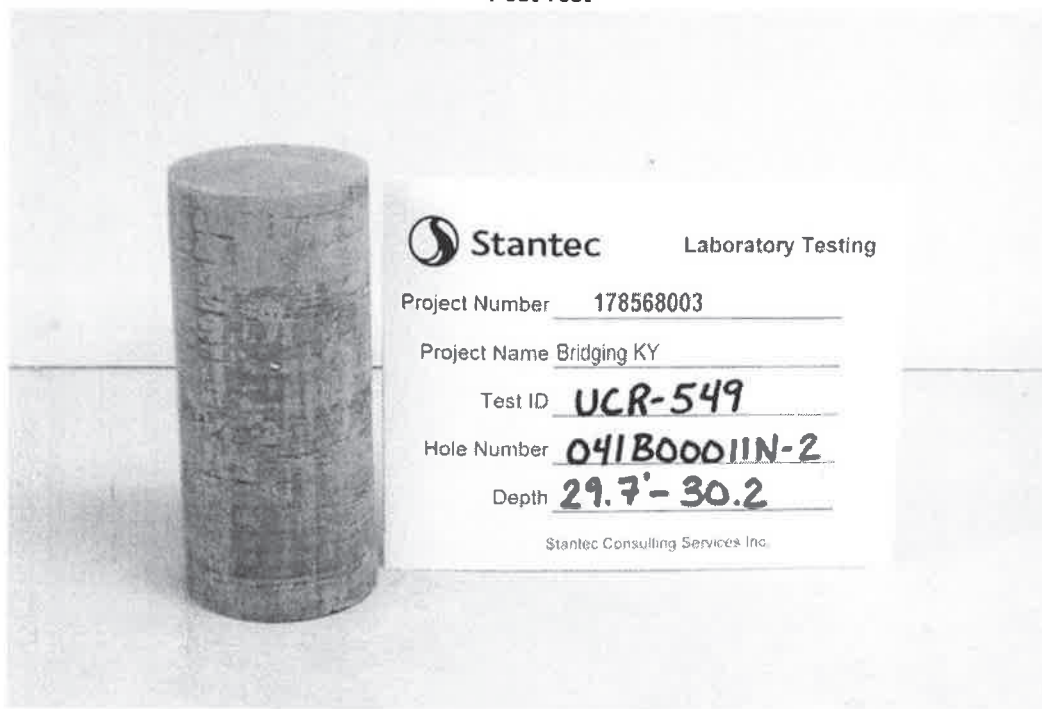


## Photo Report

Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft , calcarious  
Hole Number 041B00011N-2 Depth (ft) 29.7'-30.2'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-549

### Post Test







**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00011N Project Number 178568003  
Lithology Shale w/Limestone, gray/dark gray, moderately hard Lab ID UCR-551  
Hole Number 041B00011N-2 Depth (ft) 44.9'-45.4' Date Received 07-12-2019

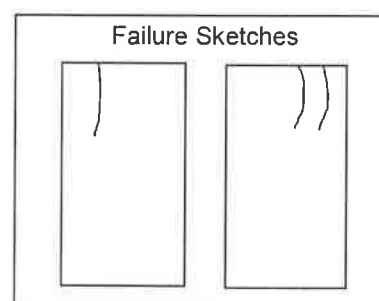
Temperature (°C) 21 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.572</u>	Wet Unit Weight (pcf)	<u>163.6</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.982</u>	Dry Unit Weight (pcf)	<u>134.8</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.086</u>	Moisture Content <sup>1</sup> (%)	<u>21.4</u>
		Height/Diameter Ratio	<u>2.306</u>	Weight (lb)	<u>1.336</u>

Loading Rate (lbf/sec) 51  
Peak Load (lbf) 7857

Failure Type Undetermined

Compressive Strength (psi) 2550  
Compressive Strength (psf) 367200  
Compressive Strength (tsf) 183



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ



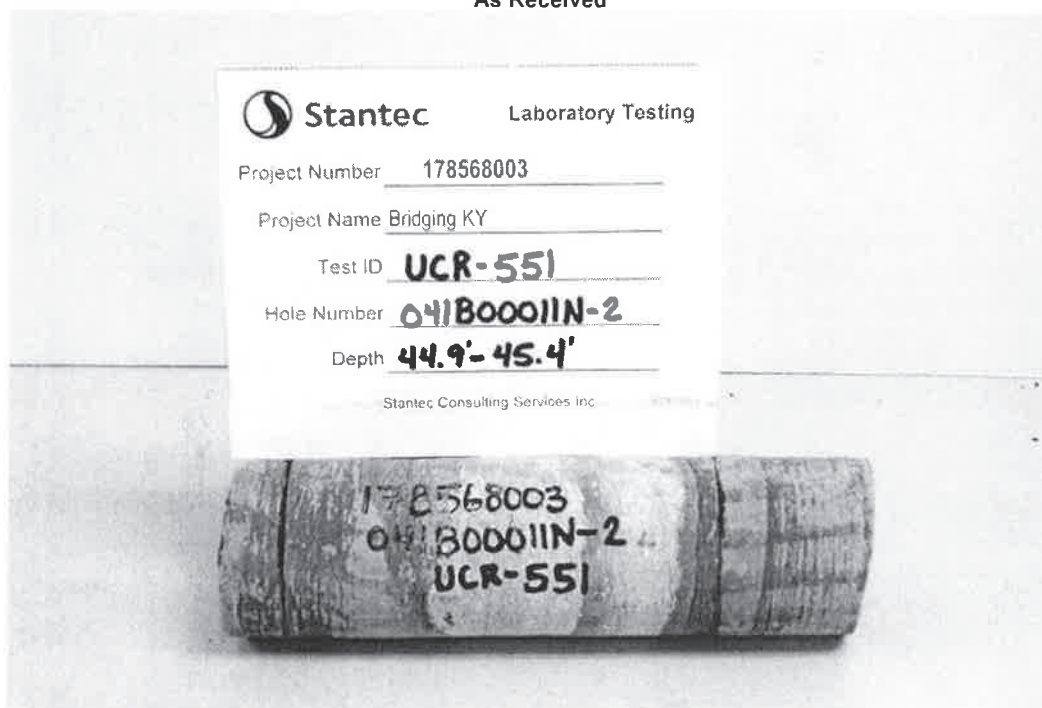


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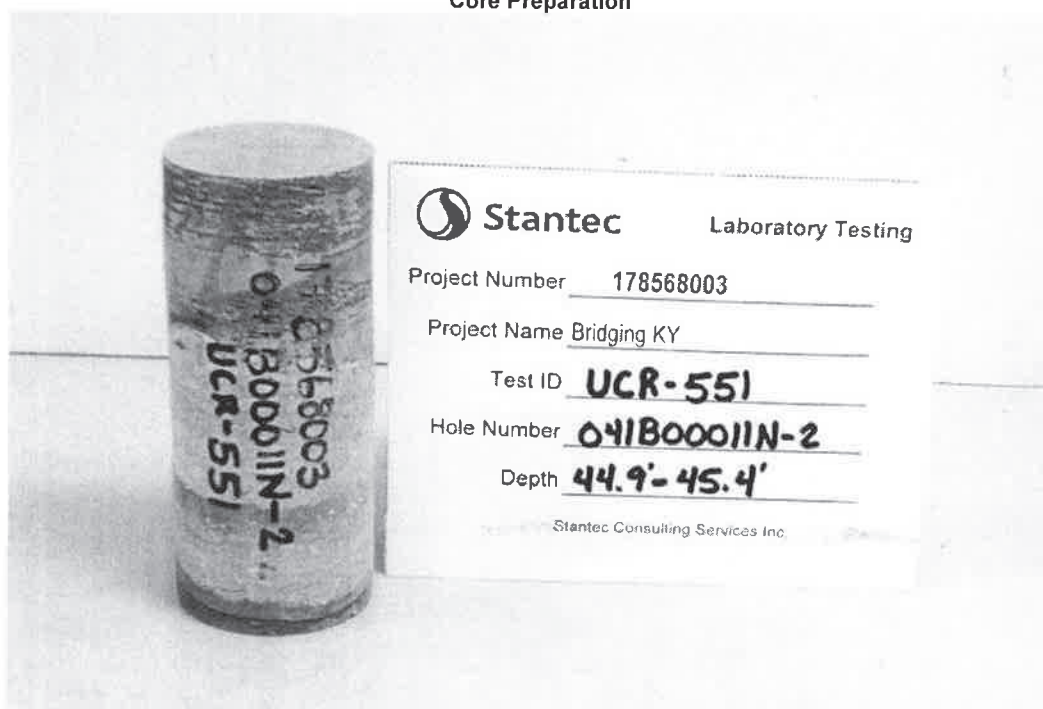
Project Name Bridging KY - 041B00011N  
Lithology Shale w/Limestone, gray/dark gray, moderately hard  
Hole Number 041B00011N-2 Depth (ft) 44.9'-45.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-551

As Received



Core Preparation



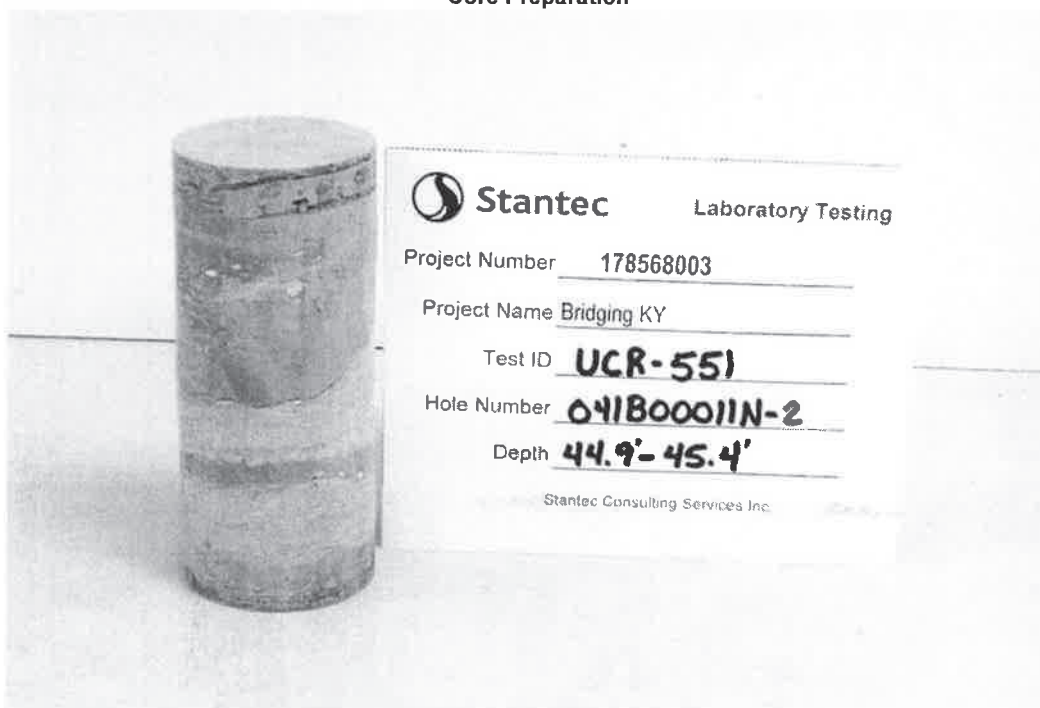


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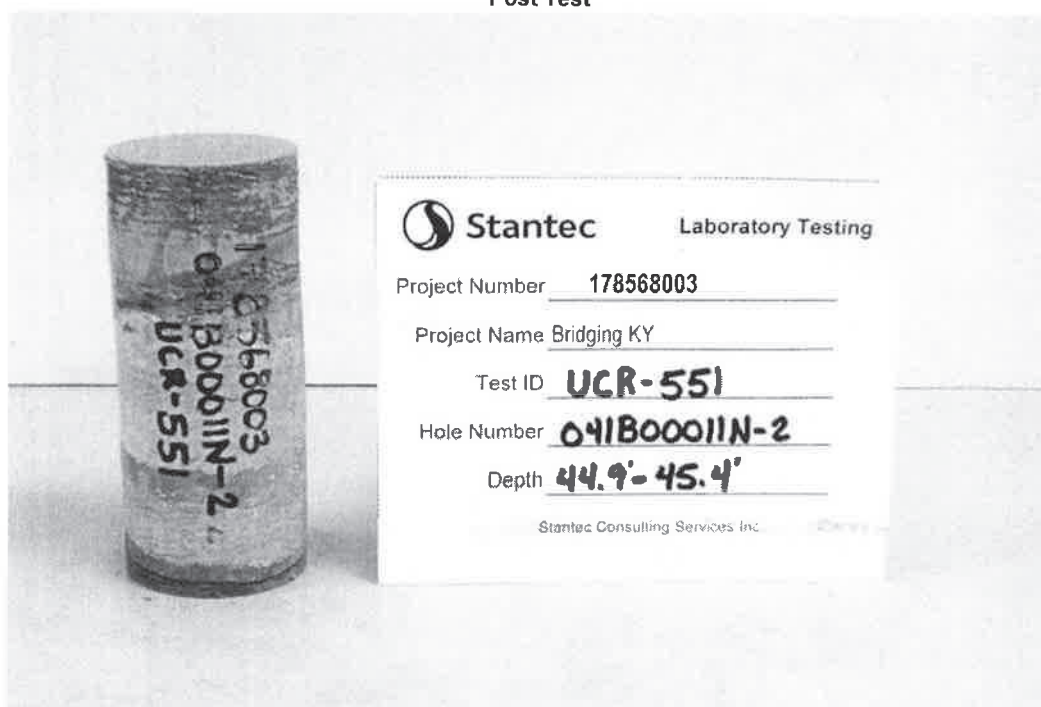
Project Name Bridging KY - 041B00011N  
Lithology Shale w/Limestone, gray/dark gray, moderately hard  
Hole Number 041B00011N-2 Depth (ft) 44.9'-45.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-551

### Core Preparation



### Post Test



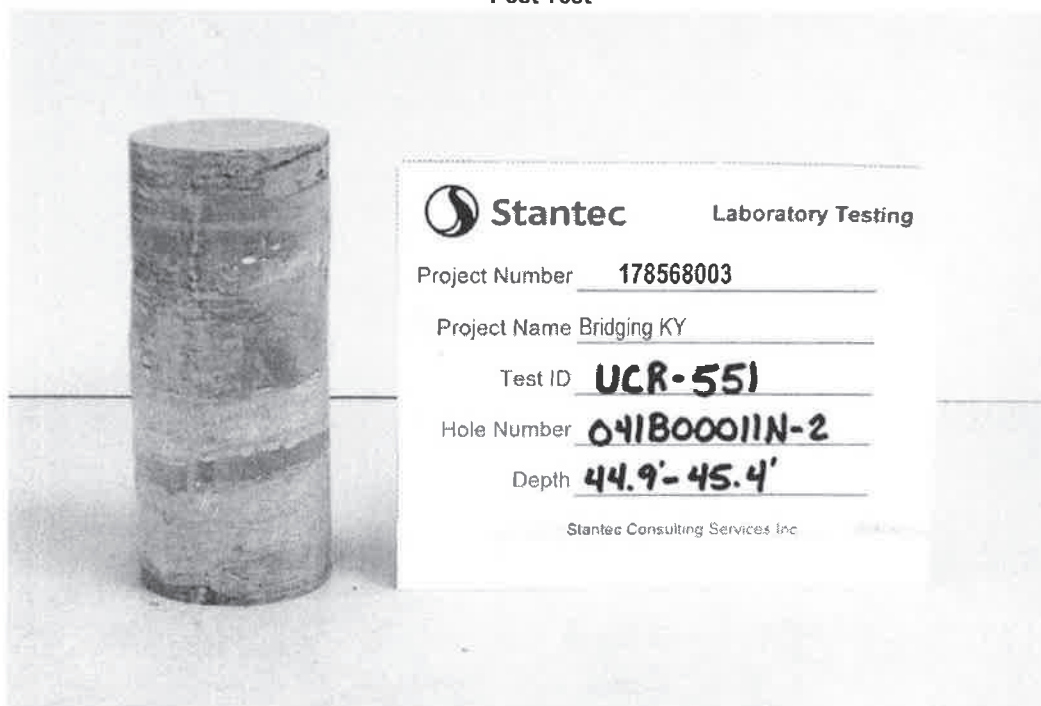


## Photo Report

Project Name Bridging KY - 041B00011N  
Lithology Shale w/Limestone, gray/dark gray, moderately hard  
Hole Number 041B00011N-2 Depth (ft) 44.9'-45.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-551

### Post Test





**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcarious  
Hole Number 041B00011N-3 Depth (ft) 19.9'-20.4'

Project Number 178568003  
Lab ID UCR-552  
Date Received 07-12-2019

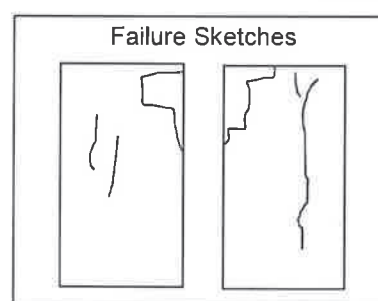
Temperature (°C) 21 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.676</u>	Wet Unit Weight (pcf)	<u>160.2</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.982</u>	Dry Unit Weight (pcf)	<u>125.3</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.084</u>	Moisture Content <sup>1</sup> (%)	<u>27.9</u>
		Height/Diameter Ratio	<u>2.360</u>	Weight (lb)	<u>1.337</u>

Loading Rate (lbf/sec) 16  
Peak Load (lbf) 3155

Failure Type Cone and Split

Compressive Strength (psi) 1020  
Compressive Strength (psf) 146880  
Compressive Strength (tsf) 74



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ

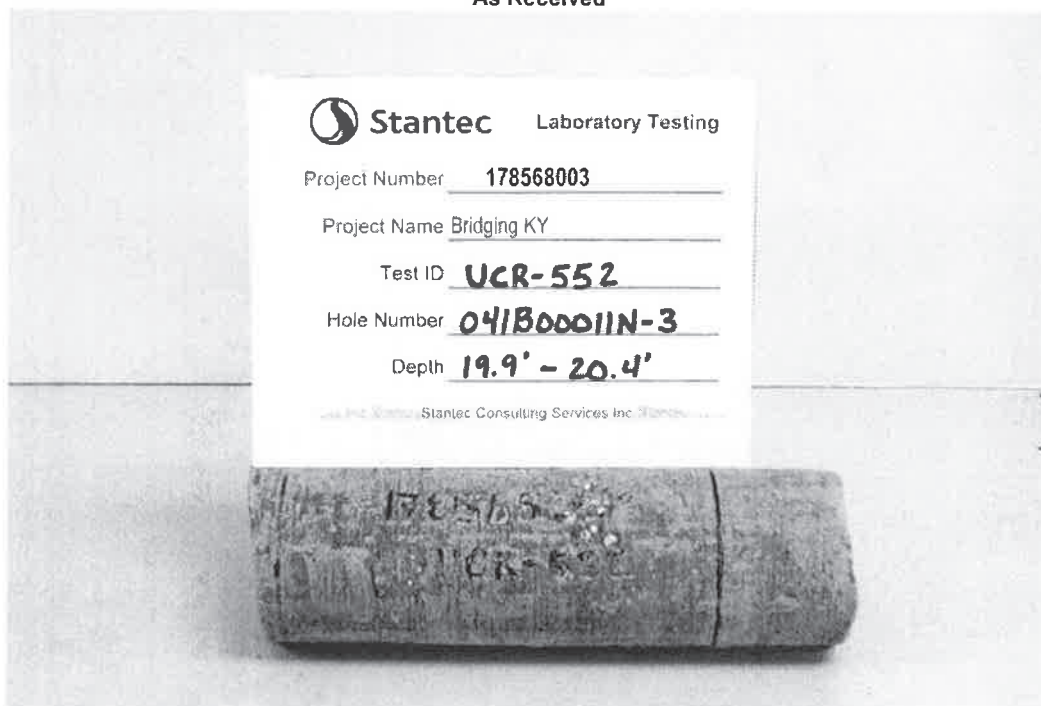


## Photo Report

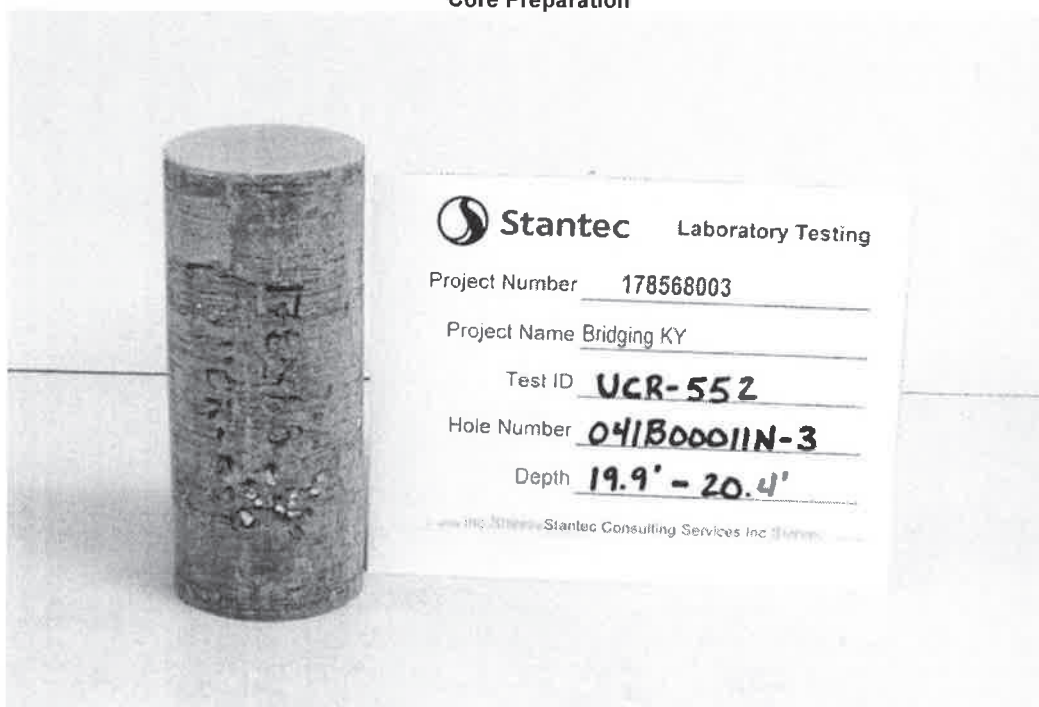
Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcarious  
Hole Number 041B00011N-3 Depth (ft) 19.9'-20.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-552

### As Received



### Core Preparation







## Photo Report

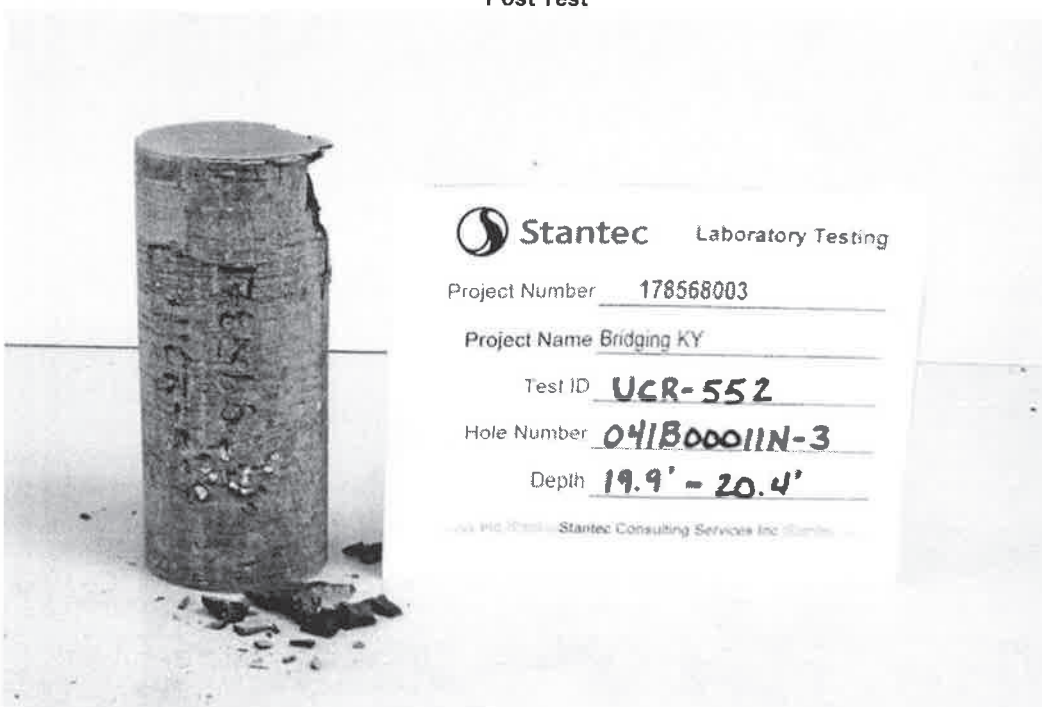
Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcarious  
Hole Number 041B00011N-3 Depth (ft) 19.9'-20.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-552

### Core Preparation



### Post Test



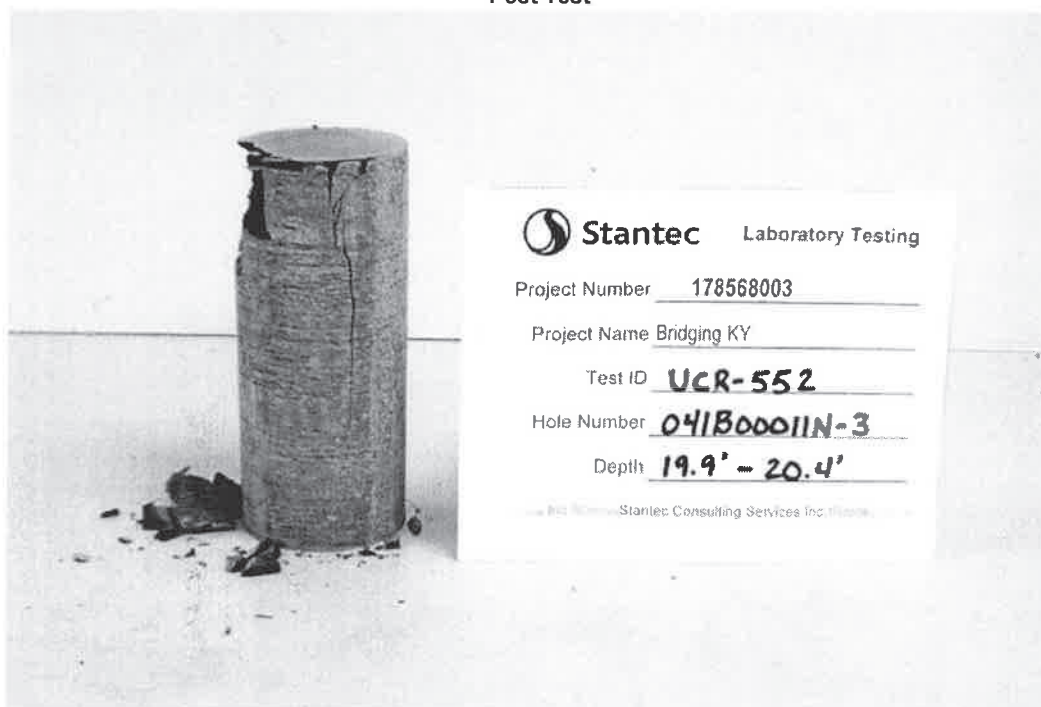


## Photo Report

Project Name Bridging KY - 041B00011N  
Lithology Shale, dark gray, soft, calcarious  
Hole Number 041B00011N-3 Depth (ft) 19.9'-20.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-552

### Post Test







**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00011N

Project Number 178568003

Lithology Shale, brownish gray, soft

Lab ID UCR-555

Hole Number 041B00011N-4

Depth (ft) 11.7'-12.1'

Date Received 07-12-2019

Temperature (°C) 21

Moisture Condition As received, moist

Date Tested 07-31-2019

Side Planeness Pass

Height (in) 4.433

Wet Unit Weight (pcf) 149.5

Perpendicularity Pass

Diameter (in) 1.892

Dry Unit Weight (pcf) 111.5

End Planeness Pass

Area (in<sup>2</sup>) 2.810

Moisture Content<sup>1</sup> (%) 34.0

Height/Diameter Ratio 2.343

Weight (lb) 1.077

Loading Rate (lbf/sec) 7

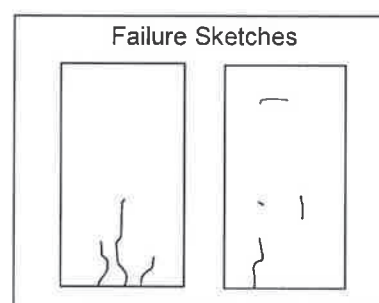
Peak Load (lbf) 1076

Failure Type Undetermined

Compressive Strength (psi) 380

Compressive Strength (psf) 54720

Compressive Strength (tsf) 28



Comments \_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>

(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A

Corrected Compressive Strength (psf) N/A

Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method A.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By



## Photo Report

Project Name Bridging KY - 041B00011N  
Lithology Shale, brownish gray, soft  
Hole Number 041B00011N-4 Depth (ft) 11.7'-12.1'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-555

### As Received



### Core Preparation



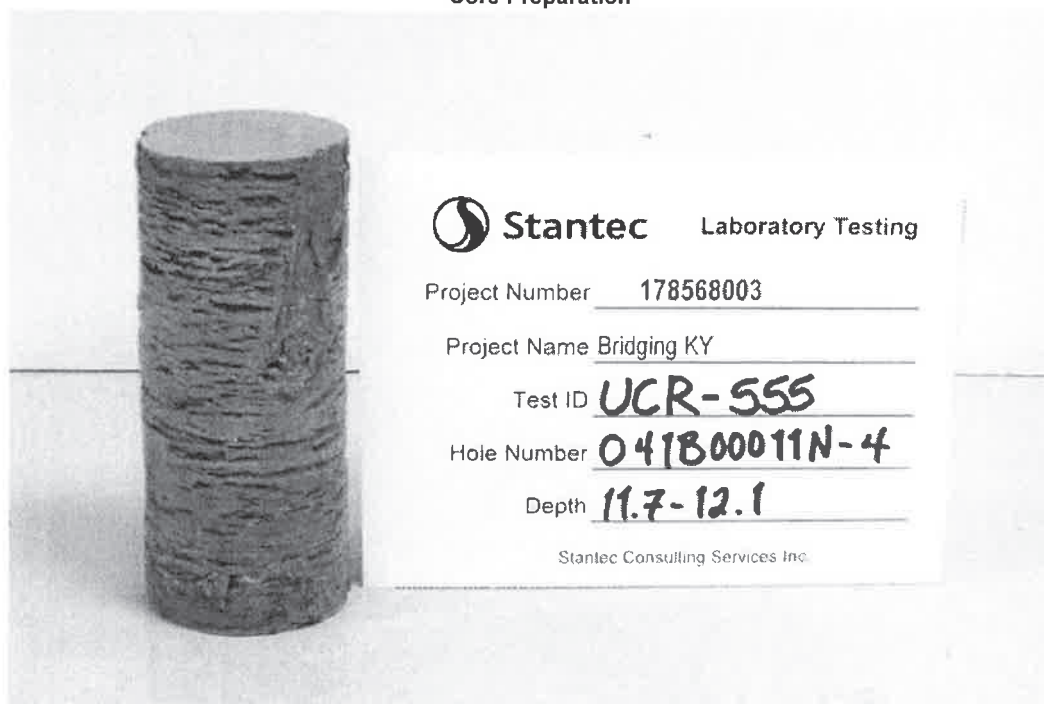


## Photo Report

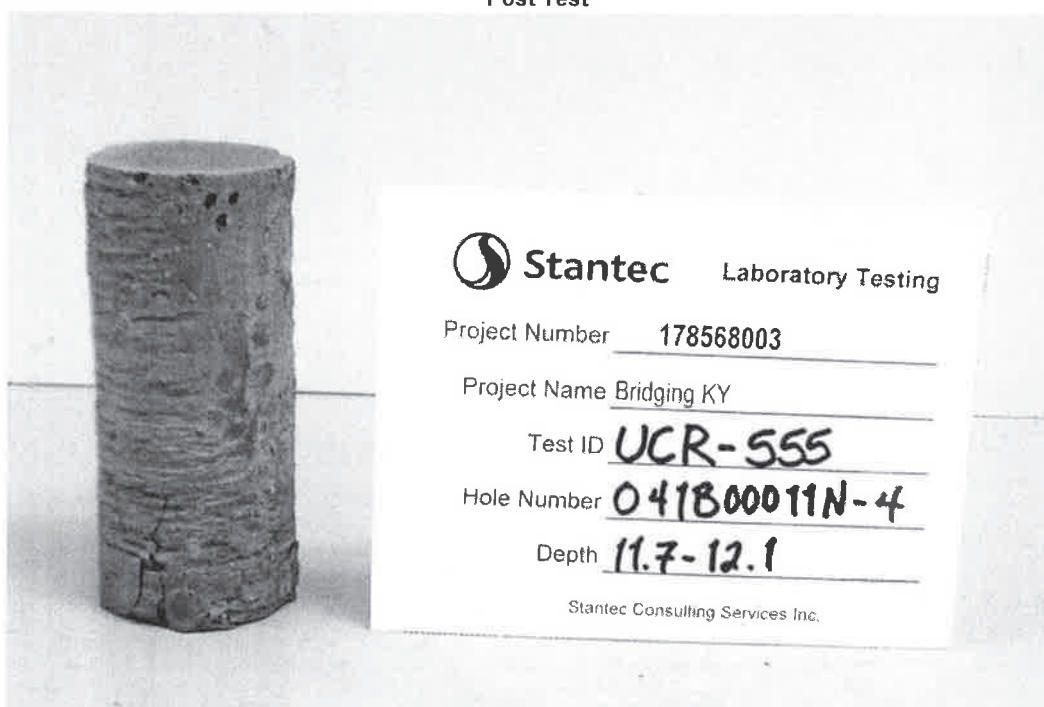
Project Name Bridging KY - 041B00011N  
Lithology Shale, brownish gray, soft  
Hole Number 041B00011N-4 Depth (ft) 11.7'-12.1'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-555

### Core Preparation



### Post Test



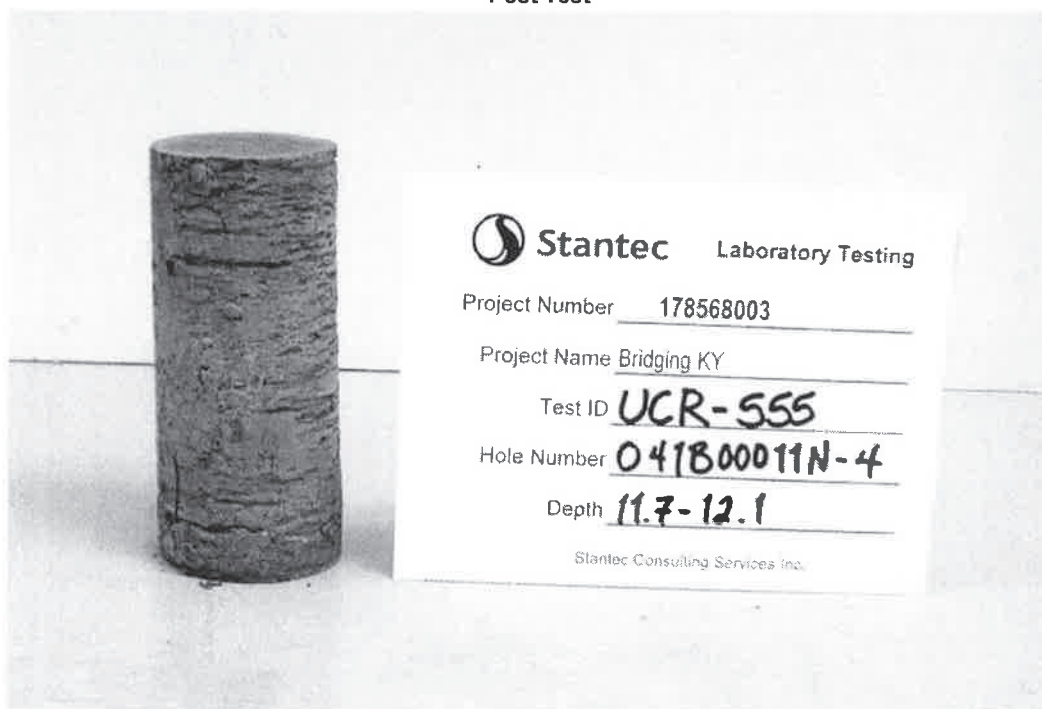


## Photo Report

Project Name Bridging KY - 041B00011N  
Lithology Shale, brownish gray, soft  
Hole Number 041B00011N-4 Depth (ft) 11.7'-12.1'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-555

### Post Test



**APPENDIX D**  
**DRILLED SHAFT CAPACITY TABLES**

DRILLED SHAFT AXIAL CAPACITY TABLE

Bridge Over Clarks Creek and Baton Rouge Road  
Piers

Drilled Shaft Diameter (ft) = 4 in overburden  
Rock Socket Diameter (in) = 42  
Rock Socket Diameter (ft) = 3.5

Shaft Tip Depth Below Top of Rock >>> (ft)		Nominal Unit Side Shear q <sub>ss</sub> (ksf)	Nominal Unit End Bearing q <sub>eb</sub> (ksf)	Nominal Side Resistance R <sub>sr</sub> (kips)	Nominal End Resistance R <sub>eb</sub> (kips)	Total Nominal Axial Capacity* Q <sub>ut</sub> (kips)	Service Limit State		Strength Limit State		Extreme Limit State	
							Total Allowable Bearing Capacity FS = 2 (kips)	Total Allowable Bearing Capacity FS = 3 (kips)	Total Factored Axial Resistance φR <sub>t</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)	Total Factored Axial Resistance φR <sub>t</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)
							FS = 2 (kips)	FS = 3 (kips)	φR <sub>t</sub> (kips)	φR <sub>tu</sub> (kips)	φR <sub>t</sub> (kips)	φR <sub>tu</sub> (kips)
Top of Rock >>>  Upper 1 D is ignored for shaft capacity	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	2.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	3.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	3.5	0.0	0.0	0	0	0	0	0	0	0	0	0
	4.0	17.6	36.0	194	346	346	173	115	173	39	346	77
	5.0	17.6	36.0	387	346	387	194	129	213	116	387	232
	6.0	17.6	36.0	581	346	581	290	194	319	194	581	387
	7.0	17.6	36.0	774	346	774	387	258	426	271	774	542
	8.0	17.6	36.0	968	346	968	484	323	532	348	968	697
	9.0	17.6	36.0	1161	346	1161	581	387	639	426	1161	851
	10.0	17.6	36.0	1355	346	1355	677	452	745	503	1355	1006
	11.0	17.6	36.0	1548	346	1548	774	516	851	581	1548	1161
	12.0	17.6	36.0	1742	346	1742	871	581	958	658	1742	1316
	13.0	17.6	36.0	1935	346	1935	968	645	1064	735	1935	1471
	14.0	17.6	36.0	2129	346	2129	1064	710	1171	813	2129	1626
	15.0	17.6	36.0	2322	346	2322	1161	774	1277	890	2322	1780
	16.0	17.6	36.0	2516	346	2516	1258	839	1384	968	2516	1935
	17.0	17.6	36.0	2709	346	2709	1355	903	1490	1045	2709	2090
	18.0	17.6	36.0	2903	346	2903	1451	968	1597	1122	2903	2245
	19.0	17.6	36.0	3096	346	3096	1548	1032	1703	1200	3096	2400
	20.0	17.6	36.0	3290	346	3290	1645	1097	1809	1277	3290	2554
	21.0	17.6	36.0	3483	346	3483	1742	1161	1916	1355	3483	2709
	22.0	17.6	36.0	3677	346	3677	1838	1226	2022	1432	3677	2864
	23.0	17.6	36.0	3870	346	3870	1935	1290	2129	1509	3870	3019
	24.0	17.6	36.0	4064	346	4064	2032	1355	2235	1587	4064	3174
	25.0	17.6	36.0	4257	346	4257	2129	1419	2342	1664	4257	3329
	26.0	17.6	36.0	4451	346	4451	2226	1484	2448	1742	4451	3483
	27.0	17.6	36.0	4645	346	4645	2322	1548	2554	1819	4645	3638
	28.0	17.6	36.0	4838	346	4838	2419	1613	2661	1897	4838	3793
	29.0	17.6	36.0	5032	346	5032	2516	1677	2767	1974	5032	3948
	30.0	17.6	36.0	5225	346	5225	2613	1742	2874	2051	5225	4103
NOTE: * It is assumed that in hard rock both side resistance and end bearing will not develop simultaneously.		From AASHTO LRFD, current Edition Table 10.5.5.2.4-1					D (ft.) =		Side Resistance in Rock = Tip Resistance in Rock = Uplift Resistance in Rock = Extreme Limit Side & Tip Resistance = Extreme Limit Uplift Resistance =			
									3.5 0.55 0.50 0.40 1.00 0.80			

DRILLED SHAFT AXIAL CAPACITY TABLE

Bridge Over Clarks Creek and Baton Rouge Road  
Piers

Drilled Shaft Diameter (ft) = 5 in overburden  
Rock Socket Diameter (in) = 54  
Rock Socket Diameter (ft) = 4.5

Shaft Tip Depth Below Top of Rock >>> (ft)		Nominal Unit Side Shear q <sub>ss</sub> (ksf)	Nominal Unit End Bearing q <sub>eb</sub> (ksf)	Nominal Side Resistance R <sub>sr</sub> (kips)	Nominal End Resistance R <sub>eb</sub> (kips)	Total Nominal Axial Capacity* Q <sub>ut</sub> (kips)	Service Limit State		Strength Limit State		Extreme Limit State	
							Total Allowable Bearing Capacity FS = 2 (kips)	Total Allowable Bearing Capacity FS = 3 (kips)	Total Factored Axial Resistance φR <sub>t</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)	Total Factored Axial Resistance φR <sub>t</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)
Top of Rock >>>		0.0	0.0	0	0	0	0	0	0	0	0	0
Upper 1 D is ignored for shaft capacity		1.0	0.0	0	0	0	0	0	0	0	0	0
		2.0	0.0	0	0	0	0	0	0	0	0	0
		3.0	0.0	0	0	0	0	0	0	0	0	0
		4.0	0.0	0	0	0	0	0	0	0	0	0
		4.5	0.0	0	0	0	0	0	0	0	0	0
		5.0	17.6	36.0	249	573	286	191	286	50	573	100
		6.0	17.6	36.0	498	573	286	191	286	149	573	299
		7.0	17.6	36.0	746	573	373	249	411	249	746	498
		8.0	17.6	36.0	995	573	498	332	547	348	995	697
		9.0	17.6	36.0	1244	573	622	415	684	448	1244	896
		10.0	17.6	36.0	1493	573	746	498	821	547	1493	1095
		11.0	17.6	36.0	1742	573	871	581	958	647	1742	1294
		12.0	17.6	36.0	1991	573	995	664	1095	746	1991	1493
		13.0	17.6	36.0	2239	573	1120	746	1232	846	2239	1692
		14.0	17.6	36.0	2488	573	1244	829	1368	945	2488	1891
		15.0	17.6	36.0	2737	573	1368	912	1505	1045	2737	2090
		16.0	17.6	36.0	2986	573	1493	995	1642	1145	2986	2289
		17.0	17.6	36.0	3235	573	1617	1078	1779	1244	3235	2488
		18.0	17.6	36.0	3483	573	1742	1161	1916	1344	3483	2687
		19.0	17.6	36.0	3732	573	1866	1244	2053	1443	3732	2886
		20.0	17.6	36.0	3981	573	1991	1327	2190	1543	3981	3085
		21.0	17.6	36.0	4230	573	2115	1410	2326	1642	4230	3284
		22.0	17.6	36.0	4479	573	2239	1493	2463	1742	4479	3483
		23.0	17.6	36.0	4727	573	2364	1576	2600	1841	4727	3682
		24.0	17.6	36.0	4976	573	2488	1659	2737	1941	4976	3882
		25.0	17.6	36.0	5225	573	2613	1742	2874	2040	5225	4081
		26.0	17.6	36.0	5474	573	2737	1825	3011	2140	5474	4280
		27.0	17.6	36.0	5723	573	2861	1908	3147	2239	5723	4479
		28.0	17.6	36.0	5972	573	2986	1991	3284	2339	5972	4678
		29.0	17.6	36.0	6220	573	3110	2073	3421	2438	6220	4877
		30.0	17.6	36.0	6469	573	3235	2156	3558	2538	6469	5076
NOTE: * It is assumed that in hard rock both side resistance and end bearing will not develop simultaneously.		From AASHTO LRFD, current Edition Table 10.5.5.2.4-1					D (ft.) =					4.5
							Side Resistance in Rock =					0.55
							Tip Resistance in Rock =					0.50
							Uplift Resistance in Rock =					0.40
							Extreme Limit Side & Tip Resistance =					1.00
							Extreme Limit Uplift Resistance =					0.80



# **APPENDIX E**

## **IDEALIZED SOIL PROFILES**

GENERAL SOIL AND BEDROCK PROFILE LEGEND SHEET

Bridge over Clarks Creek and Baton Rouge Road

SUMMARY OF PARAMETERS DEVELOPED FOR SOIL PROFILES

Parameter	Units	Description
$\gamma_t$	$\text{lb/ft}^3$	Total Unit Weight
$\gamma_e$	$\text{lb/ft}^3$	Effective Unit Weight
$q_u$	$\text{lb/ft}^2$	Unconfined Compressive Strength (soil)
$q_u$	$\text{ton/ft}^2$	Unconfined Compressive Strength (rock)
$C_u$	$\text{lb/ft}^2$	Undrained Shear Strength
RQD	%	Rock Quality Designation
$\phi$	( $^\circ$ )	Angle of Internal Friction
$c$	$\text{lb/ft}^2$	Effective stress cohesion
$K_s$	$\text{lb/in}^3$	Soil Secant Modulus - Static (computer program LPILE2016)
$E_m$	ksi	Rock Modulus
$\nu$		Poisson's Ratio
GSI		Geological Strength Index

GENERAL SOIL AND BEDROCK PROFILE

Bridge over Clarks Creek and Baton Rouge Road  
End Bent  
Based on Boring 041B00011N-4

Approximate		Description	
Elevation	Depth	STRATA	
(ft)	(ft)	Description	Parameters
		(USCS Classification)	
681.6	0.0	Clayey Gravel	$\gamma_t \text{ (lb/ft}^3\text{)} = 120$
		(GC)	$C_u \text{ (lb/ft}^2\text{)} = 2000$
			$K_s \text{ (lb/in}^3\text{)} = 500$
			$E_{50} = 0.005$
671.1	10.5	Top of Rock	
		Shale and Limestone	$\gamma_t \text{ (lb/ft}^3\text{)} = 160$
			$GSI = 35$
			$q_u \text{ (ton/ft}^2\text{)} = 27$
			$\nu = 0.09$
658.6	23.0		$RQD = 14$
		Bottom of Hole	

GENERAL SOIL AND BEDROCK PROFILE

Bridge over Clarks Creek and Baton Rouge Road  
Piers  
Based on Borings 041B00011N-2 & 041B00011N-3

Approximate		Description	
Elevation	Depth	STRATA	
(ft)	(ft)	Description	Parameters
		(USCS Classification)	
660.5- 662.9	0.0	Gravel with Clay	$\gamma_t \text{ (lb/ft}^3\text{)} = 120$
		(GC)	$\phi \text{ (degree)} = 35$
		[Material not encountered in boring 041B00011N-3]	$K_s \text{ (lb/in}^3\text{)} = 225$
657.9	5.0	Lean Clay w/ Gravel	$\gamma_t \text{ (lb/ft}^3\text{)} = 120$
		(CL)	$C_u \text{ (lb/ft}^2\text{)} = 500$
			$K_s \text{ (lb/in}^3\text{)} = 30$
			$E_{50} = 0.020$
646.6 - 650.5	10.0 - 16.5	Top of Rock	
		Limestone and Shale	$\gamma_t \text{ (lb/ft}^3\text{)} = 160$
			GSI = 35
			$q_u \text{ (ton/ft}^2\text{)} = 73$
			$\nu = 0.09$
616.4 - 619.0	41.5 - 46.5		RQD = 18
		Bottom of Hole	

## **Report of Geotechnical Exploration**

041B00014N  
Bridge over Eagle Creek  
Grant County, Kentucky



Prepared by:  
Stantec Consulting Services Inc.  
Lexington, Kentucky

September 17, 2019



**Stantec Consulting Services Inc.**  
3052 Beaumont Centre Circle, Lexington KY 40513-1703

September 17, 2019  
File: rpt\_001\_let\_178568003

**Attention: Mr. Brian Meade, PE**  
Bridging Kentucky Area 4 Team Lead  
AECOM  
Suite 1600  
Louisville, Kentucky 40202

**Reference: Report of Geotechnical Exploration  
041B00014N  
Bridge over Eagle Creek  
Grant County, Kentucky**

Dear Mr. Meade,

Stantec Consulting Services Inc. (Stantec) is submitting the geotechnical engineering report for the referenced structure with this letter. This report presents results of the field exploration along with our recommendations for the design and construction for the referenced bridge. As always, we enjoy working with your staff and if we can be of further assistance, please contact our office.

Sincerely,

**STANTEC CONSULTING SERVICES INC.**



Donald L. Blanton, PE  
Senior Associate  
Phone: (859) 422-3033  
Fax: (859) 422-3100  
Donald.Blanton@stantec.com

/rws

REPORT OF GEOTECHNICAL EXPLORATION

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## REPORT OF GEOTECHNICAL EXPLORATION

September 17, 2019

### 1.0 INTRODUCTION

The Kentucky Transportation Cabinet (KYTC) has initiated the Bridging Kentucky program. The purpose of the program is to rehabilitate or replace over 1,000 bridges across the state. Bridges that have been identified to be a part of the program are structures that because of their deteriorating conditions and resulting low load ratings are limiting the movement of people and freight across the state.

This report addresses the geotechnical considerations for Bridge 041B00014N, Bridge over Eagle Creek which is in Grant County, Kentucky. The bridge location is presented on Figure 1 below.

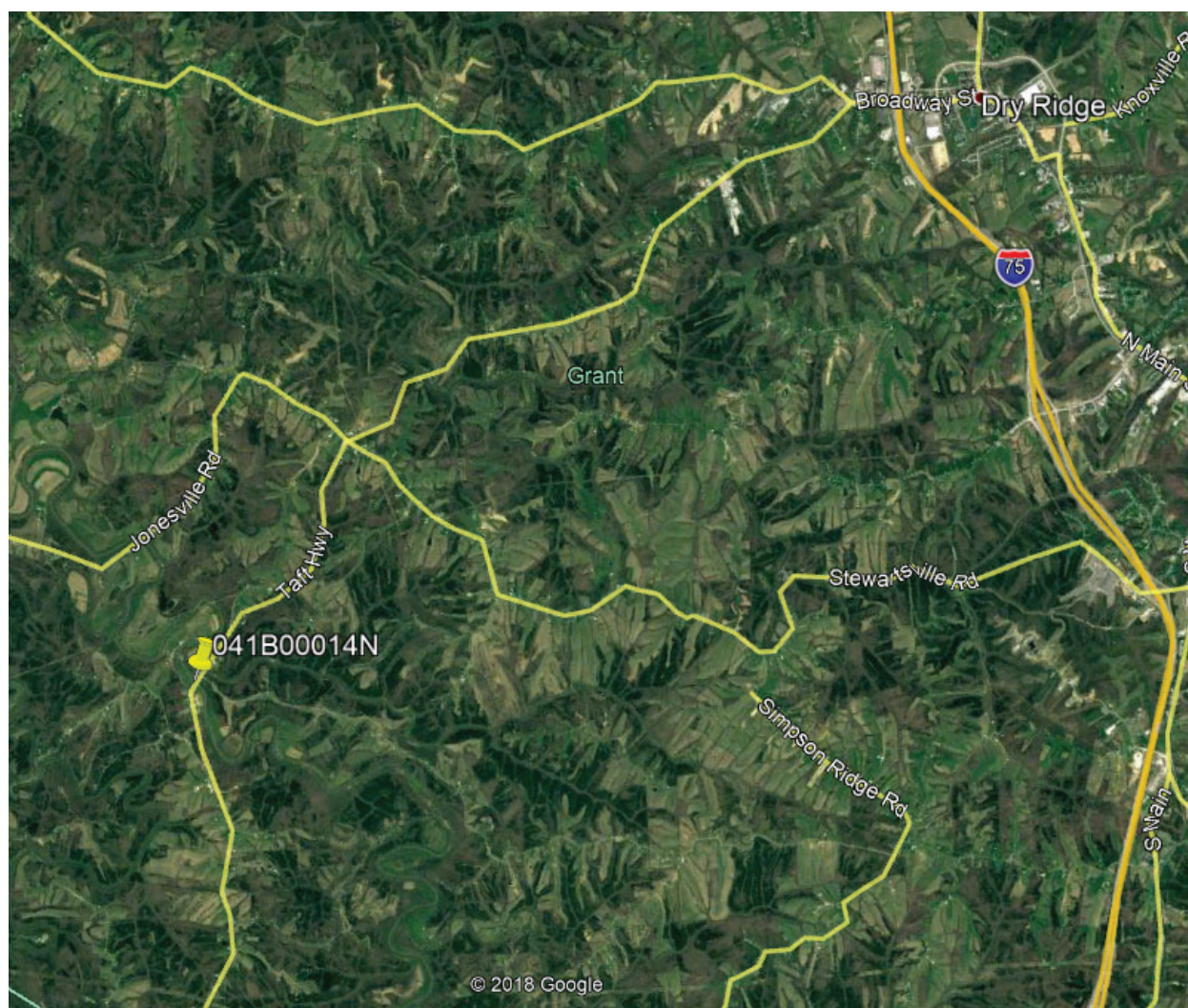


Figure 1. Google Image Showing Project Site.

REPORT OF GEOTECHNICAL EXPLORATION

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2.0 SITE TOPOGRAPHY AND GEOLOGIC CONDITIONS

The project site is situated on the Geologic Map of the Elliston Quadrangle, Grant County, Kentucky (GQ-994). Based on the review of this geologic map, the project is underlain by alluvium. The alluvium consists of clay, silt and gravel. Based on the mapping the alluvial deposits vary in thickness up to approximately 25 feet.

The Kope Formation, of the Upper Ordovician geologic period, underlies the alluvium. The Kope Formation consists of shale and limestone. The shale is medium gray, weathers light gray to yellowish gray, silty, calcareous; sparsely fossiliferous. The limestone is medium gray, weathers light gray and yellowish gray, evenly bedded. Limestone commonly occurs as single beds separated by a few inches to several feet of shale; limestone content estimated to be 10 to 20 percent, at some exposures may be as high as 50 percent.

No detrimental geologic features are noted by the available mapping within the immediate vicinity of the proposed bridge.

3.0 FIELD INVESTIGATION

A geotechnical exploration was conducted in July of 2019 which consisted of three subsurface borings, designated herein as 041B00014N-1, 041B00014N-2 and 041B00014N-3. A fourth boring 041B00014N-4 was not drilled. The boring locations and surface elevations were obtained by the Bridging Kentucky TEAM and are presented in Appendix A. Table 1 provides a summary of the locations, elevations, and depths of the borings drilled for the proposed bridge.

Table 1. Bridge over Eagle Creek– Summary of Borings

Hole No.	Latitude	Longitude	Surface Elevation (ft.) MSL	Top of Rock/Refusal		Begin Core		Bottom of Hole	
				Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL	Depth (ft.)	Elevation (ft.) MSL
041B00014N-1	38.628604	-84.709217	632.0	8.0	624.0	8.0	624.0	22.0	610.0
041B00014N-2	38.628417	-84.709394	613.4	10.5	602.9	10.5	602.9	41.5	571.9
041B00014N-3	38.627956	-84.709781	614.8	16.0	598.8	16.0	598.8	50.5	564.3

The drill crew operated a track-mounted drill rig equipped with hollow-stem and flight augers as well as wire line coring tools. The field personnel generally performed soil sampling at five-foot intervals of depth to obtain in situ strength data and specimens for subsequent laboratory strength and/or classification testing. Standard penetration testing (SPT) was conducted at the boring locations.



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### 4.0 SUBSURFACE CONDITIONS

In general, the subsurface materials observed in the sample borings consist primarily of brown clay that was moist, and very soft to medium stiff. Standard penetration test blowcounts (N) in soil material ranged from 2 to 8 blows per foot. The soil thickness encountered was found to range from 8.0 feet to 16.0 feet at the bridge location.

Bedrock was encountered at a high Elevation of 624.0 feet at boring 041B00014N-1 and at a low elevation of 598.8 feet at the boring 041B00014N-3. Bedrock specimens recovered from coring operations consist of limestone and shale. The limestone is described as being light gray, calcareous, zones argillaceous with shale streaks. The shale is described as medium gray and laminated. Detailed logs of the borings are presented in Appendix B.

Observation wells were not installed. Groundwater can be expected to be encountered at the level of Eagle Creek. Groundwater levels and/or conditions may vary considerably, with time, according to the prevailing climate, rainfall or other factors.

### 5.0 LABORATORY TESTING AND RESULTS

Stantec performed laboratory testing on soil samples from the borings. All laboratory tests were performed in accordance with the applicable AASHTO or Kentucky Methods soil and rock testing specifications. Laboratory testing consisted of natural moisture content, grain size-sieve analyses (silt plus clay determinations), and soil classification index testing. Unconfined compression testing was performed on select rock specimens in addition to Slake Durability Index (SDI) and Jar Slakes (JS) were conducted on bedrock samples.

The SPT soil samples tested classify as CL according to USCS and A-7-6 and A-6 on the AASHTO classification system. Results of the soil and rock laboratory testing are also presented in Appendix C.

### 6.0 ENGINEERING ANALYSES

#### 6.1 GENERAL

This project will consist of replacing the existing bridge. No significant grading efforts are planned, as such, embankment stability or settlement analyses have been not performed. Any grading requirements or material placement that may be needed should be placed at 2H:1V slopes or flatter. Based on a combination of existing conditions and anticipated grades, recommendations for spread footings, H-piles bearing on rock and drilled shafts are being provided for support of the end bents and piers of the subject structure.

## REPORT OF GEOTECHNICAL EXPLORATION

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### 6.2 BEARING CAPACITY FOR SPREAD FOOTINGS ON BEDROCK

Upon review of the boring logs, spread footings are an option. Based on a review of the rock core logs and the quality of the bedrock encountered, a presumptive bearing resistance of 20,000 psf on unweathered bedrock is being recommended at the substructure locations in accordance with NAVFAC DM 7.2, page 7.2-142 for spread footings bearing on sedimentary rock at the service limit state.

Additional evaluation will be necessary if the designer's analyses of the nominal bearing resistance indicate the strength or extreme limit states control the footing design.

### 6.3 STEEL H-PILE ANALYSES

#### 6.3.1 Pile Capacity

Based upon depths to top of rock, steel H-piles driven to bedrock could be used. As noted in Sections 3 and 4 of this report, existing foundation soils at the end bent locations are on the order of 8.0 feet. Due to the nature of the soil deposits and the subsurface conditions observed at the site, an axial resistance factor ( $\phi_c$ ) of 0.6 is recommended for good driving conditions as outlined in Section 6.5.4.2 of the current LRFD Design Specifications. Using  $\phi_c = 0.6$ , the estimated total factored axial resistance for 12x53 H-piles is 465.0 kips.

#### 6.3.2 Hammer Energy

Static pile analyses were conducted to estimate the ultimate driving resistance that 12-inch steel H-piles would experience during the installation process. Drivability analyses were performed at the End Bent locations. The analyses were performed using guidelines presented in the FHWA "Soils and Foundations Workshop Manual".

The soil column contributing to driving resistance at the End Bent locations includes existing embankment material and foundation soils down to rock. The pile is estimated to be clay and silty sand down to bedrock. The results of FHWA research and other literature regarding pile installation indicate that significant reductions in skin resistances occur during pile driving, primarily due to the dynamics of the installation process. Soils are remolded and pore water pressures apparently increase, causing reductions in shear strengths. The driving resistances were estimated under the condition that no interruptions, and therefore no pile "set" characteristics would be experienced during the driving process.

The drivability analyses were conducted using the GRLWEAP (Version 2010) computer program for steel H-piles driven to bedrock. To perform the drivability analyses, two situations were modeled. The first one involved determining the minimum hammer energy which would drive the H-piles to refusal on bedrock without excessive blows, and which would achieve the maximum allowable pile capacity. This condition would show the minimum hammer energy necessary to seat the piles on bedrock. The second part of the analyses would determine what the maximum hammer energy can be to drive the piles to refusal, and one which would not





## REPORT OF GEOTECHNICAL EXPLORATION

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damage the pile upon achieving refusal on bedrock. The FHWA publication title "Soils and Foundations Workshop Manual-Second Edition" defines a reasonable range of hammer blows to be between 30 and 144 blows per foot for a steel H-pile. The results of the driveability analyses indicate that a hammer with a minimum energy of 10.5 foot-kips and a maximum energy of 20.1 foot-kips will be required to drive 12x53 steel H-piles to practical refusal without encountering excessive blow counts or damaging the piles.

### 6.4 DRILLED SHAFT ANALYSES

Drilled shaft options have been evaluated as an alternate foundation type for the pier locations. A geotechnical engineer performed axial analyses for 4- and 5-foot diameter shafts (3.5-foot and 4.5-foot diameter rock sockets) at the pier locations. Stantec utilized the procedures outlined in the Federal Highway Administration Publication No. FHWA-IF-99-025 and 2017 AASHTO LRFD Bridge Design Specifications to estimate axial capacities of drilled shafts.

The selection of LRFD resistance factors for drilled shaft capacities involves an evaluation of the type of loading (axial compression versus uplift) and the variability and reliability of models or methodologies used to determine nominal resistance capacities. Table 2 summarizes the applicable analysis methodologies as well as the resistance factors recommended by the 2017 Edition of the AASHTO LRFD Bridge Design Specifications.

**Table 2. LRFD Resistance Factors for Drilled Shaft Analyses**

Loading Condition	Resistance Mechanism	Analysis Methodology	Resistance Factor <sup>a</sup> ( $\phi$ )
Nominal Axial Compressive Resistance of Single Drilled Shaft	Side Resistance in Rock	O'Neill and Reese, 1999	0.55
	End Bearing in Rock	O'Neill and Reese, 1999	0.50
Uplift Resistance of Single Drilled Shafts	Rock	Carter and Kulhway, 1988	0.40
Horizontal Geotechnical Resistance of Single Shaft or Shaft Group	All Material		1.0

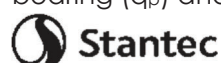
a. 2017 Edition of the AASHTO LRFD Bridge Design Specifications, portion of Table 10.5.5.2.4-1.

#### 6.4.1 End Bearing and Side Resistance of Shafts in Bedrock

Stantec utilized the procedures outlined in the Federal Highway Administration Publication No. FHWA-IF-99-025 and 2017 AASHTO LRFD Bridge Design Specifications to estimate axial capacities of drilled shafts. Refer to Appendix D for drilled shaft nominal axial estimates for Pier locations.

#### 6.4.2 Strength Limit State

Bearing capacities were calculated for the strength limit state by deriving nominal end bearing and side resistance of drilled shafts in bedrock based on the results of the drilling, sampling, and laboratory testing programs conducted. The methodology used to calculate the nominal end bearing ( $q_p$ ) and side resistance ( $q_s$ ) of drilled shafts in bedrock is presented in the 2017 Edition of



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the AASHTO LRFD Bridge Design Specifications, Section 10.8.3.5.4. Using the referenced procedures and design unconfined compressive strength of 3,500 psi for concrete, the nominal end bearing resistance ( $q_p$ ) and nominal side resistance ( $q_s$ ) were determined for underlying bedrock at the pier locations. A resistance factor as indicated in Table 2 was then applied to the nominal axial capacity to arrive at the total factored axial resistance. Refer to the drilled shaft capacity tables presented in Appendix D.

### 6.4.3 Service Limit State

Capacity values were also determined for the service limit state using the same procedures outlined above except a Factor of Safety (FS) of 3.0 was applied to the nominal axial capacity in order to arrive at the service limit state total allowable bearing capacity. The Service Limit State capacities will be used by the Designer for the evaluation of lateral deflection.

### 6.4.4 Extreme Limit State

Stantec also determined capacity values for the extreme limit state using the same procedures outlined above except a resistance factor of 1.0 (2017 Edition of the AASHTO LRFD Bridge Design Specifications, Section 10.5.5.3.2) was applied to the nominal axial capacity in order to arrive at the extreme limit state total factored axial resistance. Refer to the drilled shaft capacity tables presented in Appendix D for specific capacities with respect to depth.

### 6.4.5 Lateral Analyses of Shafts

The lateral analyses for the drilled shafts are being performed by the Designer. Appendix E provides Idealized Subsurface Profiles that outline the recommended soil and rock parameters for use in lateral load analyses.

### 6.4.6 Uplift

Uplift analyses were determined for the strength limit state and utilized a resistance factor of 0.4 as described in Table 2. In accordance with AASHTO, the resistance factor used for the socket friction for uplift loading was 0.4, corresponding to uplift resistance of single-drilled shafts. Uplift analysis was also determined for the extreme limit state and utilized a resistance factor of 0.8 (2017 Edition of the AASHTO LRFD Bridge Design Specifications, Section 10.5.5.3.2). Refer to Appendix D for tables showing the total factored uplift resistance.

## 7.0 FOUNDATION SYSTEM RECOMMENDATIONS

Stantec developed the following recommendations based upon reviews of available data, information obtained during the field exploration, results of laboratory testing and engineering analyses, and discussions with TEAM personnel.

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### 7.1 GENERAL

7.1.1. Based on a review of the existing subsurface conditions and anticipated structural loads, it is recommended that rock bearing foundation systems be used for all bridge substructure elements. The following table provides possible foundation alternates using the following notations.

1. = Spread Footings
2. = Pre-Drilled H-Piles
3. = Drilled Shafts

The foundation alternates shown below are those Stantec considers being most practical. However, other structural and/or economic considerations may dictate which option is most preferable.

Boring No.	Latitude	Longitude	Foundation Alternate	Top of Rock Elevation (feet)
041B00014N-1	38.628604	-84.709217	1,2	624.0
041B00014N-2	38.628417	-84.709394	1,3	602.9
041B00014N-3	38.627956	-84.709781	1,3	598.8

7.1.2. Foundation excavations should be properly braced/shored to provide adequate safety to people working in or around the excavations. Bracing should be performed in accordance with applicable federal, state and local guidelines.

7.1.3. **A plan note should be included by the designer** that indicates that temporary shoring, sheeting, cofferdams, and/or dewatering methods may be required to facilitate foundation construction. It should be anticipated that groundwater will be encountered at foundation locations within the flood plain.

### 7.2 SPREAD FOOTING FOUNDATIONS

7.2.1. Rock-bearing spread footing options are being provided for substructure elements. Foundation excavations for footings at the structure locations should be level and free of loose, water softened material, etc. Additional rock excavation to achieve suitable bearing conditions may be required depending upon topography and bedrock weathering conditions.

7.2.2. **A plan note should be included by the designer** that indicates that solid rock excavation will be required for installation of the substructure's spread footings. The contractor shall take care during blasting and other excavation methods to avoid over-breakage and damage to the bedrock beneath the footings.



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7.2.3. **A plan note should be included by the designer** that indicates that the bearing elevation of footings may be adjusted at the discretion of the Engineer if competent, unweathered bedrock is found at a higher elevation than specified for the respective substructure element. The top of new spread footings should be fully embedded into unweathered bedrock. The plan note should also state that the base of new footings must be placed on unweathered bedrock.

7.2.4. Prior to placement of any concrete or reinforcing steel in a foundation excavation, the excavation bottom should be clean and all soft, wet, or loose materials should be removed. In no case should concrete be placed upon compressible or water-softened materials.

7.2.5. **A plan note should be included by the designer** indicating that footings should be placed as soon as practical after completion of the footing excavation. If the bedrock becomes softened at bearing elevation, the softened material should be undercut to unweathered material prior to placement of reinforcing steel and concrete. Seasonal groundwater fluctuations may cause groundwater infiltration into the footing excavation, and a dewatering method may be necessary.

7.2.6. Any clay seams or suspect weak materials at or near the bearing elevation will need to be undercut and replaced with mass concrete.

7.2.7. Mass concrete shall be placed in the footing excavations from the top of footing to the bedrock surface where the footing does not extend to the bedrock surface.

### 7.3 STEEL H-PILE FOUNDATIONS

7.3.1. The following notes provides recommendations applicable at the substructure element locations. It is estimated that pre-drilled 12x53 H-pile foundations are being planned for use in supporting the new bridge substructure elements.

7.3.2. **A plan note should be included by the designer** which states the following hammer criteria: At the End Bent locations, a diesel pile driving hammer with a rated energy between 10.5 foot-kips and 20.1 foot-kips will be required to drive 12x53 steel H-piles to practical refusal without encountering excessive blow counts or damaging the piles. The Contractor shall submit the proposed pile driving system to the Engineer for approval prior to the installation of the first pile. Approval of the pile driving system by the Engineer will be subject to satisfactory field performance of the pile driving procedures.

7.3.3. Stantec understands that end bearing piles are being driven to a practical refusal. **A plan note should be included by the designer** which indicates: For this project, minimum blow requirements may be reached after total penetration becomes 1/2 inch or less for ten consecutive blows, practical refusal is obtained after the pile is struck an additional ten blows with total penetration of 1/2 inch or less. Advance the production piling to the driving resistances specified above and to depths determined by test pile(s) and subsurface data sheet(s). Immediately cease driving operations if the pile visibly yields or becomes damaged during driving.



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7.3.4. **A plan note should be included by the designer** to address pre-drilling for piles to the estimated bearing elevation. Where pre-drilling is necessary for pile installation, holes shall be drilled into solid rock. Pre-drilling shall extend below any soft zones and/or known coal seams. A minimum pile length of 10 feet is required below the pile bent/pile cap. Backfill the holes with sand or pea gravel after the pile is placed in the hole. A temporary casing may be required to prevent collapse of the hole. If used, remove the casing as the hole is being backfilled. Drive piles to refusal after backfill operations are complete. Include the cost of all materials, labor, and equipment needed to pre-drill, backfill the holes, and drive the piles to refusal in the price per linear foot for "Pre-drilling for Piles".

7.3.5. The design and installation of the pile foundations should conform to current AASHTO LRFD Bridge Design Specifications, and Section 604 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction.

7.3.6. The Kentucky Transportation Cabinet recommends that protective pile points be used on end bearing piles to allow for embedment into the top of bedrock. Use of reinforced pile points capable of penetrating boulders and hard layers which may be encountered is recommended. Installation of pile points should be in accordance with Section 604 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

7.3.7. The AASHTO LRFD Bridge Design Specifications recommend a resistance factor for horizontal geotechnical resistance of a single pile or pile group of 1.0 for lateral capacity analyses.

7.3.8. The 2014 AASHTO LRFD Bridge Design Specifications recommends axial resistance factors based on pile driving conditions (good or severe driving conditions). Based on the general subsurface conditions encountered across the project, it is anticipated that there will be good pile driving conditions. Therefore, it is recommended that the axial resistance of piles in compression ( $\phi_c$ ) used in design be 0.60. Further, the combined axial and flexural resistance factors for design should be  $\phi_c = 0.70$  and  $\phi_f = 1.00$  as noted in Section 6.5.4.2 of the referenced AASHTO specifications.

## 7.4 DRILLED SHAFT FOUNDATIONS

7.4.1. The Contractor shall use a permanent casing from the top of shaft to the top of unweathered bedrock and use an uncased rock socket which is 6 inches smaller than the inside diameter of the permanent casing. **A plan note should be included by the designer** which indicates: Permanent casing shall be incidental to the unit bid price for Drilled Shaft - Common or Drilled Shaft - Solid Rock, as applicable.

7.4.2. Unless otherwise specified, it is recommended that construction methods and materials used for drilled shaft installations be in accordance with the current KYTC "Special Note for Drilled Shafts".

7.4.3. A minimum rebar cover of 6-inches is required in the uncased rock sockets.



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7.4.4. For Load & Resistance Factor Design (LRFD), evaluate the total factored axial resistances using the attached Drilled Shaft Axial Capacity Tables considering the capacity developed in the uncased rock sockets. Note that the axial capacities provided ignore the upper one shaft diameter. The factored resistances must exceed the factored loads at the strength limit state. The shaft tips shall extend a minimum depth into the bedrock, which satisfies both axial and lateral load design criteria.

7.4.5. Design the shafts neglecting any lateral resistance above the upper one shaft diameter. Perform lateral load analysis using the geotechnical parameters provided in the attached Idealized Soil and Bedrock Profile. These parameters may be used to perform analyses using LPILE Plus or other similar software.

7.4.6. Additional drilling will be required at each drilled shaft location as noted in Section 3.5, Subsurface Exploration of the KYTC's Special Note for Drilled Shafts. Estimates of the amount of Rockline Sounding may be made by taking the difference between the ground surface and the rockline at each shaft location. For estimating the amount of Rock Coring at this location, it is recommended that the subsurface exploration extend a minimum depth of three (3) shaft diameters (but no less than 10 feet) below the bottom of the anticipated tip elevation of each drilled shaft.

7.4.7. **A plan note should be included by the Designer** that states The Contractor will be responsible for providing subsurface exploration drilling during construction to finalize the drilled shaft tip elevations. Additional drilling will be required at each drilled shaft location in accordance with the Special Note for Drilled Shafts, current edition.

## 8.0 CLOSING

8.1. The conclusions and recommendations presented herein are based on data and subsurface conditions from the borings drilled during previous geotechnical exploration using that degree of care and skill ordinarily exercised under similar circumstances by competent members of the engineering profession. No warranties can be made regarding the continuity of conditions between borings.

8.2. General soil and rock descriptions and indicated boundaries are based on an engineering interpretation of all available subsurface information and may not necessarily reflect the actual variation in subsurface conditions between borings and samples.

8.3. The observed water levels and/or conditions indicated on the boring logs are as recorded at the time of exploration. These water levels and/or conditions may vary considerably, with time, according to the prevailing climate, rainfall, tail water elevations or other factors and are otherwise dependent on the duration of and methods used in the exploration program.

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September 17, 2019

8.4. Stantec exercised sound engineering judgment in preparing the subsurface information presented herein. This information has been prepared and is intended for design and estimating purposes. Its presentation on the plans or elsewhere is for the purpose of providing intended users with access to the same information. This subsurface information interpretation is presented in good faith and is not intended as a substitute for independent interpretations or judgments of the Contractor.

8.5. All structure details shown herein are for illustrative purposes only and may not be indicative of the final design conditions shown in the contract plans.

# **APPENDIX A SITE MAP**



**LEGEND**

- SOIL BORING WITH UNDISTURBED (SHELBY) TUBE SAMPLES AND/OR STANDARD PENETRATION TESTS AND ROCK CORE

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PLOT DATE: 08/05/2019 USER: SAMS, BRIAN  
V:\1785\ACTIVE\178568003\GEOTECHNICAL\041B00014N\041B00014N.DWG



GRAPHIC SCALE: <b>1" = 50'</b>		BRIDGING KENTUCKY	
DATE: 08/02/2019	BRIDGE: 041B00014N		PAGE NO. -
DRAWN BY: BFS	CKD. BY: DLB	SHEET: BRIDGE OVER EAGLE CREEK GRANT COUNTY, KY	FIG. NO. -
STANTEC JOB NO.: 178568003	FILE NAME:		

# **APPENDIX B TYPED BORING LOGS**



Project ID: <u>178568003</u>		<u>Statewide - Various</u>			Project Type: <u>Structure Bridge</u>					
Item Number: <u>Statewide</u>					Project Manager: <u>  </u>					
Hole Number <u>041B00014N-1</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/08/2019</u>		Hole Type <u>core and sample</u>				
Surface Elevation <u>632.0'</u>		Static Water Depth <u>NA</u>		End Date <u>07/08/2019</u>		Rig_Number <u>45Track</u>				
Total Depth <u>22.0'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.628604</u>						
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.709217</u>						
Lithology		Overburden	Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks		
Elevation	Depth	Description	Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)		SDI (JS)	
5 624.0	8.0	Medium stiff, light brown, lean clay.  (Begin Core)		1	2.0-3.5	1.0	2-2-3	SPT	5	
				2	5.0-6.5	1.0	3-4-4	SPT		
10 610.0	22.0	Limestone with shale, (Limestone (50), light gray, calcareous, zones argillaceous with shale streaks. Shale (50), medium gray, laminated).	23 / 23	4.0	2.8	70		12.0	10 15 20 22.0	
			10 / 10	5.0	5.0	100		17.0		
			24 / 16	5.0	5.0	100				
25 30 35 40 45 50		(Bottom of Hole 22.0')							25 30 35 40 45 50	

DRILLER'S SUBSURFACE LOG

GRANT COUNTY  
041GR19D067-STP&HSIP  
Drilling Firm: Stantec  
For: Division of Structural Design  
Geotechnical Branch

Project ID: <u>178568003</u>		<u>Statewide - Various</u>			Project Type: <u>Structure Bridge</u>			
Item Number: <u>Statewide</u>					Project Manager: <u>  </u>			
Hole Number <u>041B00014N-2</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/08/2019</u>		Hole Type <u>core and sample</u>		
Surface Elevation <u>613.4'</u>		Static Water Depth <u>NA</u>		End Date <u>07/08/2019</u>		Rig_Number <u>45Track</u>		
Total Depth <u>41.5'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.628417</u>				
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.709394</u>				
Lithology		Overburden	Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks
Elevation	Depth	Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	SDI (JS)	
		Medium stiff, brown, moist, lean clay.						
			1	2.0-3.5	1.0	2-3-3	SPT	
			2	5.0-6.5	1.5	3-3-3	SPT	
603.4	10.0	(Begin Core)	3	10.0-10.5	0.5	50/0.50'	SPT	
602.9	10.5	Stiff, light brown, moist, clay.	40 / 40	1.0	0.5	50		11.5
		Limestone with shale, (Limestone (50), light gray, calcareous, zones argillaceous with shale streaks. Shale (50), medium gray, laminated).	8 / 8	5.0	3.8	76		15
								16.5
			8 / 8	5.0	5.0	100		20
								21.5
			44 / 26	5.0	5.0	100		25
								26.5
			30 / 18	5.0	5.0	100		30
							31.5	
		42 / 34	5.0	5.0	100		35	
							36.5	
		22 / 22	5.0	5.0	100		40	
571.9	41.5							41.5
		(Bottom of Hole 41.5')						45
								50

Page 1 of 2

Project ID: <u>178568003</u>		<u>Statewide - Various</u>				Project Type: <u>Structure Bridge</u>			
Item Number: <u>Statewide</u>						Project Manager: <u>  </u>			
Hole Number <u>041B00014N-3</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/09/2019</u>		Hole Type <u>core and sample</u>			
Surface Elevation <u>614.8'</u>		Static Water Depth <u>NA</u>		End Date <u>07/09/2019</u>		Rig_Number <u>45Track</u>			
Total Depth <u>50.5'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.627956</u>					
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.709781</u>					
Lithology		Overburden		Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks
Elevation	Depth	Description		Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	
5		Soft, dark brown, moist, lean clay.							
				1	2.0-3.5	1.0	1-1-3	SPT	
				2	5.0-6.5	1.5	2-2-2	SPT	
10	604.8	10.0							
15	599.8	Very soft, light brown, damp, clay.		3	10.0-11.5	1.5	2-1-1	SPT	
	598.8	16.0	Stiff, gray, wet, gravelly clay. (Begin Core)		4	15.0-16.0	1.0	7-50/0.50'	SPT
20		Limestone with shale, (Limestone (50), light gray, calcareous, zones argillaceous with shale streaks. Shale (50), medium gray, laminated).		0 / 0	1.0	1.0	100		17.0
				0 / 0	5.0	5.0	100		20.0
									22.0
				14 / 8	5.0	5.0	100		25.0
									27.0
				36 / 22	5.0	5.0	100		30.0
									32.0
				54 / 44	5.0	5.0	100		35.0
									37.0
40				12 / 12	5.0	5.0	100		40.0
									42.0
				12 / 12	5.0	5.0	100		45.0
45									47.0
				0 / 0	3.5	3.5	100		50.0

Project ID: <u>178568003</u>		<u>Statewide - Various</u>			Project Type: <u>Structure Bridge</u>				
Item Number: <u>Statewide</u>					Project Manager: <u>  </u>				
Hole Number <u>041B00014N-3</u>		Immediate Water Depth <u>NA</u>		Start Date <u>07/09/2019</u>		Hole Type <u>core and sample</u>			
Surface Elevation <u>614.8'</u>		Static Water Depth <u>NA</u>		End Date <u>07/09/2019</u>		Rig_Number <u>45Track</u>			
Total Depth <u>50.5'</u>		Driller <u>danny jessie</u>		Latitude(83) <u>38.627956</u>					
Location <u>+ 'Lt.</u>				Longitude(83) <u>-84.709781</u>					
Lithology		Description	Overburden	Sample No.	Depth (ft)	Rec. (ft)	SPT Blows	Sample Type	Remarks
Elevation	Depth		Rock Core	Std/Ky RQD	Run (ft)	Rec (ft)	Rec (%)	SDI (JS)	
564.3	50.5	(Bottom of Hole 50.5')							50.5
55									55
60									60
65									65
70									70
75									75
80									80
85									85
90									90
95									95
100									100

# **APPENDIX C**

## **LABORATORY DATA SHEETS**



## Summary of Soil Tests

Project Name Bridging KY - 041B00014N Project Number 178568003  
Source 041B00014N-1, 2.0'-3.5', 5.0'-6.5' Lab ID 573

Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed  
Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90  
Prepared: Dry  
Liquid Limit: 43  
Plastic Limit: 19  
Plasticity Index: 24  
Activity Index: 0.6

#### Particle Size Analysis

Preparation Method: AASHTO T 87  
Gradation Method: AASHTO T 88  
Hydrometer Method: AASHTO T 88

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	99.5
No. 4	4.75	99.4
No. 10	2	98.5
No. 40	0.425	95.1
No. 200	0.075	91.3
	0.02	74.4
	0.005	52.1
	0.002	41.1
estimated	0.001	34.7

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	0.6	1.5
Coarse Sand	0.9	3.4
Medium Sand	3.4	---
Fine Sand	3.8	3.8
Silt	39.2	50.2
Clay	52.1	41.1

#### Moisture-Density Relationship

Test Not Performed  
Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed  
Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100  
Prepared: Dry  
Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.74

#### Classification

Unified Group Symbol: CL  
Group Name: Lean clay  
AASHTO Classification: A-7-6 ( 23 )

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Reviewed By RJ



Particle-Size Analysis of Soils  
AASHTO T 88

Project Name  
Source

Bridging KY - 041B00014N  
041B00014N-1, 2.0'-3.5', 5.0'-6.5'

Project Number  
Lab ID

178568003  
573

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method  
Prepared using

AASHTO T 88  
AASHTO T 87

Particle Shape  
Particle Hardness:

Angular  
Hard and Durable

Tested By  
Test Date  
Date Received

HE  
07-23-2019  
07-12-2019

Sieve Size	% Passing
3/4"	100.0
3/8"	99.5
No. 4	99.4
No. 10	98.5

Maximum Particle size: 3/4" Sieve

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

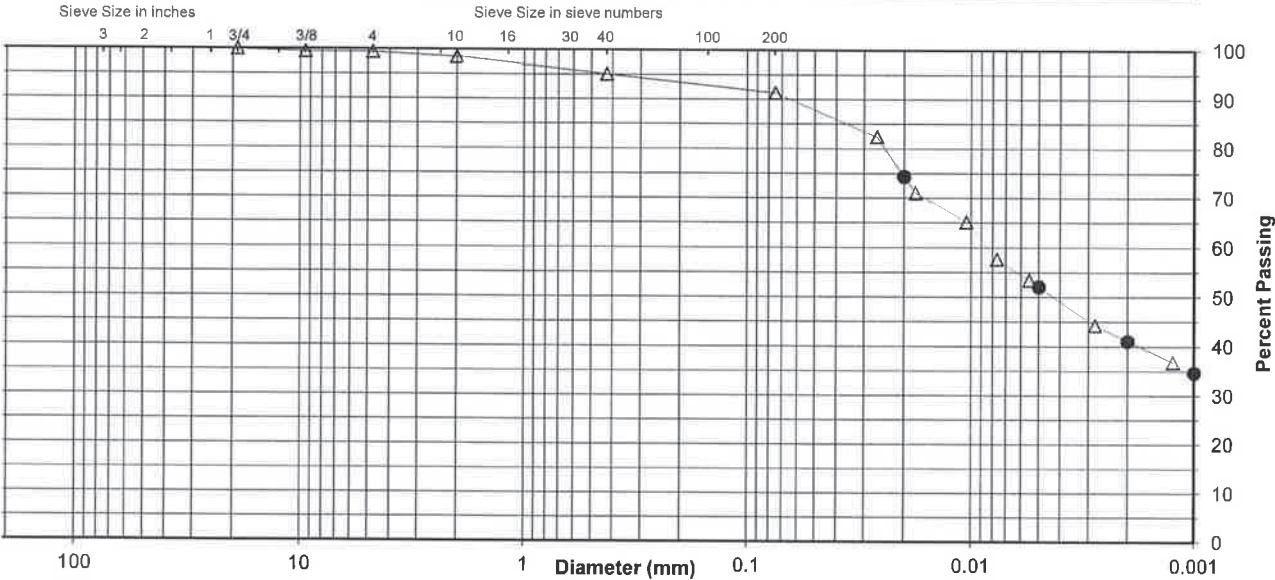
Specific Gravity 2.74

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	95.1
No. 200	91.3
0.02 mm	74.4
0.005 mm	52.1
0.002 mm	41.1
0.001 mm	34.7

Particle Size Distribution

ASTM	Coarse Gravel 0.0	Fine Gravel 0.6	C. Sand 0.9	Medium Sand 3.4	Fine Sand 3.8	Silt 39.2	Clay 52.1
AASHTO	Gravel 1.5		Coarse Sand 3.4	Fine Sand 3.8	Silt 59.2	Clay 41.1	



Comments \_\_\_\_\_

Reviewed By RJ



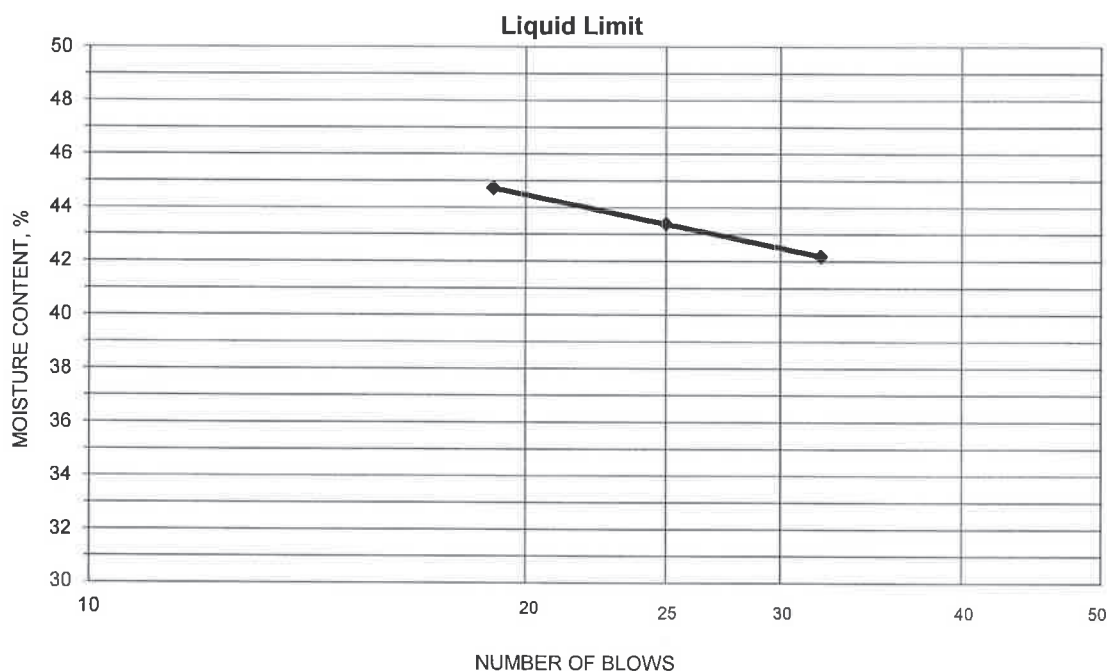


# ATTERBERG LIMITS

Project Bridging KY - 041B00014N  
Source 041B00014N-1, 2.0'-3.5', 5.0'-6.5'  
Tested By KWS Test Method AASHTO T 89 & T 90  
Test Date 07-26-2019 Prepared Dry

Project No. 178568003  
Lab ID 573  
% + No. 40 5  
Date Received 07-12-2019

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
19.65	17.53	12.79	19	44.7	43
20.52	18.22	12.92	25	43.4	
19.41	17.41	12.67	32	42.2	



## PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
19.07	18.01	12.51	19.3	19	24
19.33	18.28	12.81	19.2		

Remarks: \_\_\_\_\_

Reviewed By RJ



## Summary of Soil Tests

Project Name Bridging KY - 041B00014N Project Number 178568003  
Source 041B00014N-2, 2.0'-3.5', 5.0'-6.5' Lab ID 576  
Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed  
Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90  
Prepared: Dry  
Liquid Limit: 41  
Plastic Limit: 22  
Plasticity Index: 19  
Activity Index: 0.6

#### Particle Size Analysis

Preparation Method: AASHTO T 87  
Gradation Method: AASHTO T 88  
Hydrometer Method: AASHTO T 88

Particle Size		% Passing
Sieve Size	(mm)	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
	N/A	
No. 4	4.75	100.0
No. 10	2	99.9
No. 40	0.425	99.5
No. 200	0.075	98.1
	0.02	72.1
	0.005	41.3
	0.002	29.7
estimated	0.001	23.0

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	0.0	0.1
Coarse Sand	0.1	0.4
Medium Sand	0.4	---
Fine Sand	1.4	1.4
Silt	56.8	68.4
Clay	41.3	29.7

#### Moisture-Density Relationship

Test Not Performed  
Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed  
Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100  
Prepared: Dry  
Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.69

#### Classification

Unified Group Symbol: CL  
Group Name: Lean clay  
AASHTO Classification: A-7-6 ( 20 )

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Reviewed By RJ



Particle-Size Analysis of Soils  
AASHTO T 88

Project Name      Bridging KY - 041B00014N

Source              041B00014N-2, 2.0'-3.5', 5.0'-6.5'

Project Number    178568003

Lab ID              576

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method      AASHTO T 88

Prepared using   AASHTO T 87

Particle Shape     Angular

Particle Hardness: Hard and Durable

Tested By         HE

Test Date         07-23-2019

Date Received    07-12-2019

Sieve Size	% Passing
No. 4	100.0
No. 10	99.9

Maximum Particle size: No. 4 Sieve

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on   -3 inch fraction only

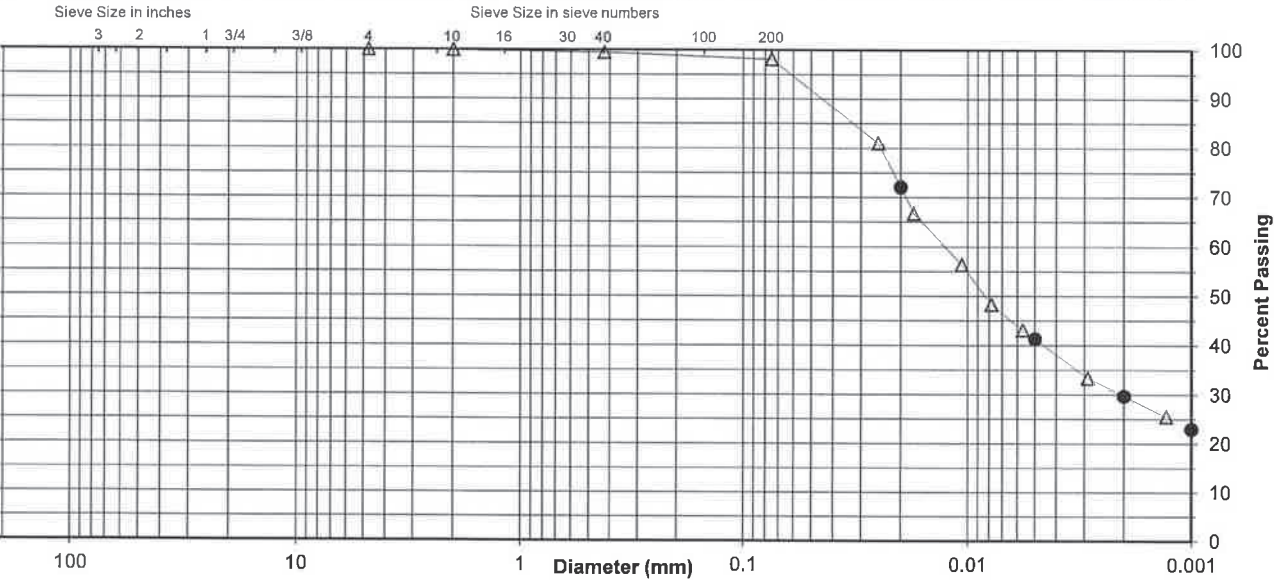
Specific Gravity     2.69

Dispersed using    Apparatus A - Mechanical, for 1 minute

No. 40	99.5
No. 200	98.1
0.02 mm	72.1
0.005 mm	41.3
0.002 mm	29.7
0.001 mm	23.0

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	0.0	0.1	0.4	1.4	56.8	41.3
AASHTO	Gravel		Coarse Sand		Fine Sand	Silt	Clay
	0.1		0.4		1.4	68.4	29.7



Comments \_\_\_\_\_

Reviewed By RJ



ATTERBERG LIMITS

Project  
Source

Bridging KY - 041B00014N  
041B00014N-2, 2.0'-3.5', 5.0'-6.5'

Project No.  
Lab ID  
% + No. 40

178568003  
576  
0

Tested By  
Test Date

KWS  
07-26-2019

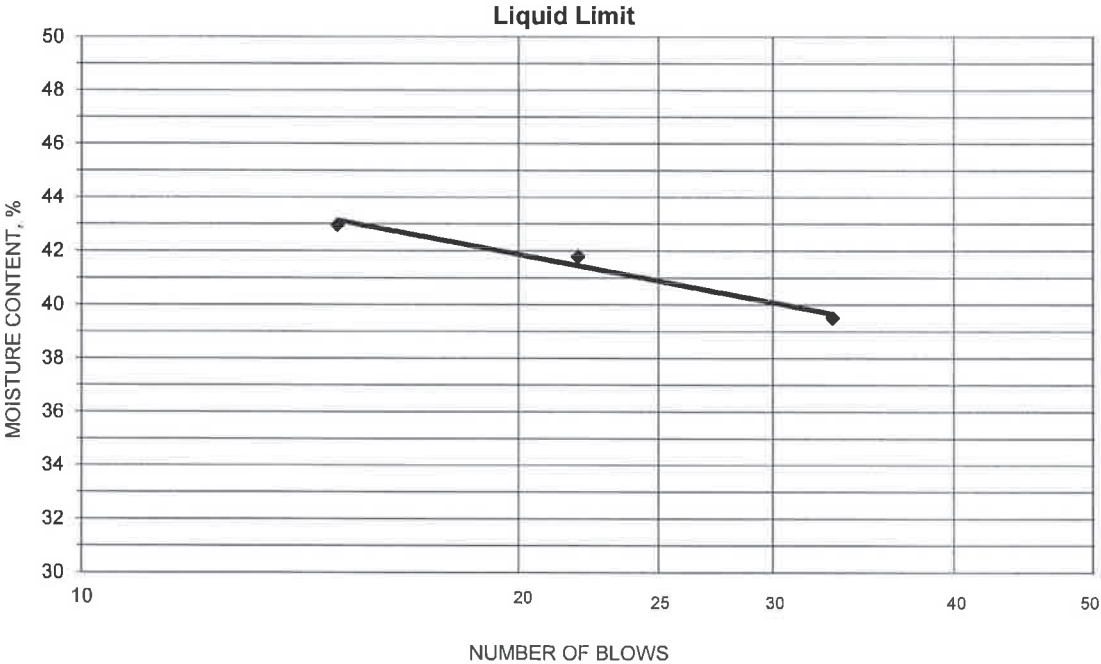
Test Method  
Prepared

AASHTO T 89 & T 90  
Dry

Date Received

07-12-2019

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
17.86	15.94	11.08	33	39.5	41
16.93	15.20	11.06	22	41.8	
18.07	15.96	11.05	15	43.0	



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.55	16.44	11.21	21.2	22	19
17.52	16.34	11.00	22.1		

Remarks:

Reviewed By



Gradation Analysis  
AASHTO T 88

Project Name Bridging KY - 041B00014N

Source 041B00014N-2, 10.0'-10.5'

Preparation Method AASHTO T 11 Method A

Soak Time (min) 260

Particle Shape Angular

Particle Hardness Hard and Durable

Sample Dry Mass (g) 237.31

Moisture Content (%) 21.7

Project Number 178568003

Lab ID 579

Date Received 07-12-2019

Preparation Date 07-18-2019

Test Date 07-24-2019

Analysis based on total sample.

Sieve Size	Grams Retained	% Retained	% Passing
3/4"	0.00	0.0	100.0
3/8"	2.11	0.9	99.1
No. 4	0.38	0.2	99.0
No. 10	2.82	1.2	97.8
No. 40	5.56	2.3	95.4
No. 200	9.72	4.1	91.3
Pan	216.72	91.3	---

% Gravel 2.2

% Sand 6.4

% Fines 91.3

Fines Classification N/A

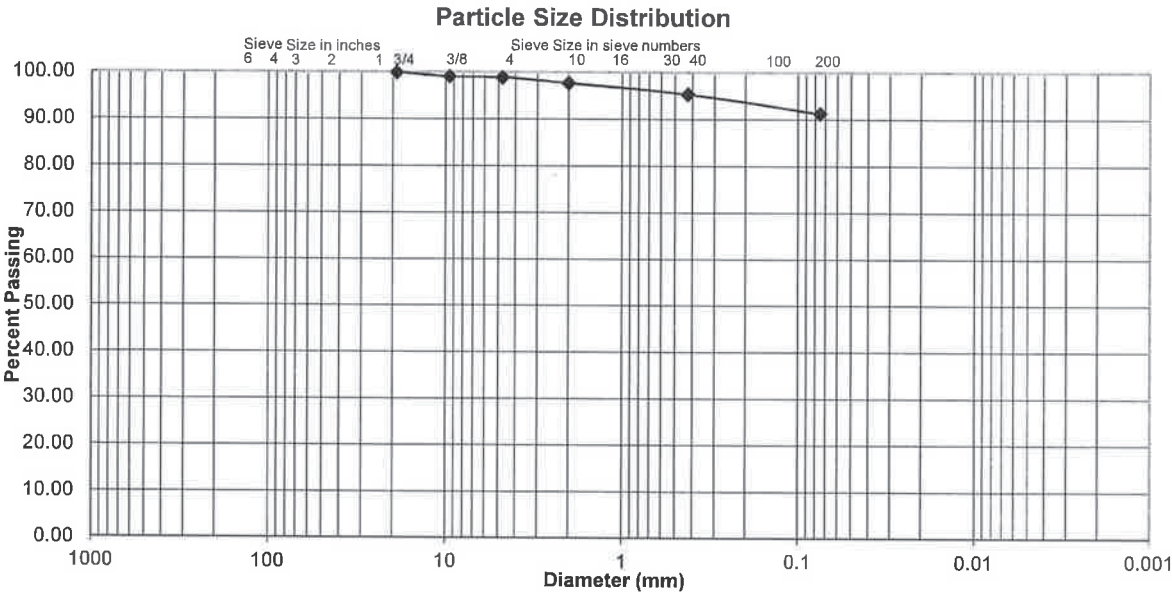
D<sub>10</sub> (mm) N/A

D<sub>30</sub> (mm) N/A

D<sub>60</sub> (mm) N/A

Cu N/A

Cc N/A



Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed By RJ





## Summary of Soil Tests

Project Name Bridging KY - 041B00014N Project Number 178568003  
Source 041B00014N-3, 2.0'-3.5', 5.0'-6.5' Lab ID 580  
Sample Type SPT Composite Date Received 7-12-19  
Date Reported 7-30-19

### Test Results

#### Natural Moisture Content

Test Not Performed

Moisture Content (%): N/A

#### Atterberg Limits

Test Method: AASHTO T 89 & T 90

Prepared: Dry

Liquid Limit: 37  
Plastic Limit: 20  
Plasticity Index: 17  
Activity Index: 0.7

#### Particle Size Analysis

Preparation Method: AASHTO T 87

Gradation Method: AASHTO T 88

Hydrometer Method: AASHTO T 88

Particle Size		%
Sieve Size	(mm)	Passing
	N/A	
	N/A	
	N/A	
	N/A	
3/4"	19	100.0
3/8"	9.5	97.1
No. 4	4.75	97.1
No. 10	2	93.1
No. 40	0.425	92.0
No. 200	0.075	90.1
	0.02	59.8
	0.005	33.2
	0.002	25.5
estimated	0.001	20.3

Plus 3 in. material, not included: 0 (%)

Range	ASTM (%)	AASHTO (%)
Gravel	2.9	6.9
Coarse Sand	4.0	1.1
Medium Sand	1.1	---
Fine Sand	1.9	1.9
Silt	56.9	64.6
Clay	33.2	25.5

#### Moisture-Density Relationship

Test Not Performed

Maximum Dry Density (lb/ft<sup>3</sup>): N/A  
Maximum Dry Density (kg/m<sup>3</sup>): N/A  
Optimum Moisture Content (%): N/A  
Over Size Correction %: N/A

#### California Bearing Ratio

Test Not Performed

Bearing Ratio (%): N/A  
Compacted Dry Density (lb/ft<sup>3</sup>): N/A  
Compacted Moisture Content (%): N/A

#### Specific Gravity

Test Method: AASHTO T 100

Prepared: Dry

Particle Size: No. 10  
Specific Gravity at 20° Celsius: 2.70

#### Classification

Unified Group Symbol: CL  
Group Name: Lean clay  
AASHTO Classification: A-6 ( 15 )

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reviewed By RJ



Particle-Size Analysis of Soils  
AASHTO T 88

Project Name  
Source

Bridging KY - 041B00014N  
041B00014N-3, 2.0'-3.5', 5.0'-6.5'

Project Number  
Lab ID

178568003  
580

Sieve analysis for the Portion Coarser than the No. 10 Sieve

Test Method  
Prepared using

AASHTO T 88  
AASHTO T 87

Particle Shape  
Particle Hardness:

Angular  
Hard and Durable

Tested By  
Test Date  
Date Received

AB  
07-23-2019  
07-12-2019

Sieve Size	% Passing
3/4"	100.0
3/8"	97.1
No. 4	97.1
No. 10	93.1

Maximum Particle size: 3/4" Sieve

Analysis for the portion Finer than the No. 10 Sieve

Analysis Based on -3 inch fraction only

Specific Gravity

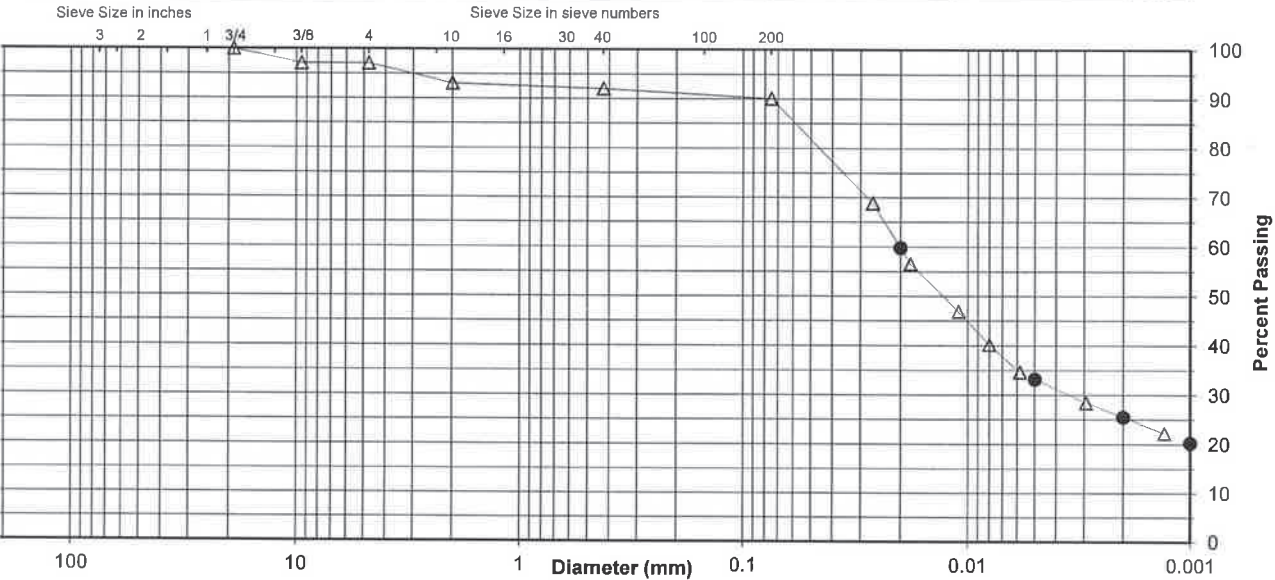
2.7

Dispersed using Apparatus A - Mechanical, for 1 minute

No. 40	92.0
No. 200	90.1
0.02 mm	59.8
0.005 mm	33.2
0.002 mm	25.5
0.001 mm	20.3

Particle Size Distribution

ASTM	Coarse Gravel	Fine Gravel	C. Sand	Medium Sand	Fine Sand	Silt	Clay
	0.0	2.9	4.0	1.1	1.9	56.9	33.2
AASHTO	Gravel		Coarse Sand		Fine Sand	Silt	Clay
	6.9		1.1		1.9	64.6	25.5



Comments \_\_\_\_\_

Reviewed By RJ





ATTERBERG LIMITS

Project  
Source

Bridging KY - 041B00014N  
041B00014N-3, 2.0'-3.5', 5.0'-6.5'

Project No.  
Lab ID  
% + No. 40  
Date Received

178568003  
580  
8  
07-12-2019

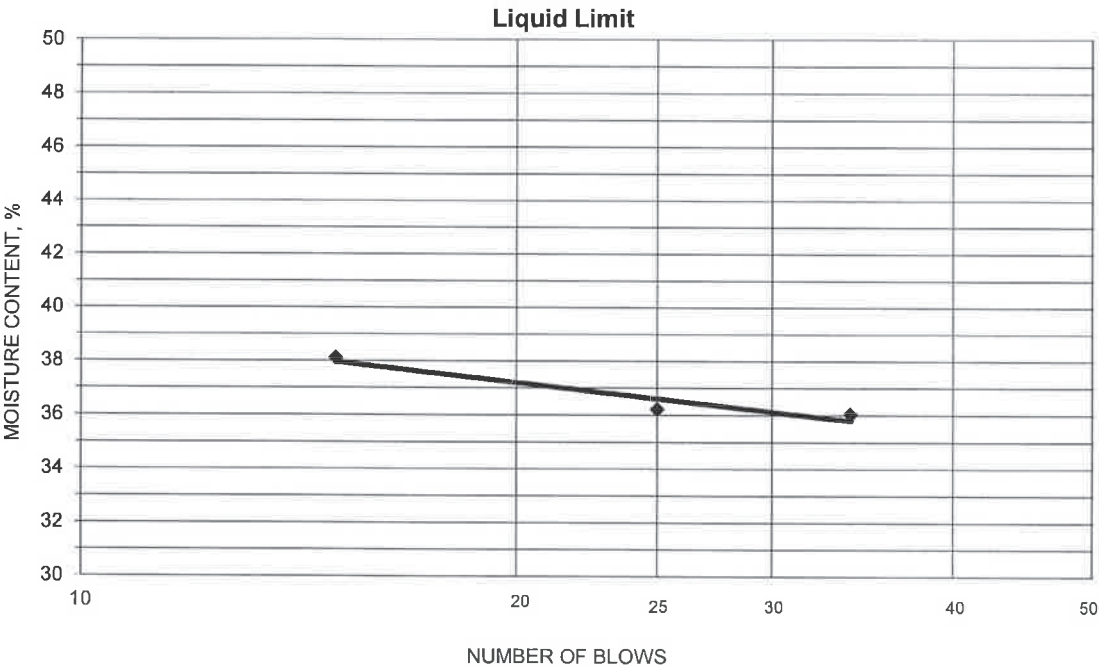
Tested By  
Test Date

KWS  
07-25-2019

Test Method  
Prepared

AASHTO T 89 & T 90  
Dry

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Number of Blows	Water Content (%)	Liquid Limit
18.16	16.14	10.84	15	38.1	37
17.95	16.23	11.48	25	36.2	
18.45	16.54	11.24	34	36.0	



PLASTIC LIMIT AND PLASTICITY INDEX

Wet Soil and Tare Mass (g)	Dry Soil and Tare Mass (g)	Tare Mass (g)	Water Content (%)	Plastic Limit	Plasticity Index
17.89	16.81	11.50	20.3	20	17
17.29	16.20	10.86	20.4		

Remarks:

Reviewed By



Gradation Analysis  
AASHTO T 88

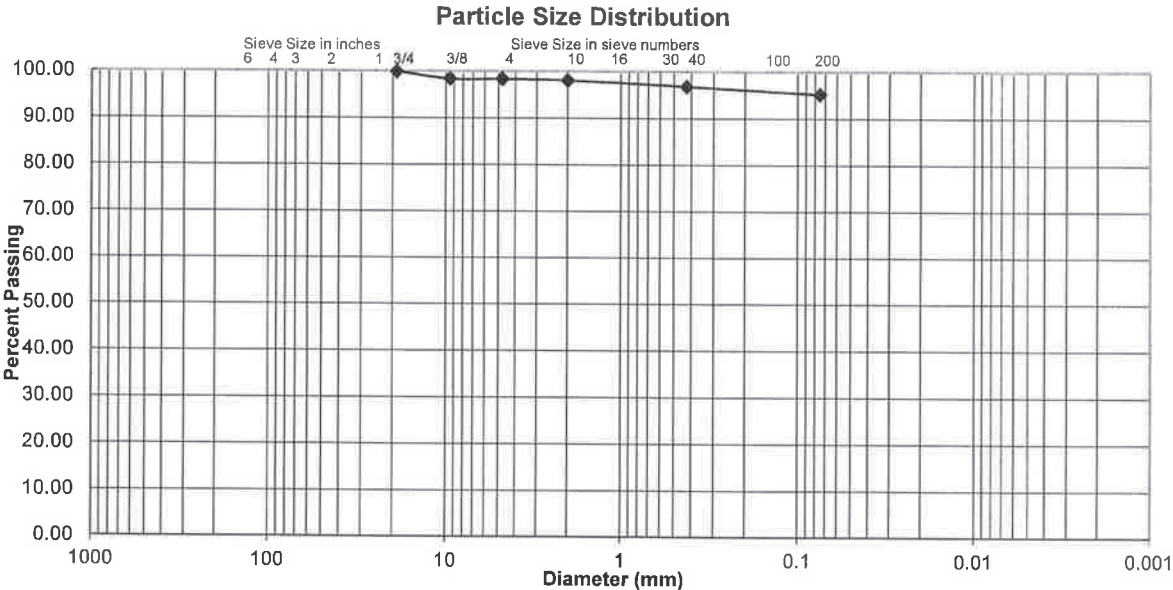
Project Name Bridging KY - 041B00014N  
Source 041B00014N-3, 10.0'-11.5'  
Preparation Method AASHTO T 11 Method A  
Soak Time (min) 270  
Particle Shape Angular  
Particle Hardness Hard and Durable  
Sample Dry Mass (g) 212.54  
Moisture Content (%) 33.2

Project Number 178568003  
Lab ID 583  
Date Received 07-12-2019  
Preparation Date 07-18-2019  
Test Date 07-18-2019

Analysis based on total sample.

Sieve Size	Grams Retained	% Retained	% Passing
3/4"	0.00	0.0	100.0
3/8"	3.29	1.5	98.5
No. 4	0.15	0.1	98.4
No. 10	0.49	0.2	98.2
No. 40	2.63	1.2	96.9
No. 200	3.49	1.6	95.3
Pan	202.49	95.3	---

% Gravel 1.8  
% Sand 2.9  
% Fines 95.3  
Fines Classification N/A  
  
D<sub>10</sub> (mm) N/A  
D<sub>30</sub> (mm) N/A  
D<sub>60</sub> (mm) N/A  
  
Cu N/A  
Cc N/A



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Reviewed By RJ



Gradation Analysis  
AASHTO T 88

Project Name Bridging KY - 041B00014N

Source 041B00014N-3, 15.0'-16.5'

Preparation Method AASHTO T 11 Method A

Soak Time (min) 280

Particle Shape Angular

Particle Hardness Hard and Durable

Sample Dry Mass (g) 170.77

Moisture Content (%) 20.9

Project Number 178568003

Lab ID 584

Date Received 07-12-2019

Preparation Date 07-18-2019

Test Date 07-24-2019

Analysis based on total sample.

Sieve Size	Grams Retained	% Retained	% Passing
1"	0.00	0.0	100.0
3/4"	39.59	23.2	76.8
3/8"	0.00	0.0	76.8
No. 4	9.98	5.8	71.0
No. 10	7.56	4.4	66.5
No. 40	11.74	6.9	59.7
No. 200	7.75	4.5	55.1
Pan	94.15	55.1	---

% Gravel 33.5

% Sand 11.4

% Fines 55.1

Fines Classification N/A

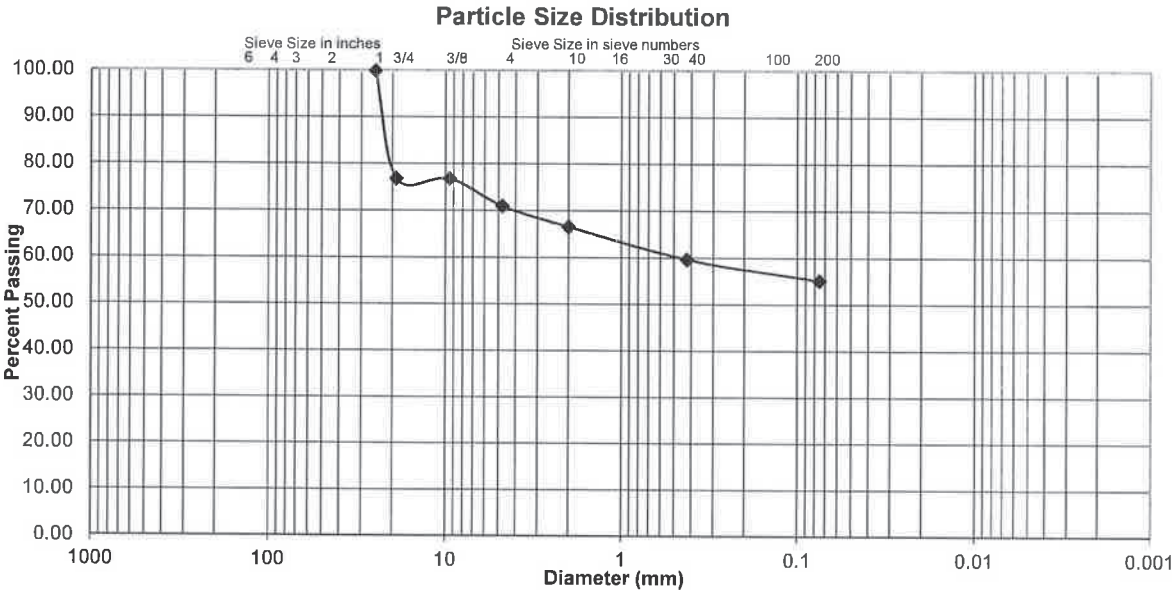
D<sub>10</sub> (mm) N/A

D<sub>30</sub> (mm) N/A

D<sub>60</sub> (mm) N/A

Cu N/A

Cc N/A



Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Reviewed By RJ



Moisture Content of Soil  
AASHTO T 265

Project Name Bridging KY - 041B00014N

Project Number 178568003  
Tested By HE

Test Method AASHTO

Maximum Particle Size in Sample	No. 40	No. 4	1/2"	1"	2"
Recommended Minimum Mass (g)	10	100	300	500	1,000

Material Type: Stratified, Laminated, Lensed, Homogeneous, Disturbed

Source	Lab ID	Date Tested	Material Type	Maximum Particle Size	Material Excluded Amount	Pass Min. Mass? (Y/N)	Can Weight (g)	Wet Soil & Can Weight (g)	Dry Soil & Can Weight (g)	Moisture Content (%)
041B00014N-1, 2.0'-3.5'	574	7/18/19	Dist	No. 4		No	20.66	76.62	65.50	24.8
041B00014N-1, 5.0'-6.5'	575	7/18/19	Dist	1"		No	21.20	79.30	69.94	19.2
041B00014N-2, 2.0'-3.5'	577	7/18/19	Dist	No. 4		No	21.25	81.33	69.91	23.5
041B00014N-2, 5.0'-6.5'	578	7/18/19	Dist	No. 4		No	21.11	72.49	60.55	30.3
041B00014N-2, 10.0'-10.5'	579	7/18/19	Dist	1"		No	285.12	573.92	522.43	21.7
041B00014N-3, 2.0'-3.5'	581	7/18/19	Dist	No. 4		No	20.39	87.94	74.71	24.4
041B00014N-3, 5.0'-6.5'	582	7/18/19	Dist	No. 4		No	21.13	85.47	73.97	21.8
041B00014N-3, 10.0'-11.5'	583	7/18/19	Dist	1"		No	308.61	591.80	521.15	33.2
041B00014N-3, 15.0'-16.5'	584	7/18/19	Dist	1"		No	310.23	516.71	481.00	20.9

Comments

Reviewed By

RJ



**Slake Durability Index**  
KM 64 - 513

Project Name Bridging KY

Project Number 178568003

Lab ID	Source	Depth	Material Description	Fragment Description	Testing Dates	Initial Dry Wt. (g)	Final Dry Wt. (g)	SDI (%)	Jar Slake
556	041B00014N-1	12.0'-12.8'	Shale, light brown, highly weathered	Type II	07/17/2019 - 07/24/2019	469.62	182.78	38.9	1
559	041B00014N-3	20.4'-21.0'	Shale, gray, hard	Type I	07/17/2019 - 07/24/2019	513.19	432.20	84.2	4



**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 24.2'-24.8'

Project Number 178568003  
Lab ID UCR-557  
Date Received 07-12-2019

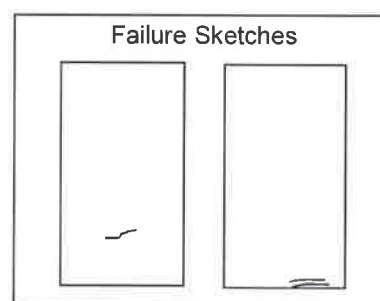
Temperature (°C) 21 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.327</u>	Wet Unit Weight (pcf)	<u>167.2</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.981</u>	Dry Unit Weight (pcf)	<u>141.4</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.083</u>	Moisture Content <sup>1</sup> (%)	<u>18.2</u>
		Height/Diameter Ratio	<u>2.184</u>	Weight (lb)	<u>1.291</u>

Loading Rate (lbf/sec) 59  
Peak Load (lbf) 23020

Failure Type Undetermined

Compressive Strength (psi) 7470  
Compressive Strength (psf) 1075680  
Compressive Strength (tsf) 538



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ



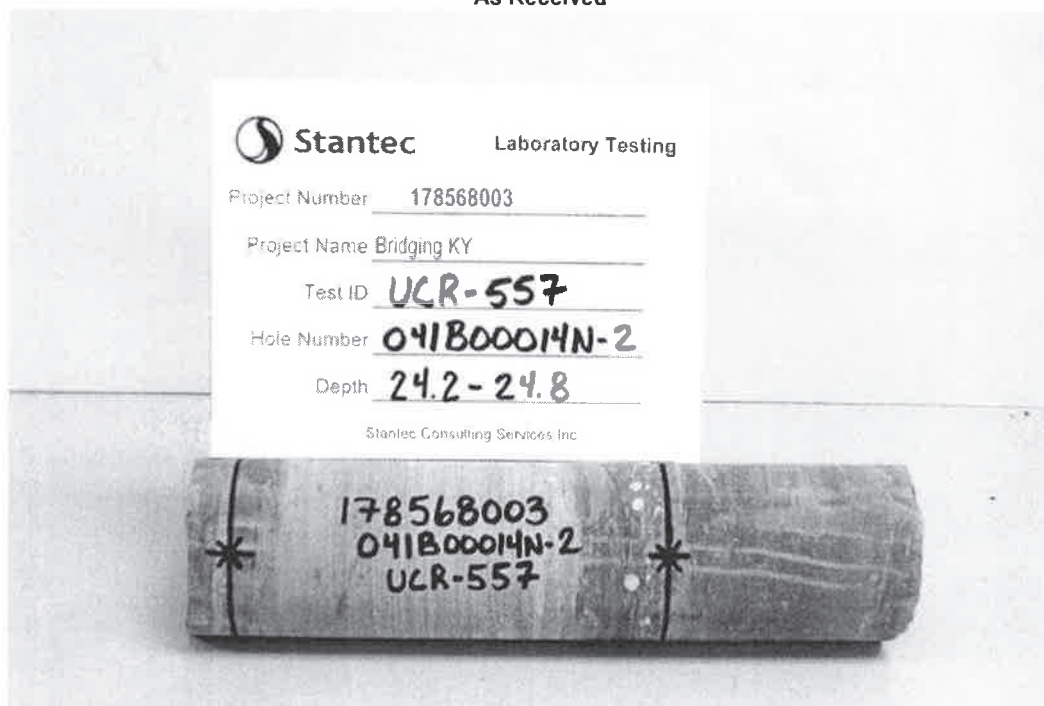


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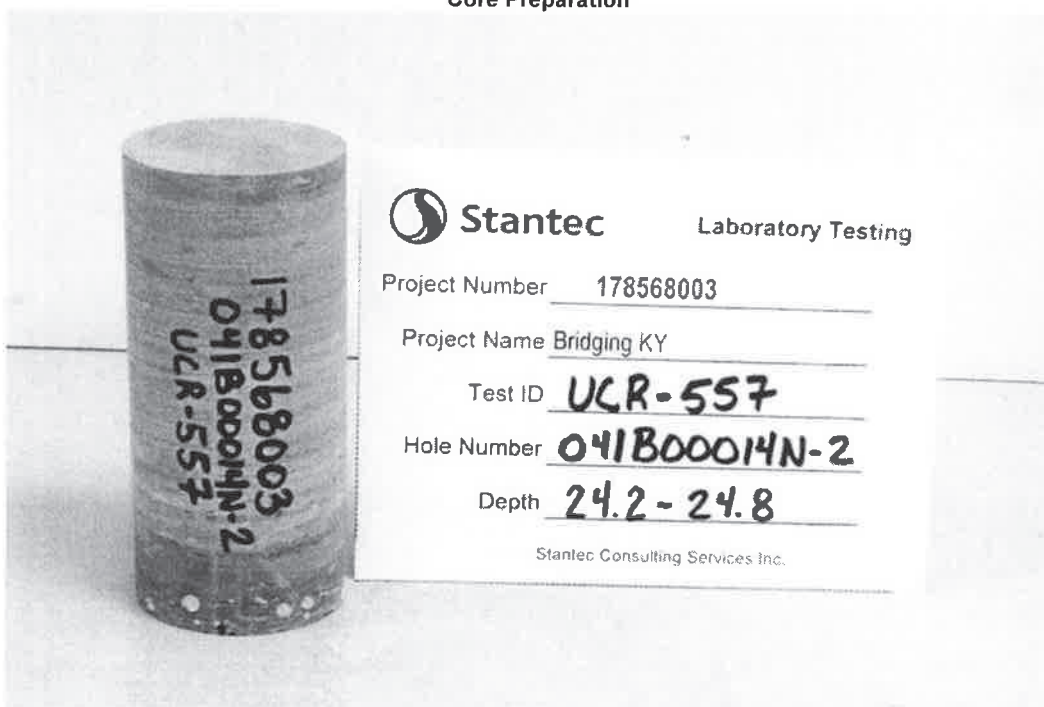
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 24.2'-24.8'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-557

As Received



Core Preparation





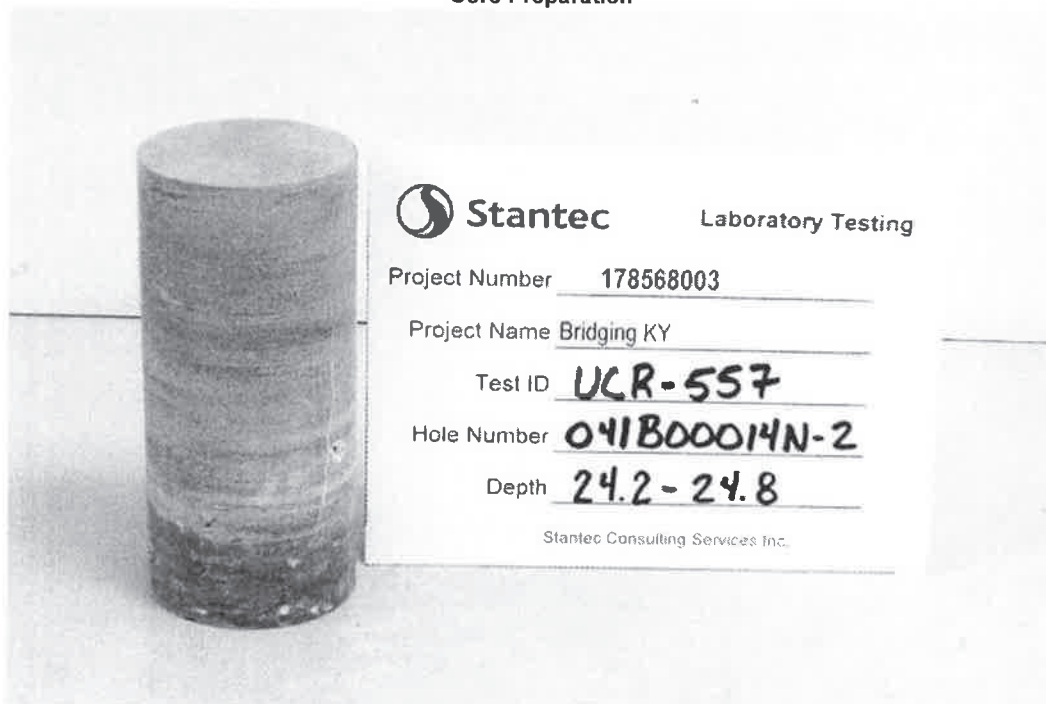


## Photo Report

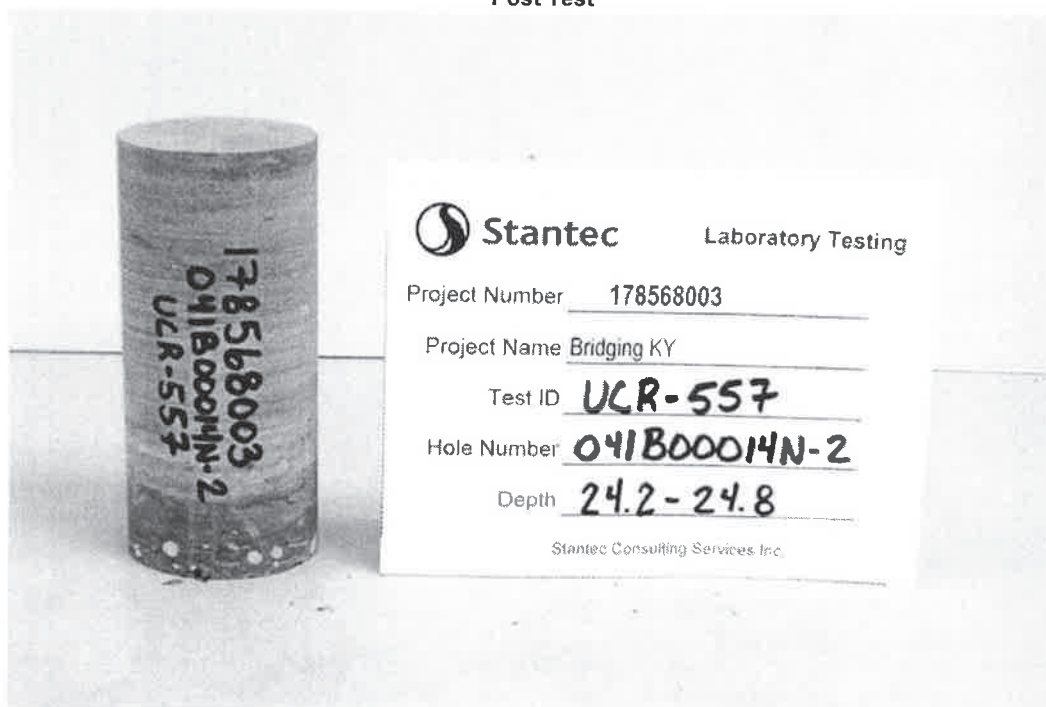
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 24.2'-24.8'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-557

### Core Preparation



### Post Test



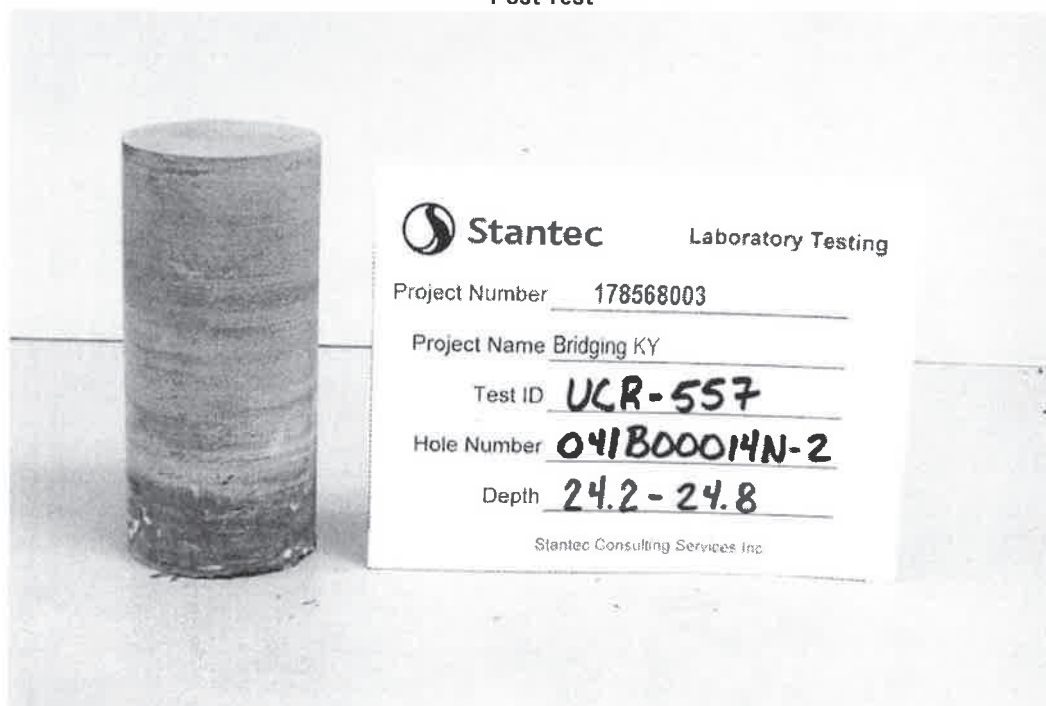


## Photo Report

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 24.2'-24.8'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-557

### Post Test





**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 38.2'-38.9'

Project Number 178568003  
Lab ID UCR-558  
Date Received 07-12-2019

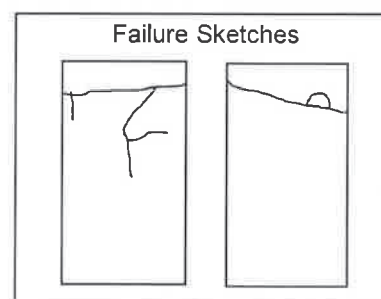
Temperature (°C) 21 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.477</u>	Wet Unit Weight (pcf)	<u>165.8</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.981</u>	Dry Unit Weight (pcf)	<u>139.3</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.081</u>	Moisture Content <sup>1</sup> (%)	<u>19.0</u>
		Height/Diameter Ratio	<u>2.260</u>	Weight (lb)	<u>1.323</u>

Loading Rate (lbf/sec) 49  
Peak Load (lbf) 15349

Failure Type Undetermined

Compressive Strength (psi) 4980  
Compressive Strength (psf) 717120  
Compressive Strength (tsf) 359



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ

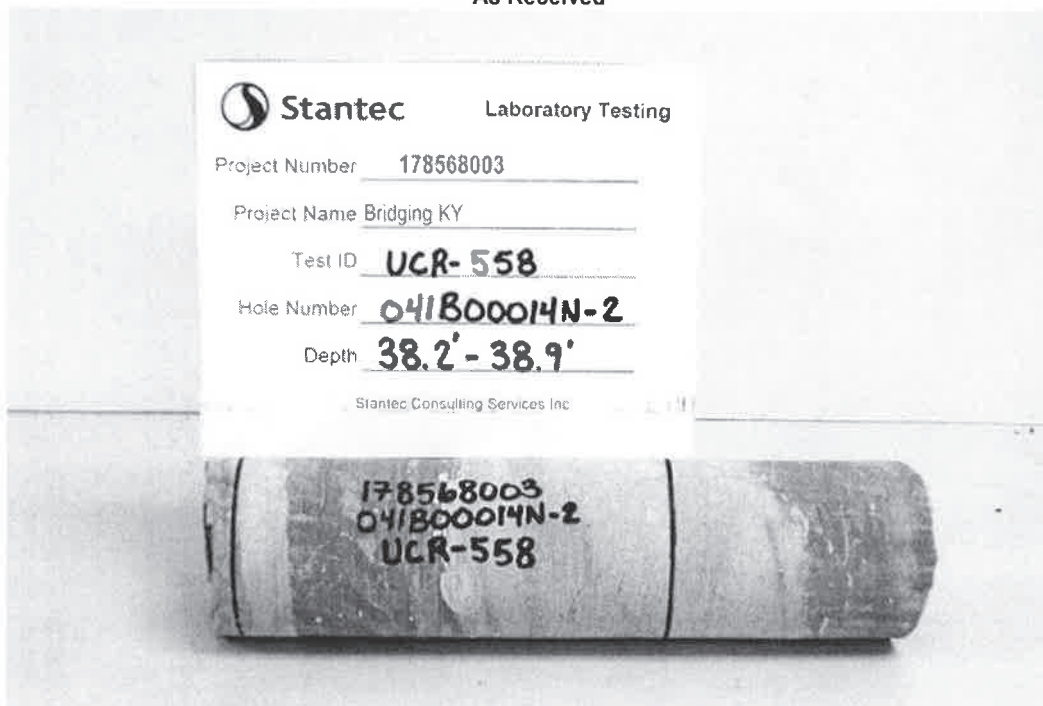


## Photo Report

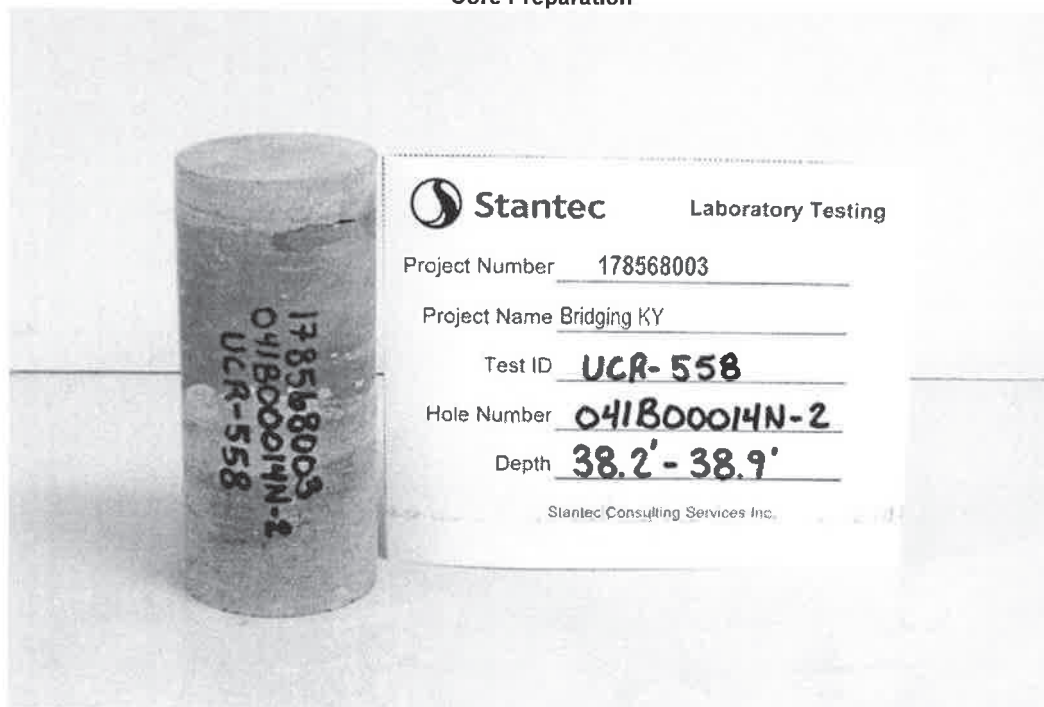
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 38.2'-38.9'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-558

### As Received



### Core Preparation



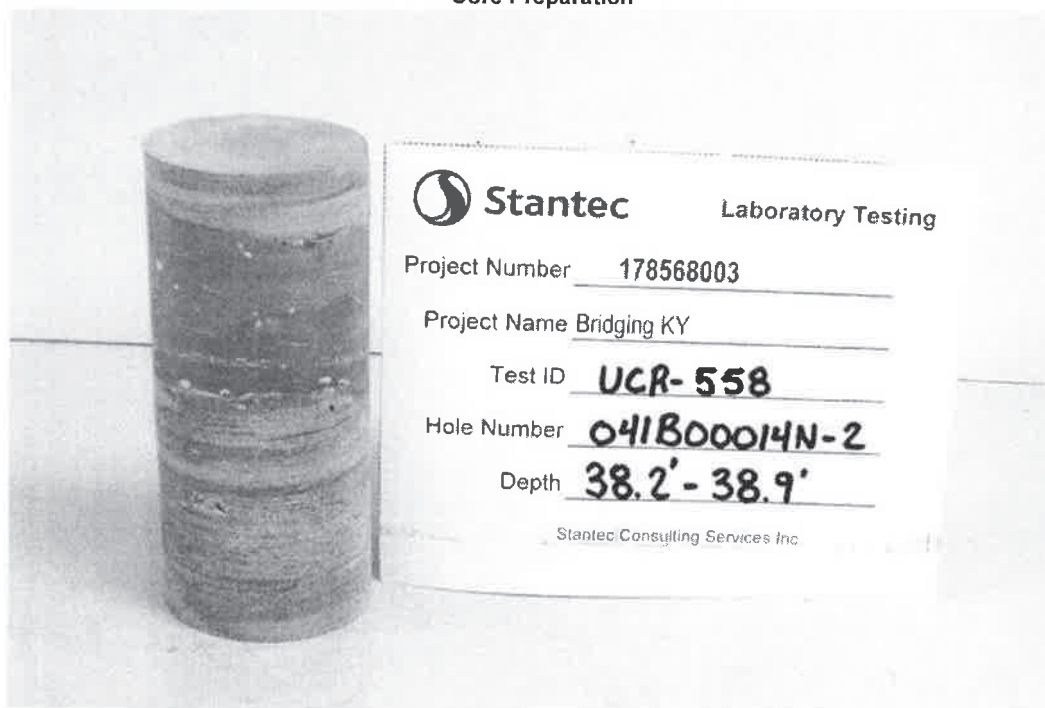


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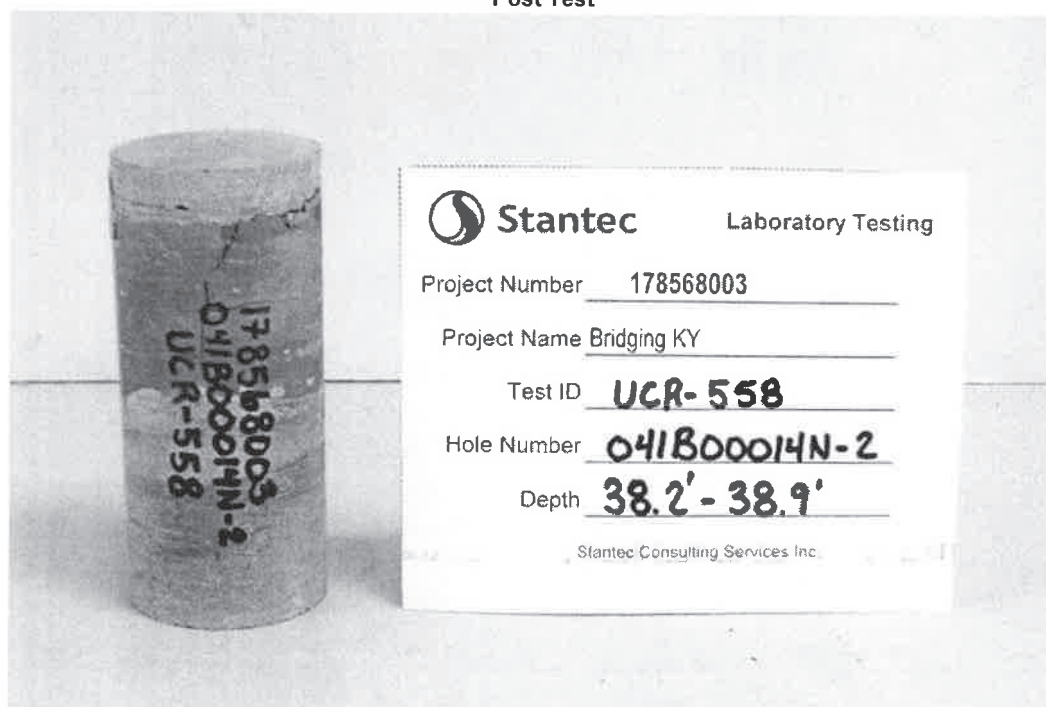
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 38.2'-38.9'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-558

### Core Preparation



### Post Test





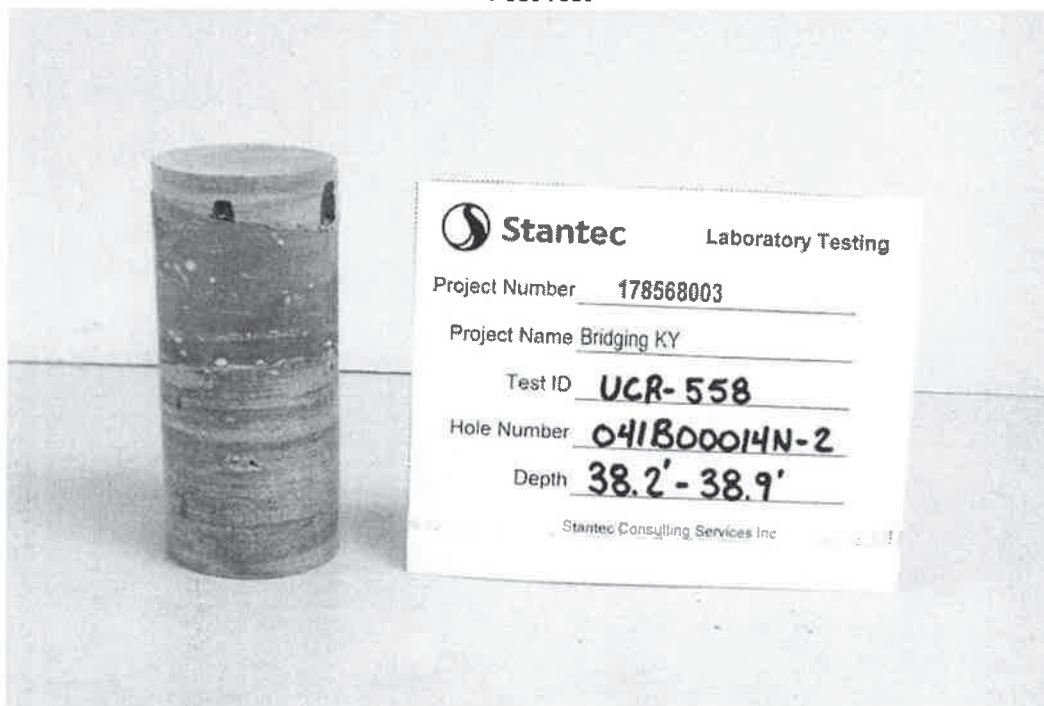


## Photo Report

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-2 Depth (ft) 38.2'-38.9'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-558

### Post Test





**Unconfined Compressive Strength  
Of Intact Rock Core**  
KM 64-523-02

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-3 Depth (ft) 35.0'-35.4'

Project Number 178568003  
Lab ID UCR-560  
Date Received 07-12-2019

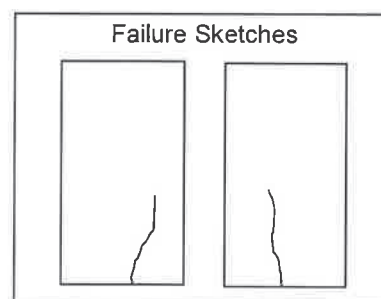
Temperature (°C) 21 Moisture Condition As received, moist Date Tested 07-31-2019

Side Planeness	<u>Pass</u>	Height (in)	<u>4.265</u>	Wet Unit Weight (pcf)	<u>166.5</u>
Perpendicularity	<u>Pass</u>	Diameter (in)	<u>1.982</u>	Dry Unit Weight (pcf)	<u>139.7</u>
End Planeness	<u>Pass</u>	Area (in <sup>2</sup> )	<u>3.086</u>	Moisture Content <sup>1</sup> (%)	<u>19.2</u>
		Height/Diameter Ratio	<u>2.152</u>	Weight (lb)	<u>1.268</u>

Loading Rate (lb/sec) 53  
Peak Load (lb) 21746

Failure Type Undetermined

Compressive Strength (psi) 7050  
Compressive Strength (psf) 1015200  
Compressive Strength (tsf) 507



Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Alternate Compressive Strength Calculation<sup>2</sup>  
(Where Height/Diameter Ratio < 2)

Correction Coefficient N/A

Corrected Compressive Strength (psi) N/A  
Corrected Compressive Strength (psf) N/A  
Corrected Compressive Strength (tsf) N/A

<sup>1</sup> Post testing moisture content determination was performed as per ASTM D 2216, where as much of the whole specimen as available after compression testing was used in moisture content testing. Method B.

<sup>2</sup> The alternate compressive strength calculation is presented when the height to diameter ratio is less than 2, as per KM 64-523-02.

Reviewed By RJ



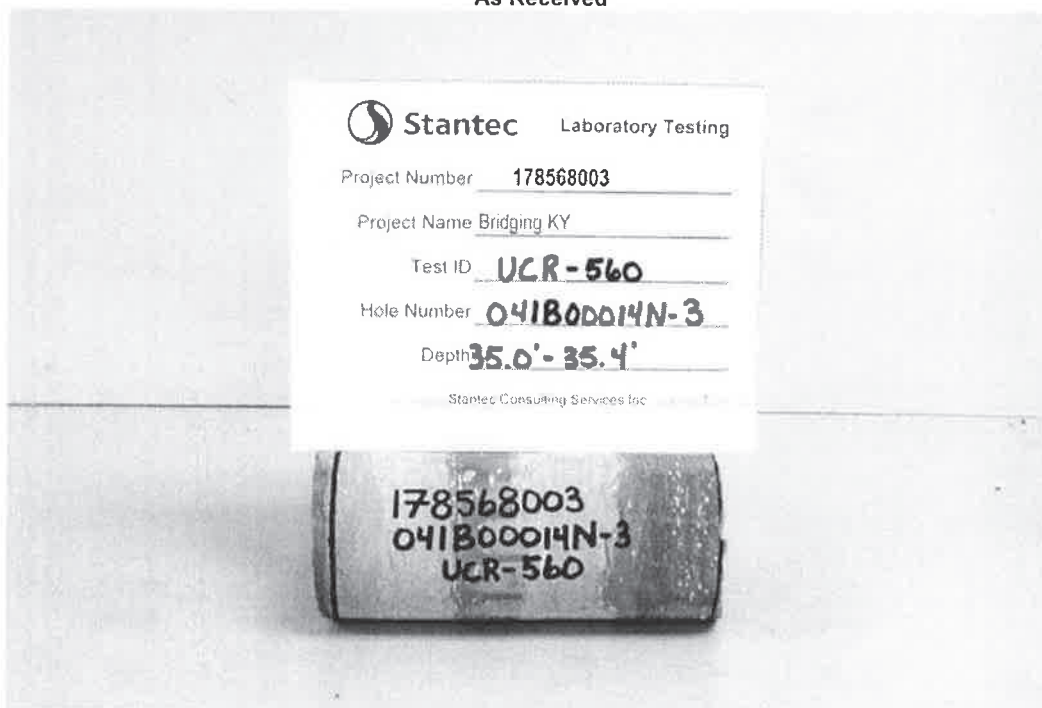


## Photo Report

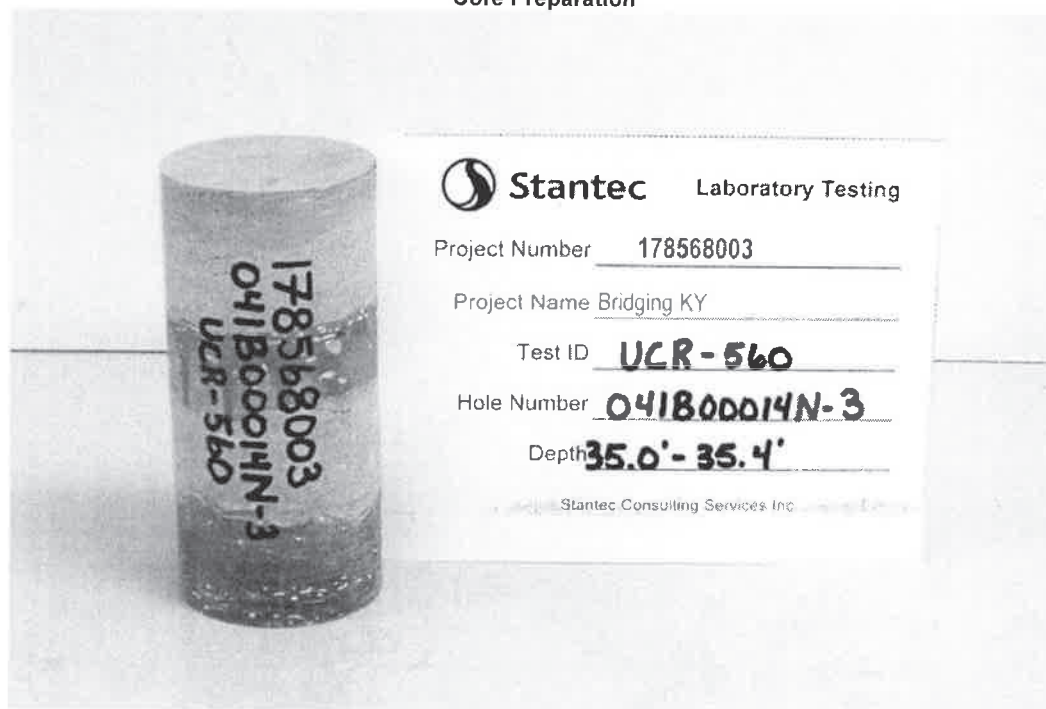
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-3 Depth (ft) 35.0'-35.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-560

### As Received



### Core Preparation



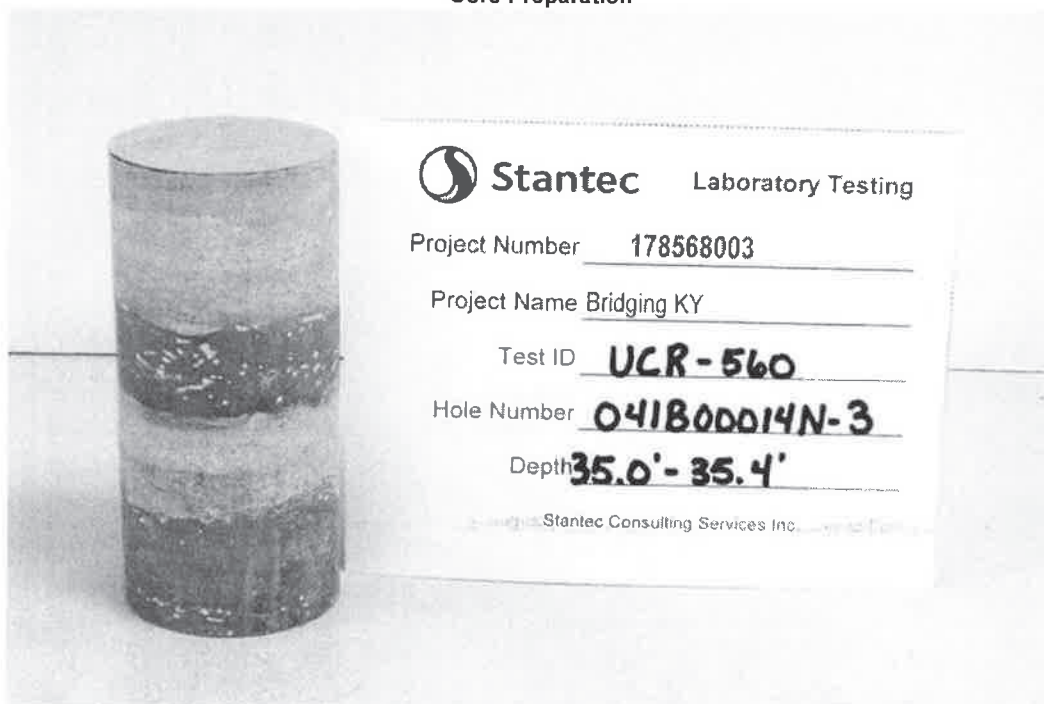


## Photo Report

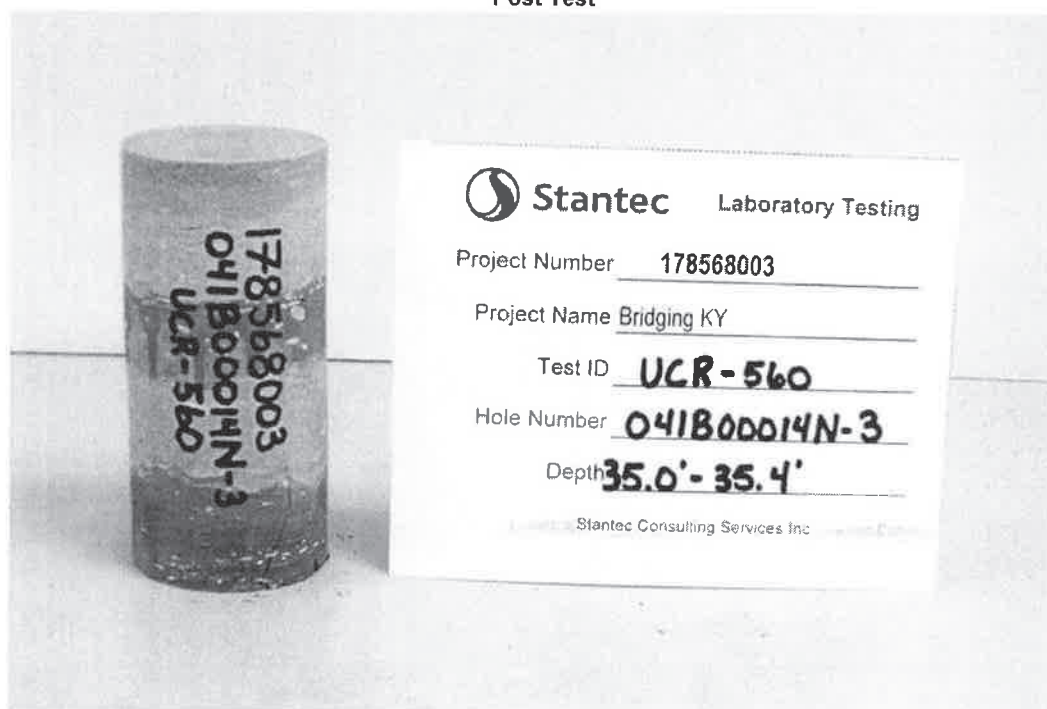
Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-3 Depth (ft) 35.0'-35.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-560

### Core Preparation



### Post Test



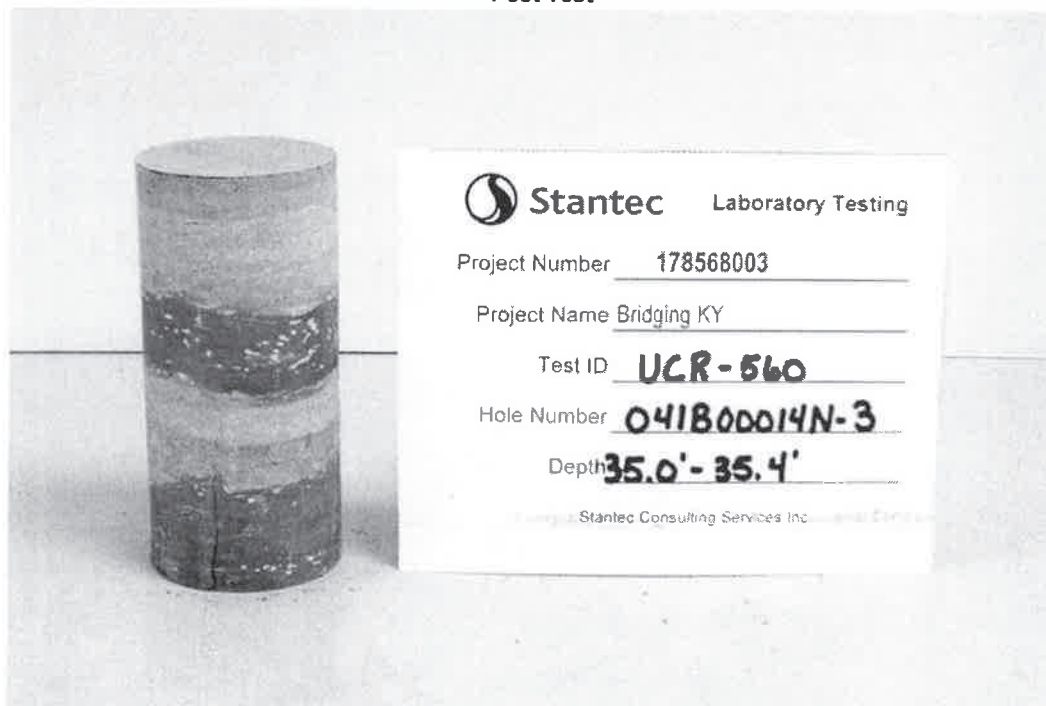


## Photo Report

Project Name Bridging KY - 041B00014N  
Lithology Limestone w/Shale, gray/ dark gray, moderately hard  
Hole Number 041B00014N-3 Depth (ft) 35.0'-35.4'  
Test Type Unconfined compressive strength

Project Number 178568003  
Lab ID UCR-560

### Post Test



**APPENDIX D**  
**DRILLED SHAFT CAPACITY TABLES**

DRILLED SHAFT AXIAL CAPACITY TABLE

Bridge Over Eagle Creek Piers												
8/5/2019												
Shaft Tip Depth Below Top of Rock >>> (ft)	Nominal Unit Side Shear q <sub>ss</sub> (ksf)	Nominal Unit End Bearing q <sub>eb</sub> (ksf)	Nominal Side Resistance R <sub>sr</sub> (kips)	Nominal End Resistance R <sub>eb</sub> (kips)	Total Nominal Axial Capacity* Q <sub>ut</sub> (kips)	Service Limit State		Strength Limit State		Extreme Limit State		
						Total Allowable Bearing Capacity FS = 2 (kips)	Total Allowable Bearing Capacity FS = 3 (kips)	Total Factored Axial Resistance φR <sub>s</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)	Total Factored Axial Resistance φR <sub>s</sub> (kips)	Total Factored Uplift Resistance φR <sub>tu</sub> (kips)	
Top of Rock >>>	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
2.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
3.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
3.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0
4.0	17.6	36.0	194	346	346	173	115	173	39	346	77	77
5.0	17.6	36.0	387	346	387	194	129	213	116	387	232	232
6.0	17.6	36.0	581	346	581	290	194	319	194	581	387	387
7.0	17.6	36.0	774	346	774	387	258	426	271	774	542	542
8.0	17.6	36.0	968	346	968	484	323	532	348	968	697	697
9.0	17.6	36.0	1161	346	1161	581	387	639	426	1161	851	851
10.0	17.6	36.0	1355	346	1355	677	452	745	503	1355	1006	1006
11.0	17.6	36.0	1548	346	1548	774	516	851	581	1548	1161	1161
12.0	17.6	36.0	1742	346	1742	871	581	958	658	1742	1316	1316
13.0	17.6	36.0	1935	346	1935	968	645	1064	735	1935	1471	1471
14.0	17.6	36.0	2129	346	2129	1064	710	1171	813	2129	1626	1626
15.0	17.6	36.0	2322	346	2322	1161	774	1277	890	2322	1780	1780
16.0	17.6	36.0	2516	346	2516	1258	839	1384	968	2516	1935	1935
17.0	17.6	36.0	2709	346	2709	1355	903	1490	1045	2709	2090	2090
18.0	17.6	36.0	2903	346	2903	1451	968	1597	1122	2903	2245	2245
19.0	17.6	36.0	3096	346	3096	1548	1032	1703	1200	3096	2400	2400
20.0	17.6	36.0	3290	346	3290	1645	1097	1809	1277	3290	2554	2554
21.0	17.6	36.0	3483	346	3483	1742	1161	1916	1355	3483	2709	2709
22.0	17.6	36.0	3677	346	3677	1838	1226	2022	1432	3677	2864	2864
23.0	17.6	36.0	3870	346	3870	1935	1290	2129	1509	3870	3019	3019
24.0	17.6	36.0	4064	346	4064	2032	1355	2235	1587	4064	3174	3174
25.0	17.6	36.0	4257	346	4257	2129	1419	2342	1664	4257	3329	3329
26.0	17.6	36.0	4451	346	4451	2226	1484	2448	1742	4451	3483	3483
27.0	17.6	36.0	4645	346	4645	2322	1548	2554	1819	4645	3638	3638
28.0	17.6	36.0	4838	346	4838	2419	1613	2661	1897	4838	3793	3793
29.0	17.6	36.0	5032	346	5032	2516	1677	2767	1974	5032	3948	3948
30.0	17.6	36.0	5225	346	5225	2613	1742	2874	2051	5225	4103	4103
NOTE: * It is assumed that in hard rock both side resistance and end bearing will not develop simultaneously.												
From AASHTO LRFD, current Edition Table 10.5.5.2.4-1						D (ft.) =			Side Resistance in Rock = Tip Resistance in Rock = Uplift Resistance in Rock = Extreme Limit Side & Tip Resistance = Extreme Limit Uplift Resistance =			
									3.5 0.55 0.50 0.40 1.00 0.80			

DRILLED SHAFT AXIAL CAPACITY TABLE

Bridge Over Eagle Creek  
Piers

Drilled Shaft Diameter (ft) = 5 in overburden  
Rock Socket Diameter (in) = 54  
Rock Socket Diameter (ft) = 4.5

Shaft Tip Depth Below Top of Rock >>> (ft)		Nominal Unit Side Shear q <sub>ss</sub> (ksf)	Nominal Unit End Bearing q <sub>eb</sub> (ksf)	Nominal Side Resistance R <sub>sr</sub> (kips)	Nominal End Resistance R <sub>eb</sub> (kips)	Total Nominal Axial Capacity* Q <sub>ut</sub> (kips)	Service Limit State		Strength Limit State		Extreme Limit State	
							Total Allowable Bearing Capacity FS = 2 (kips)	Total Allowable Bearing Capacity FS = 3 (kips)	Total Factored Axial Resistance φR <sub>s</sub> (kips)	Total Factored Uplift Resistance φR <sub>u</sub> (kips)	Total Factored Axial Resistance φR <sub>s</sub> (kips)	Total Factored Uplift Resistance φR <sub>u</sub> (kips)
Top of Rock >>>  Upper 1 D is ignored for shaft capacity	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	2.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	3.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	4.0	0.0	0.0	0	0	0	0	0	0	0	0	0
	4.5	0.0	0.0	0	0	0	0	0	0	0	0	0
	5.0	17.6	36.0	249	573	573	286	191	286	50	573	100
	6.0	17.6	36.0	498	573	573	286	191	286	149	573	299
	7.0	17.6	36.0	746	573	746	373	249	411	249	746	498
	8.0	17.6	36.0	995	573	995	498	332	547	348	995	697
	9.0	17.6	36.0	1244	573	1244	622	415	684	448	1244	896
	10.0	17.6	36.0	1493	573	1493	746	498	821	547	1493	1095
	11.0	17.6	36.0	1742	573	1742	871	581	958	647	1742	1294
	12.0	17.6	36.0	1991	573	1991	995	664	1095	746	1991	1493
	13.0	17.6	36.0	2239	573	2239	1120	746	1232	846	2239	1692
	14.0	17.6	36.0	2488	573	2488	1244	829	1368	945	2488	1891
	15.0	17.6	36.0	2737	573	2737	1368	912	1505	1045	2737	2090
	16.0	17.6	36.0	2986	573	2986	1493	995	1642	1145	2986	2289
	17.0	17.6	36.0	3235	573	3235	1617	1078	1779	1244	3235	2488
	18.0	17.6	36.0	3483	573	3483	1742	1161	1916	1344	3483	2687
	19.0	17.6	36.0	3732	573	3732	1866	1244	2053	1443	3732	2886
	20.0	17.6	36.0	3981	573	3981	1991	1327	2190	1543	3981	3085
	21.0	17.6	36.0	4230	573	4230	2115	1410	2326	1642	4230	3284
	22.0	17.6	36.0	4479	573	4479	2239	1493	2463	1742	4479	3483
	23.0	17.6	36.0	4727	573	4727	2364	1576	2600	1841	4727	3682
	24.0	17.6	36.0	4976	573	4976	2488	1659	2737	1941	4976	3882
	25.0	17.6	36.0	5225	573	5225	2613	1742	2874	2040	5225	4081
	26.0	17.6	36.0	5474	573	5474	2737	1825	3011	2140	5474	4280
	27.0	17.6	36.0	5723	573	5723	2861	1908	3147	2239	5723	4479
	28.0	17.6	36.0	5972	573	5972	2986	1991	3284	2339	5972	4678
	29.0	17.6	36.0	6220	573	6220	3110	2073	3421	2438	6220	4877
	30.0	17.6	36.0	6469	573	6469	3235	2156	3558	2538	6469	5076
NOTE: * It is assumed that in hard rock both side resistance and end bearing will not develop simultaneously.		From AASHTO LRFD, current Edition Table 10.5.5.2.4-1					D (ft.) =		Side Resistance in Rock = Tip Resistance in Rock = Uplift Resistance in Rock = Extreme Limit Side & Tip Resistance = Extreme Limit Uplift Resistance =			
									4.5 0.55 0.50 1.00 0.80			

# **APPENDIX E**

## **IDEALIZED SOIL PROFILES**



GENERAL SOIL AND BEDROCK PROFILE LEGEND SHEET

Bridge over Eagle Creek

SUMMARY OF PARAMETERS DEVELOPED FOR SOIL PROFILES

Parameter	Units	Description
$\gamma_t$	lb/ft <sup>3</sup>	Total Unit Weight
$\gamma_e$	lb/ft <sup>3</sup>	Effective Unit Weight
$q_u$	lb/ft <sup>2</sup>	Unconfined Compressive Strength (soil)
$q_u$	ton/ft <sup>2</sup>	Unconfined Compressive Strength (rock)
$C_u$	lb/ft <sup>2</sup>	Undrained Shear Strength
RQD	%	Rock Quality Designation
$\phi$	( ° )	Angle of Internal Friction
$c$	lb/ft <sup>2</sup>	Effective stress cohesion
$K_s$	lb/in <sup>3</sup>	Soil Secant Modulus - Static (computer program LPILE2016)
$E_m$	ksi	Rock Modulus
$\nu$		Poisson's Ratio
GSI		Geological Strength Index

GENERAL SOIL AND BEDROCK PROFILE

Bridge over Eagle Creek  
End Bent  
Based on Boring 041B00014N-1

Approximate		Description	
Elevation	Depth	STRATA	
(ft)	(ft)	Description	Parameters
		(USCS Classification)	
632.0	0.0	Lean Clay	$\gamma_t \text{ (lb/ft}^3\text{)} = 120$
		(CL)	$C_u \text{ (lb/ft}^2\text{)} = 1250$
			$K_s \text{ (lb/in}^3\text{)} = 100$
			$E_{50} = 0.010$
624.0	8.0	Top of Rock	
		Limestone and Shale	$\gamma_t \text{ (lb/ft}^3\text{)} = 160$
			$GSI = 35$
			$q_u \text{ (ton/ft}^2\text{)} = 73$
			$\nu = 0.09$
610.0	22.0		$RQD = 18$
		Bottom of Hole	

GENERAL SOIL AND BEDROCK PROFILE

Bridge over Eagle Creek  
Piers  
Based on Borings 041B00014N-2 & 041B00014N-3

Approximate		Description	
Elevation	Depth	STRATA	
(ft)	(ft)	Description	Parameters
		(USCS Classification)	
613.4 - 614.8	0.0	Lean Clay w/ Gravel	$\gamma_t$ (lb/ft <sup>3</sup> ) = 120
		(CL)	$C_u$ (lb/ft <sup>2</sup> ) = 500
			$K_S$ (lb/in <sup>3</sup> ) = 30
			$E_{50}$ = 0.020
598.8 - 602.9	10.5 - 16.0	Top of Rock	
		Limestone and Shale	$\gamma_t$ (lb/ft <sup>3</sup> ) = 160
			$GSI$ = 35
564.3 - 571.9	41.5 - 50.5		$q_u$ (ton/ft <sup>2</sup> ) = 73
			$\nu$ = 0.09
			$RQD$ = 18
		Bottom of Hole	

MATERIAL SUMMARY

CONTRACT ID: 195152

041GR19D067-STP&HSIP

0604100221901

TAFT HIGHWAY (KY 22) FROM KY 36 EXTENDING EAST TO 0.108 MILE EAST OF NEW DEL DRIVE ASPHALT PAVEMENT & ROADWAY REHAB, A DISTANCE OF 4.87 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0005	00001	DGA BASE	320.00	TON
0010	00080	CRUSHED AGGREGATE SIZE NO 23	1,515.00	TON
0015	00100	ASPHALT SEAL AGGREGATE	30.00	TON
0020	00103	ASPHALT SEAL COAT	3.90	TON
0025	00190	LEVELING & WEDGING PG64-22	784.00	TON
0030	00212	CL2 ASPH BASE 1.00D PG64-22	1,923.00	TON
0035	00356	ASPHALT MATERIAL FOR TACK	22.00	TON
0040	02677	ASPHALT PAVE MILLING & TEXTURING	2,657.00	TON
0045	02697	EDGE LINE RUMBLE STRIPS	38,084.00	LF
0050	20748ED	SHOULDER MILLING/TRENCHING	54.00	SQYD
0055	24785EC	FIBER REINFORCEMENT FOR HMA	1,842.00	TON
0060	24685EC	CL2 ASPH SURF 0.38A PG64-22	2,725.00	TON
0065	00078	CRUSHED AGGREGATE SIZE NO 2	1,030.00	TON
0070	01000	PERFORATED PIPE-4 IN	626.00	LF
0075	01010	NON-PERFORATED PIPE-4 IN	125.00	LF
0080	01028	PERF PIPE HEADWALL TY 3-4 IN	5.00	EACH
0085	01381	METAL END SECTION TY 2-18 IN	2.00	EACH
0090	01691	FLUME INLET TYPE 2	1.00	EACH
0095	01811	STANDARD CURB AND GUTTER MOD	250.00	LF
0100	01987	DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	55.00	EACH
0105	02159	TEMP DITCH	12,862.00	LF
0110	02160	CLEAN TEMP DITCH	6,431.00	LF
0115	02230	EMBANKMENT IN PLACE	235.00	CUYD
0120	02237	DITCHING	20.00	LF
0125	02360	GUARDRAIL TERMINAL SECTION NO 1	3.00	EACH
0130	02367	GUARDRAIL END TREATMENT TYPE 1	9.00	EACH
0135	02373	GUARDRAIL END TREATMENT TYPE 3	2.00	EACH
0140	02381	REMOVE GUARDRAIL	2,475.00	LF
0145	02391	GUARDRAIL END TREATMENT TYPE 4A	2.00	EACH
0150	02483	CHANNEL LINING CLASS II	170.00	TON
0155	02562	TEMPORARY SIGNS	190.00	SQFT
0160	02575	DITCHING AND SHOULDERING	4,695.00	LF
0165	02599	FABRIC-GEOTEXTILE TYPE IV	1,485.00	SQYD
0170	02650	MAINTAIN & CONTROL TRAFFIC - GRANT KY 22 HSIP	1.00	LS
0175	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0180	02676	MOBILIZATION FOR MILL & TEXT - GRANT KY 22 HSIP	1.00	LS
0185	02701	TEMP SILT FENCE	12,862.00	LF
0190	02703	SILT TRAP TYPE A	8.00	EACH
0195	02704	SILT TRAP TYPE B	8.00	EACH
0200	02705	SILT TRAP TYPE C	8.00	EACH
0205	02706	CLEAN SILT TRAP TYPE A	8.00	EACH
0210	02707	CLEAN SILT TRAP TYPE B	8.00	EACH
0215	02708	CLEAN SILT TRAP TYPE C	8.00	EACH

MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0220	02726	STAKING - GRANT KY 22 HSIP	1.00	LS
0225	04933	TEMP SIGNAL 2 PHASE	1.00	EACH
0230	05950	EROSION CONTROL BLANKET	1,000.00	SQYD
0235	05952	TEMP MULCH	25,321.00	SQYD
0240	05953	TEMP SEEDING AND PROTECTION	18,991.00	SQYD
0245	05963	INITIAL FERTILIZER	.25	TON
0250	05964	MAINTENANCE FERTILIZER	.42	TON
0255	05985	SEEDING AND PROTECTION	7,982.00	SQYD
0260	05989	SPECIAL SEEDING CROWN VETCH	500.00	SQYD
0265	05992	AGRICULTURAL LIMESTONE	5.00	TON
0270	06511	PAVE STRIPING-TEMP PAINT-6 IN	63,144.00	LF
0275	24995EC	PAVE STRIPING-SPRAY THERMO-6 IN W	51,248.00	LF
0280	24996EC	PAVE STRIPING-SPRAY THERMO-6 IN Y	41,061.00	LF
0285	08100	CONCRETE-CLASS A	8.70	CUYD
0290	10020NS	FUEL ADJUSTMENT	8,455.00	DOLL
0295	10030NS	ASPHALT ADJUSTMENT	21,237.00	DOLL
0300	20191ED	OBJECT MARKER TY 3	11.00	EACH
0305	20603ED	SOIL NAIL WALL	4,630.00	SQFT
0310	21134ND	REMOVE-STORE AND REINSTALL SIGN	28.00	EACH
0315	21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)	2,848.00	LF
0320	24894EC	REMOVE - (RAILROAD RAIL ABOVE ANY GROUNDLINE BY TORCH CUTTING)	26.00	EACH
0325	00440	ENTRANCE PIPE-15 IN	334.00	LF
0330	00461	CULVERT PIPE-15 IN	16.00	LF
0335	00462	CULVERT PIPE-18 IN	210.00	LF
0340	00464	CULVERT PIPE-24 IN	90.00	LF
0345	01204	PIPE CULVERT HEADWALL-18 IN	1.00	EACH
0350	01208	PIPE CULVERT HEADWALL-24 IN	2.00	EACH
0355	01310	REMOVE PIPE	201.00	LF
0360	01490	DROP BOX INLET TYPE 1	2.00	EACH
0365	01728	SAFETY BOX INLET-18 IN DBL SDB-5	5.00	EACH
0370	02625	REMOVE HEADWALL	11.00	EACH
0375	03262	CLEAN PIPE STRUCTURE	2.00	EACH
0380	21819NN	FITTINGS - (15" RCP TO PROPOSED 15" CULVERT PIPE)	2.00	EACH
0385	21819NN	FITTINGS - (18" RCP TO PROPOSED 18" CULVERT PIPE)	8.00	EACH
0390	21819NN	FITTINGS - (24" RCP TO PROPOSED 24" CULVERT PIPE)	3.00	EACH
0395	22938ND	SAFETY BOX INLET-15 IN	1.00	EACH
0400	24575ES610	HEADWALL - (SLOPED & MITERED CONCRETE - 15")	1.00	EACH
0405	24575ES610	HEADWALL - (SLOPED & MITERED CONCRETE - 24")	3.00	EACH
0410	06406	SBM ALUM SHEET SIGNS .080 IN	128.00	SQFT
0415	06407	SBM ALUM SHEET SIGNS .125 IN	7.00	SQFT
0420	06410	STEEL POST TYPE 1	369.00	LF
0425	21373ND	REMOVE SIGN	33.00	EACH
0430	24631EC	BARCODE SIGN INVENTORY	24.00	EACH
0435	02569	DEMOBILIZATION	1.00	LS
0440	22978EN	ROADWAY EXCAVATION-SPECIAL	495.00	CUYD

MATERIAL SUMMARY

CONTRACT ID: 195152

041GR19D067-STP&HSIP

BR04100221985

KY 22 ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER RATTLESNAKE CREEK (041B00013N) BRIDGE REPLACEMENT, A DISTANCE OF .04 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0685	01891	ISLAND HEADER CURB TYPE 2	50.00	LF
0690	01987	DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	10.00	EACH
0695	01990	DELINEATOR FOR BARRIER WALL-B/W	8.00	EACH
0700	02223	GRANULAR EMBANKMENT	50.00	CUYD
0705	02351	GUARDRAIL-STEEL W BEAM-S FACE	472.00	LF
0710	02363	GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH
0715	02367	GUARDRAIL END TREATMENT TYPE 1	4.00	EACH
0720	02545	CLEARING AND GRUBBING - Less than 1 acre	1.00	LS
0725	02650	MAINTAIN & CONTROL TRAFFIC	1.00	LS
0730	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0735	02726	STAKING	1.00	LS
0740	02731	REMOVE STRUCTURE	1.00	LS
0745	03299	ARMORED EDGE FOR CONCRETE	56.00	LF
0750	03304	BRIDGE OVERLAY APPROACH PAVEMENT	222.00	SQYD
0755	08002	STRUCTURE EXCAV-SOLID ROCK	67.50	CUYD
0760	08003	FOUNDATION PREPARATION	1.00	LS
0765	08019	CYCLOPEAN STONE RIP RAP	816.00	TON
0770	08033	TEST PILES	50.00	LF
0775	08039	PRE-DRILLING FOR PILES	100.00	LF
0780	08046	PILES-STEEL HP12X53	245.00	LF
0785	08094	PILE POINTS-12 IN	10.00	EACH
0790	08100	CONCRETE-CLASS A	198.00	CUYD
0795	08104	CONCRETE-CLASS AA	79.00	CUYD
0800	08150	STEEL REINFORCEMENT	14,992.80	LB
0805	08151	STEEL REINFORCEMENT-EPOXY COATED	22,354.80	LB
0810	08663	PRECAST PC BOX BEAM CB21-48	1,176.00	LF
0815	21415ND	EROSION CONTROL	1.00	LS
0820	21532ED	RAIL SYSTEM TYPE III	336.00	LF
0825	23378EC	CONCRETE SEALING	9,770.00	SQFT
0830	02568	MOBILIZATION	1.00	LS
0835	02569	DEMOBILIZATION	1.00	LS

MATERIAL SUMMARY

CONTRACT ID: 195152

041GR19D067-STP&HSIP

BR04100221986

KY 22 ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER EAGLE CREEK (041B00014N) BRIDGE REPLACEMENT, A DISTANCE OF .06 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0840	01891	ISLAND HEADER CURB TYPE 2	88.00	LF
0845	01987	DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	14.00	EACH
0850	01990	DELINEATOR FOR BARRIER WALL-B/W	18.00	EACH
0855	02223	GRANULAR EMBANKMENT	184.00	CUYD
0860	02351	GUARDRAIL-STEEL W BEAM-S FACE	631.00	LF
0865	02363	GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH
0870	02367	GUARDRAIL END TREATMENT TYPE 1	4.00	EACH
0875	02545	CLEARING AND GRUBBING - Less than 1 acre	1.00	LS
0880	02650	MAINTAIN & CONTROL TRAFFIC	1.00	LS
0885	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0890	02726	STAKING	1.00	LS
0895	02731	REMOVE STRUCTURE	1.00	LS
0900	03299	ARMORED EDGE FOR CONCRETE	63.00	LF
0905	03304	BRIDGE OVERLAY APPROACH PAVEMENT	1,274.00	SQYD
0910	08002	STRUCTURE EXCAV-SOLID ROCK	76.00	CUYD
0915	08003	FOUNDATION PREPARATION	1.00	LS
0920	08019	CYCLOPEAN STONE RIP RAP	395.00	TON
0925	08033	TEST PILES	45.00	LF
0930	08039	PRE-DRILLING FOR PILES	120.00	LF
0935	08046	PILES-STEEL HP12X53	223.00	LF
0940	08094	PILE POINTS-12 IN	12.00	EACH
0945	08100	CONCRETE-CLASS A	255.90	CUYD
0950	08104	CONCRETE-CLASS AA	287.00	CUYD
0955	08150	STEEL REINFORCEMENT	17,799.70	LB
0960	08151	STEEL REINFORCEMENT-EPOXY COATED	84,136.40	LB
0965	08160	STRUCTURAL STEEL - approx. 10,000 lbs	1.00	LS
0970	08634	PRECAST PC I BEAM TYPE 4	1,334.00	LF
0975	21415ND	EROSION CONTROL	1.00	LS
0980	21532ED	RAIL SYSTEM TYPE III	667.00	LF
0985	23378EC	CONCRETE SEALING	15,614.00	SQFT
0990	02568	MOBILIZATION	1.00	LS
0995	02569	DEMOBILIZATION	1.00	LS

CONTRACT ID: 195152

041GR19D067-STP&HSIP

BR04100221987

KY 22 ADDRESS DEFICIENCIES OF KY-22 BRIDGE OVER CLARKS CRK + BATON ROUGE R. (041B00011N), FROM MP 6.594 TO MP 6.64 BRIDGE REPLACEMENT, A DISTANCE OF .05 MILES.

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0445	00001	DGA BASE	57.00	TON

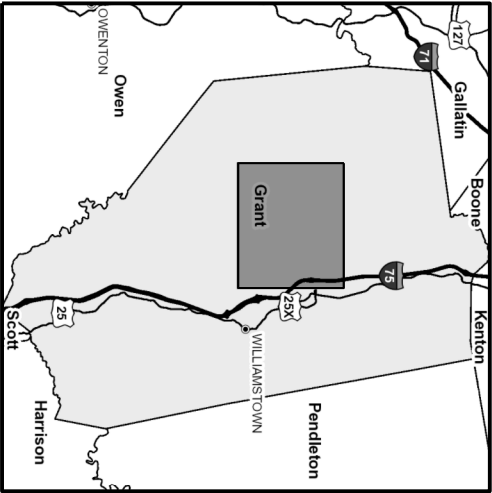
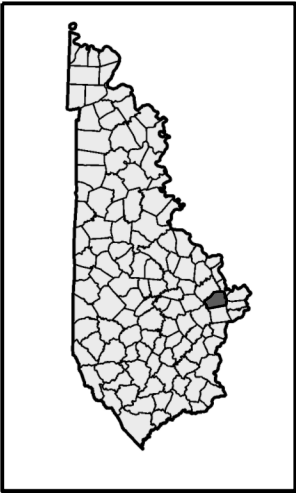


MATERIAL SUMMARY

Project Line No	Bid Code	DESCRIPTION	Quantity	Unit
0450	00190	LEVELING & WEDGING PG64-22	42.00	TON
0455	00212	CL2 ASPH BASE 1.00D PG64-22	34.00	TON
0460	00301	CL2 ASPH SURF 0.38D PG64-22	98.00	TON
0465	00439	ENTRANCE PIPE-12 IN	38.00	LF
0470	00441	ENTRANCE PIPE-18 IN	51.00	LF
0475	01550	DROP BOX INLET TYPE 12A	27.00	LF
0480	01691	FLUME INLET TYPE 2	1.00	EACH
0485	01891	ISLAND HEADER CURB TYPE 2	100.00	LF
0490	01987	DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	30.00	EACH
0495	02223	GRANULAR EMBANKMENT	326.00	CUYD
0500	02351	GUARDRAIL-STEEL W BEAM-S FACE	475.00	LF
0505	02360	GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH
0510	02363	GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH
0515	02367	GUARDRAIL END TREATMENT TYPE 1	2.00	EACH
0520	02371	GUARDRAIL END TREATMENT TYPE 7	2.00	EACH
0525	02381	REMOVE GUARDRAIL	403.00	LF
0530	02399	EXTRA LENGTH GUARDRAIL POST	40.00	EACH
0535	02483	CHANNEL LINING CLASS II	110.00	TON
0540	02545	CLEARING AND GRUBBING - Less than 1 acre	1.00	LS
0545	02602	FABRIC-GEOTEXTILE CLASS 1	169.00	SQYD
0550	02650	MAINTAIN & CONTROL TRAFFIC	1.00	LS
0555	02671	PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH
0560	02726	STAKING	1.00	LS
0565	02731	REMOVE STRUCTURE	1.00	LS
0570	03299	ARMORED EDGE FOR CONCRETE	66.00	LF
0575	03304	BRIDGE OVERLAY APPROACH PAVEMENT	186.00	SQYD
0580	08003	FOUNDATION PREPARATION	1.00	LS
0585	08019	CYCLOPEAN STONE RIP RAP	744.00	TON
0590	08033	TEST PILES	85.00	LF
0595	08039	PRE-DRILLING FOR PILES	60.00	LF
0600	08046	PILES-STEEL HP12X53	360.00	LF
0605	08094	PILE POINTS-12 IN	12.00	EACH
0610	08100	CONCRETE-CLASS A	232.50	CUYD
0615	08104	CONCRETE-CLASS AA	283.80	CUYD
0620	08151	STEEL REINFORCEMENT-EPOXY COATED	146,770.00	LB
0625	08633	PRECAST PC I BEAM TYPE 3	1,020.00	LF
0630	20743ED	DRILLED SHAFT 54 IN-SOLID ROCK	90.00	LF
0635	20744ED	DRILLED SHAFT 60 IN-COMMON	65.00	LF
0640	20745ED	ROCK SOUNDINGS	80.00	LF
0645	20746ED	ROCK CORINGS	171.00	LF
0650	21415ND	EROSION CONTROL	1.00	LS
0655	21532ED	RAIL SYSTEM TYPE III	518.00	LF
0660	23378EC	CONCRETE SEALING	15,600.00	SQFT
0665	23813EC	DECK DRAIN	3.00	EACH
0670	24731EC	REMOVE AND RESET - 1-Mailbox to be relocated	1.00	EACH
0675	02568	MOBILIZATION	1.00	LS
0680	02569	DEMOBILIZATION	1.00	LS

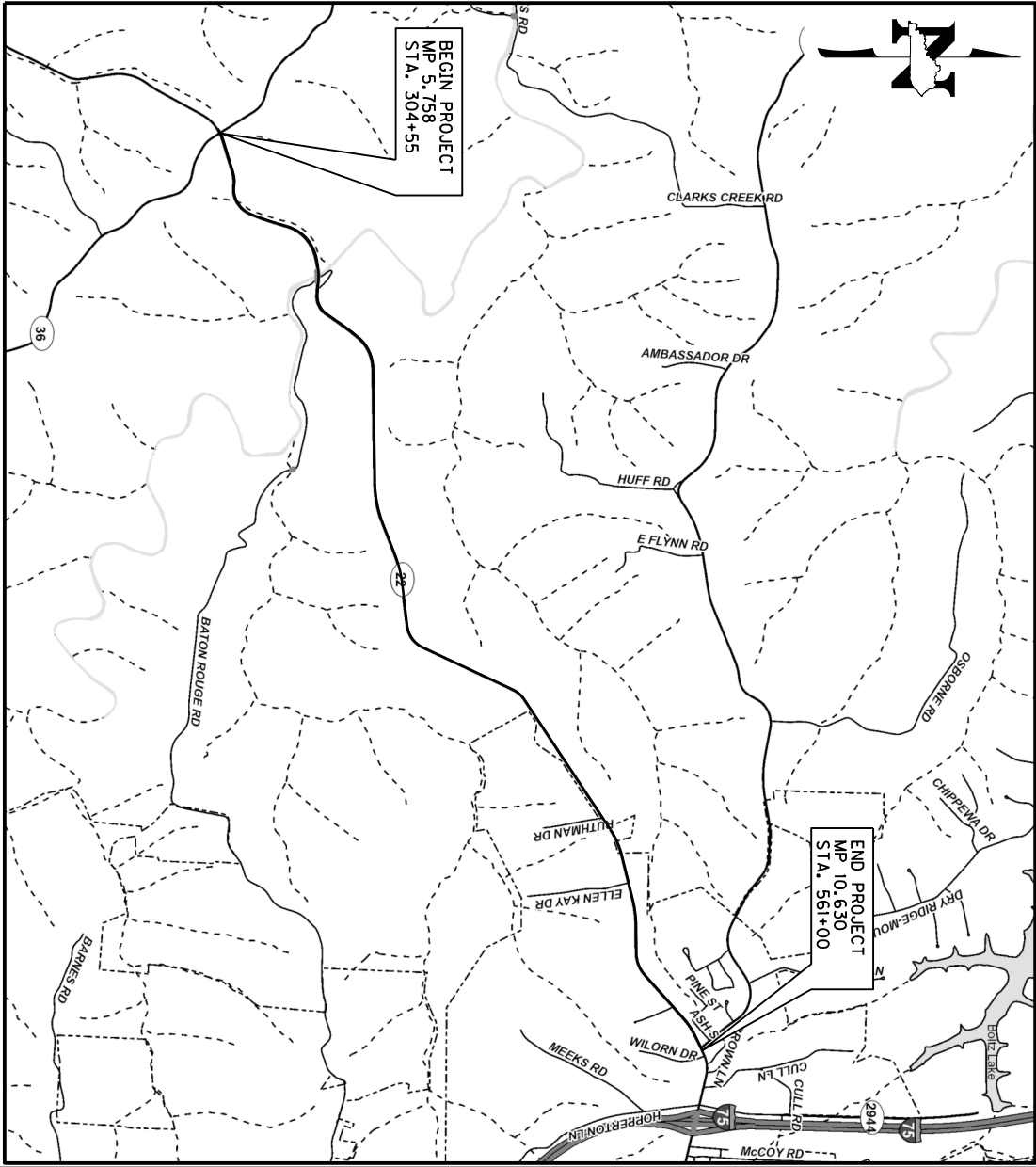
LOCATION MAP OF HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00



Commonwealth of Kentucky  
DEPARTMENT OF HIGHWAYS

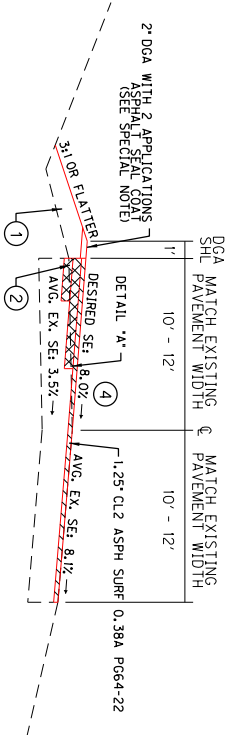
PLANS OF  
PROPOSED PROJECT  
GRANT COUNTY  
KY 22



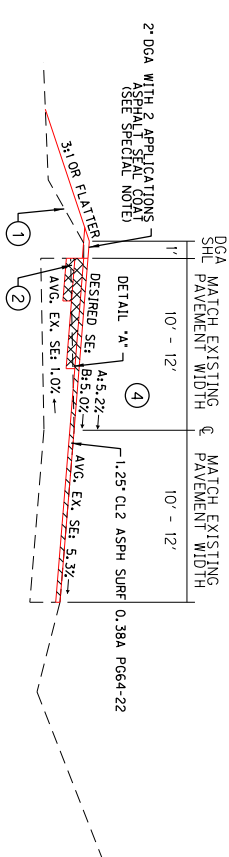
TYPICAL SECTIONS  
SUPERELEVATION IMPROVEMENTS

COUNTY OF	ITEM NO.
GRANT	6-9019.00

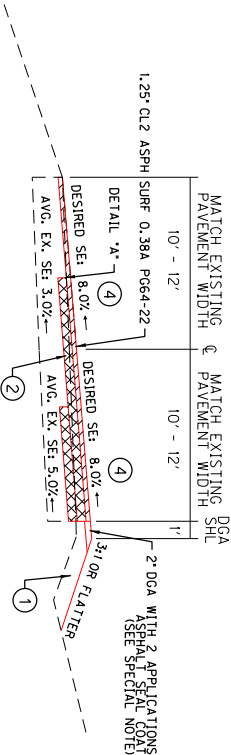
SEE SUMMARY SHEET AND PLAN SHEET FOR SUPERELEVATION TRANSITION DETAILS



**CURVE 2 - PI STA. 315 + 87.97  
SUPERELEVATION IMPROVEMENT**



**CURVE 4A - PI STA. 337 + 91.27  
CURVE 4B - PI STA. 343 + 16.65  
SUPERELEVATION IMPROVEMENT**

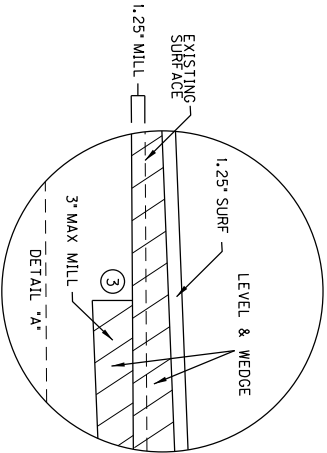


**CURVE 9 - PI STA. 442 + 72.79  
SUPERELEVATION IMPROVEMENT**

- ① COMPACTED EMBANKMENT (INCIDENTAL TO DITCHING & SHOULDERING, CONTRACTOR SHALL PROPERLY BENCH INTO EXISTING SLOPE AND APPLY PROPER COMPACTOR. COMPACT MATERIAL ACCORDING TO STANDARD SPECIFICATIONS (SECT. 206). FINAL EMBANKMENT WILL BE PAID AS LIFT OF DITCHING & SHOULDERING. CONTRACTOR SHALL PROVIDE SLOPE PROTECTION AND SHOULD EMBANKMENT BE NECESSARY TO PERFORM WORK. CONTRACTOR SHALL MAINTAIN SLOPE 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 OBSTRUCTIONS). (SLOPE MAY BE STEEPER THAN 3:1)
- ② LEVELING & WEDGING MIX DESIGN WILL BE BASED ON THE LIFT THICKNESS BEING PLACED FOR EACH CURVE. NUMBER IN THICKNESS OF LIFTS SHOWN IN THESE DETAILS ARE GRAPHICAL REPRESENTATIONS ONLY AND ARE NOT MEANT TO BE TAKEN AS AN INDICATION OF ACTUAL FIELD CONDITIONS.
- ③ MAXIMUM DEPTH OF MILLING AT LONGITUDINAL EDGE KEY SHALL BE 3"
- ④ FINAL SUPERELEVATION RATE TO BE DETERMINED BY THE ENGINEER IN THE FIELD. DESIRED SUPERELEVATION RATE MAY NEED TO BE MODIFIED IN ORDER TO REMAIN WITHIN RIGHT-OF-WAY OR AVOID A SENSITIVE OBSTRUCTION.

KEY 22 - SUPERELEVATION IMPROVEMENTS

1.25" SURFACE — CL2 ASPH SURF 0.38A PG64-22  
DEPTH VARIES — LEVELING & WEDGING PG64-22

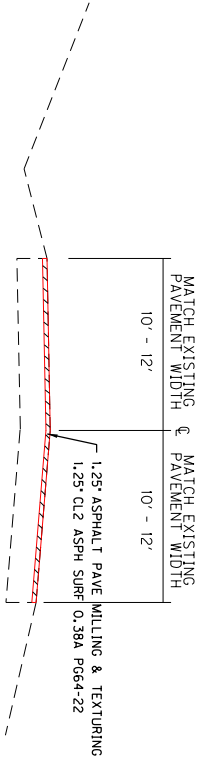


NOT TO SCALE

KEY 22  
TYPICAL SECTIONS  
SUPERELEVATION IMPROVEMENTS

COUNTY OF	ITEM NO.
GRANT	6-9019.00

TYPICAL SECTIONS  
RESURFACING IMPROVEMENTS



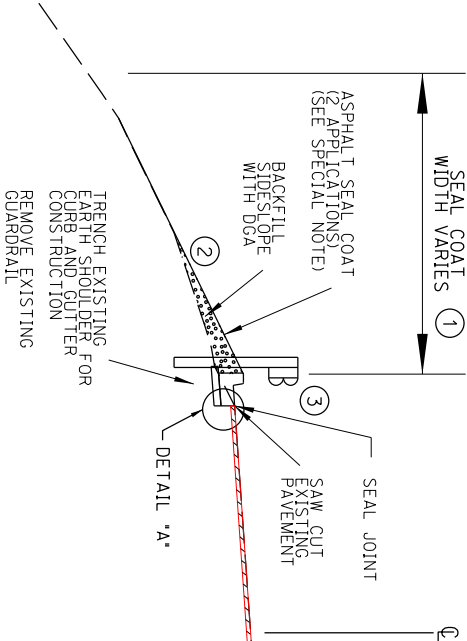
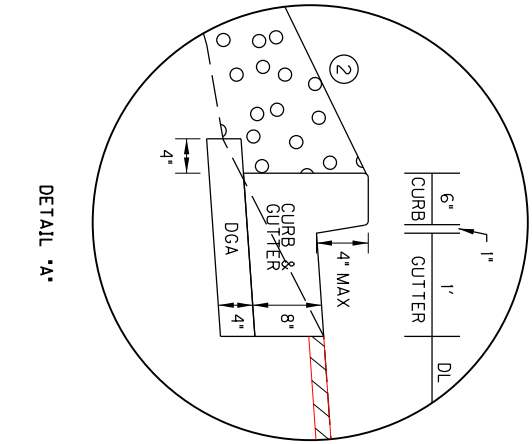
1.25" SURFACE — CL2 ASPH SURF 0.38A PG64-22

KY 22 - RESURFACING IMPROVEMENTS

RESURFACING IMPROVEMENT

STA. 306 + 50 TO STA. 346 + 86  
STA. 352 + 00 TO STA. 379 + 00  
STA. 403 + 00 TO STA. 447 + 00  
STA. 467 + 00 TO STA. 475 + 00  
STA. 508 + 50 TO STA. 547 + 00

CURVE #5 CURB & GUTTER  
STA. 357 + 00 TO STA. 359 + 50 (LT)



① SEAL COAT LIMITS AS DIRECTED BY THE ENGINEER.

② SEAL COAT: FIRST COURSE ESTIMATED AT 3.2 LBS. PER SQ. YD. SECOND COURSE ESTIMATED AT 2.8 LBS. PER SQ. YD. SEAL AGGREGATE: FIRST COURSE ESTIMATED AT 30 LBS. PER SQ. YD. SECOND COURSE ESTIMATED AT 20 LBS. PER SQ. YD.

③ FACE OF GUARDRAIL SHALL BE AT

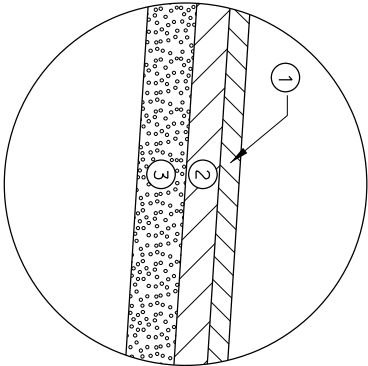
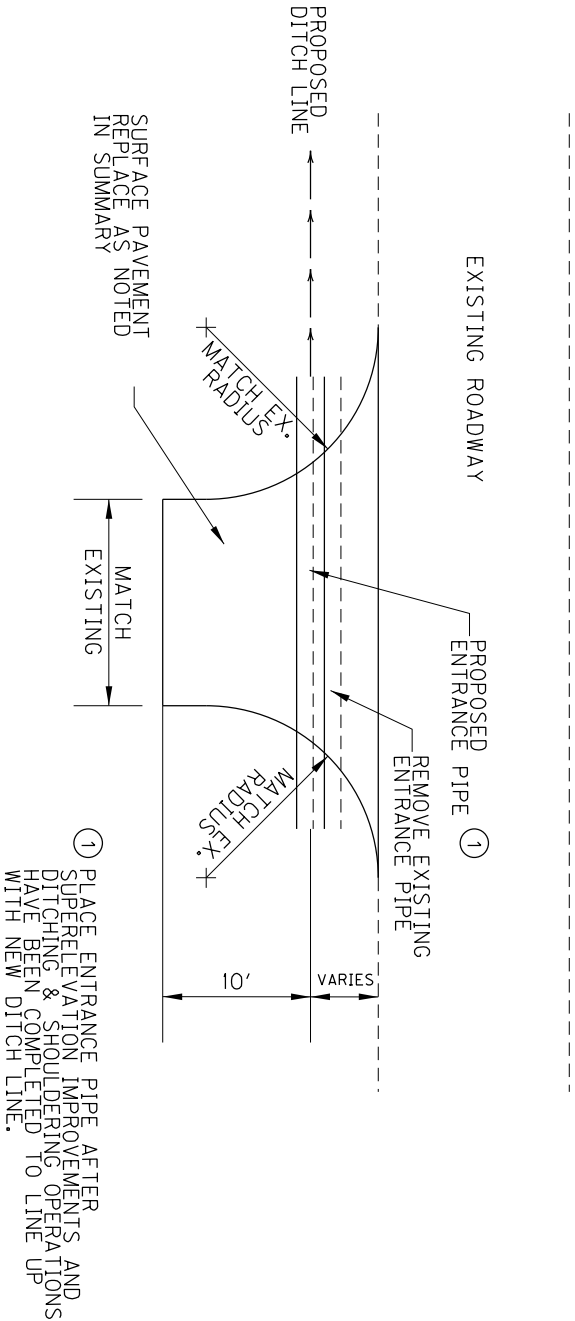
NOT TO SCALE

KY 22  
TYPICAL SECTIONS  
RESURFACING IMPROVEMENTS / CURVE #5 CURB & GUTTER

TYPICAL SECTIONS

ENTRANCE DETAIL

COUNTY OF	ITEM NO.
GRANT	6-9019.00



ASPHALT ENTRANCE

- ① 1.25" CL2 ASPH SURF 0.38A PG64-22
- ② 2.00" CL2 ASPH BASE 1.00D PG64-22
- ③ 4.00" DGA

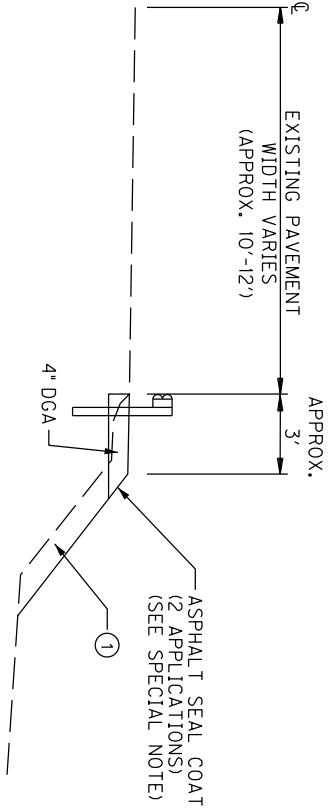
NOT TO SCALE

KY 22  
TYPICAL SECTIONS  
ENTRANCE DETAIL

TYPICAL SECTIONS

GUARDRAIL: ADDITIONAL DGA SHOULDER

COUNTY OF	ITEM NO.
GRANT	6-9019.00



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 LT OF DITCHING & SHOULDERING AND INCLUDE ALL WORK NECESSARY TO SENIOR EARTHWORK. SHOULDER EMBANKMENT MATERIAL SHALL BE SUFFICIENT TO PROVIDE PROPER DRAINAGE 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 OBSTRUCTIONS). (SLOPE MAY BE STEEPER THAN 3:1)

STA. 466 + 82 TO STA. 472 + 61 (RT SIDE)



EXISTING FIELD CONDITION

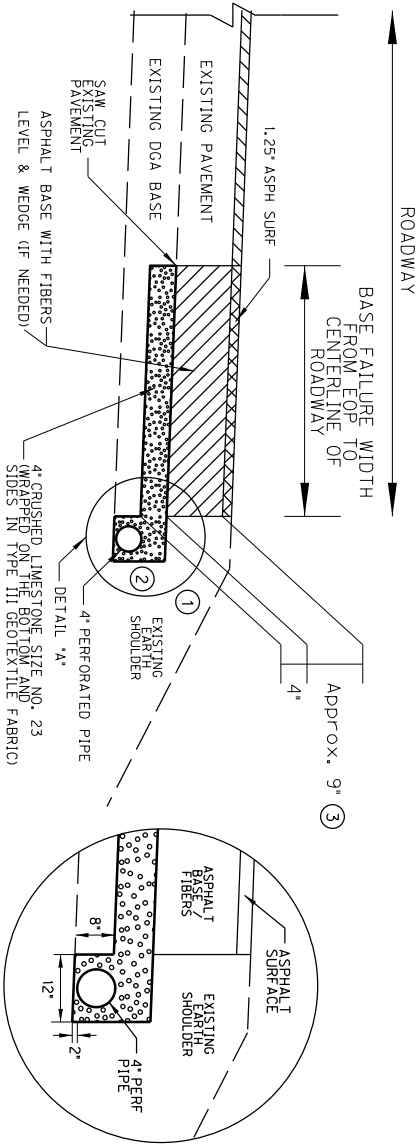
NOT TO SCALE	KY 22 TYPICAL SECTIONS GUARDRAIL ADDITIONAL DGA SHOULDER
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# TYPICAL SECTIONS

## BASE FAILURE REPAIR DETAILS (CASE B)

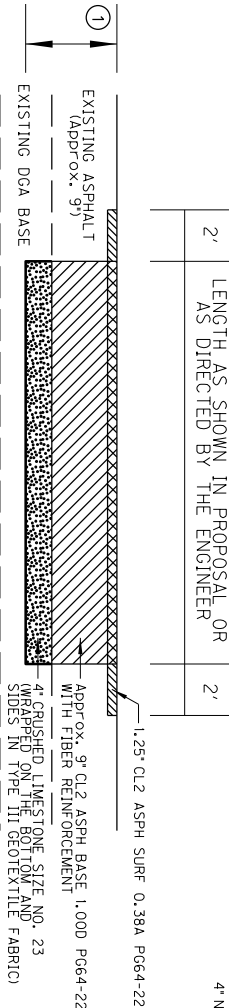
- STA. 438 + 69 TO STA. 439 + 30 (LT)
- STA. 456 + 83 TO STA. 458 + 86 (LT & RT)
- STA. 462 + 28 TO STA. 462 + 88 (LT)
- STA. 463 + 86 TO STA. 466 + 18 (LT)
- STA. 520 + 00 TO STA. 520 + 70 (RT)

### BASE FAILURE CROSS SECTION VIEW

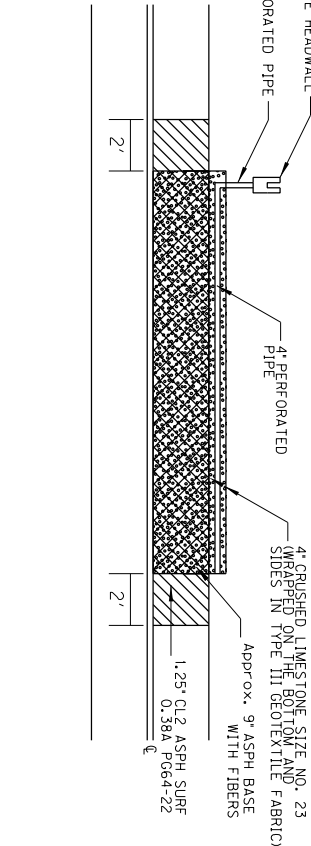


NOTE: BID ITEMS ASSOCIATED WITH UNDERCUTTING HAVE BEEN INCLUDED IN GENERAL SUMMARY. IN THE EVENT POOR SUBGRADE IS ENCOUNTERED, REFER TO THE SPECIAL NOTE FOR BASE FAILURE REPAIR FOR FURTHER INFORMATION.

### BASE FAILURE PROFILE VIEW



### BASE FAILURE TOP VIEW



① DEPTH OF EXCAVATION AND REPAIR LIMITS AS DIRECTED BY THE ENGINEER.

② CONSTRUCT 4' PERFORATED PIPE AND HEADWALL TO DEPTH OF CRUSHED LIMESTONE SIZE NO. 23. 4' CRUSHED LIMESTONE SIZE NO. 23 IS WRAPPED ON BOTTOM AND SIDES WITH TYPE III GEOTEXTILE FABRIC TO PROVIDE POSITIVE DRAINAGE FOR EXCAVATION PIPE AND BACKFILL FOR PERFORATED PIPE AND HEADWALL IS INCIDENTAL TO PERFORATED PIPE AND HEADWALL.

③ IF ASPHALT BASE LAYER IS DEEPER THAN 9" CRUSHED LIMESTONE IS TO BE OMITTED. CONSTRUCT CRUSHED AGGREGATE IF IN DGA BASE LAYER. CONSTRUCT PERFORATED PIPE EDGE DRAIN AS DIRECTED BY THE ENGINEER TO THE DEPTH OF EXISTING DGA. IN THIS CASE WRAP EXISTING DGA IN TYPE III GEOTEXTILE FABRIC SIMILAR TO DETAIL A.

NOT TO SCALE

KY 22  
TYPICAL SECTIONS  
BASE FAILURE REPAIR DETAILS

COUNTY OF	ITEM NO.
GRANT	6-9019.00



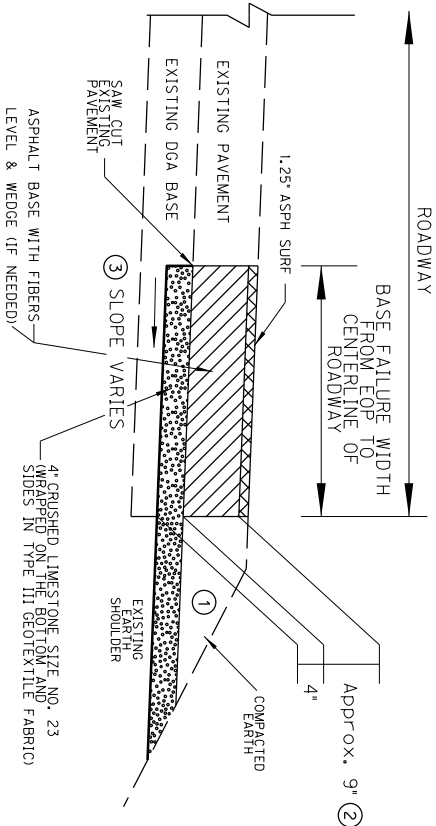
TYPICAL SECTIONS

COUNTY OF	ITEM NO.
GRANT	6-9019.00

BASE FAILURE REPAIR DETAILS (CASE A)

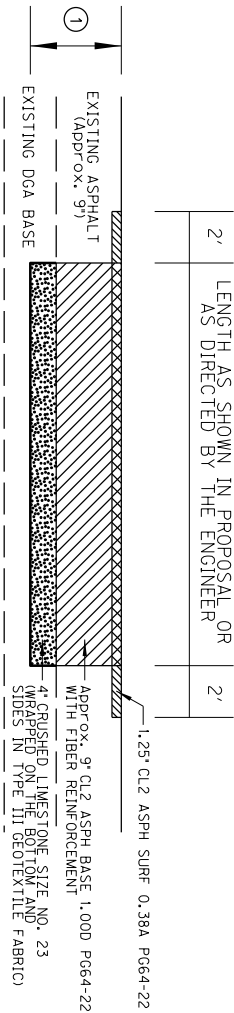
STA. 320 + 58 TO STA. 323 + 81 (LT)	STA. 416 + 43 TO STA. 417 + 60 (RT)
STA. 321 + 11 TO STA. 322 + 71 (RT)	STA. 428 + 42 TO STA. 429 + 78 (LT)
STA. 324 + 70 TO STA. 325 + 70 (LT)	STA. 440 + 83 TO STA. 442 + 91 (LT)
STA. 366 + 40 TO STA. 368 + 63 (LT & RT)	STA. 484 + 04 TO STA. 487 + 59 (LT & RT)

BASE FAILURE CROSS SECTION VIEW

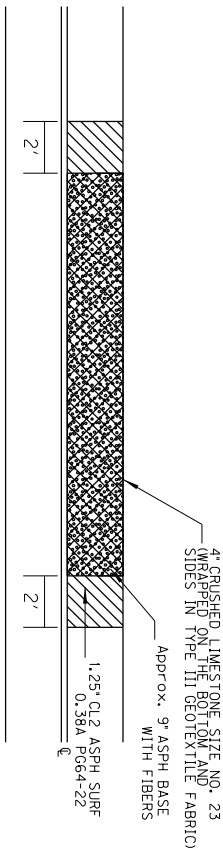


NOTE: BID ITEMS ASSOCIATED WITH UNDERLAYS HAVE BEEN INCLUDED IN GENERAL SUMMARY IN THE EVENT POOR SUBGRADE IS ENCOUNTERED. REFER TO THE SPECIAL NOTE FOR BASE FAILURE REPAIR FOR FURTHER INFORMATION.

BASE FAILURE PROFILE VIEW



BASE FAILURE TOP VIEW



- ① DEPTH OF EXCAVATION AND REPAIR DETAILS AS DIRECTED BY THE ENGINEER.
- ② IF EXCAVATION DEPTH IS BELOW EXISTING DGA BASE, EXTEND TO EXISTING DGA BASE FOR DRAINAGE.
- ③ IF ASPHALT BASE LAYER IS DEEPER THAN 9" CRUSHED AGGREGATE IS TO BE OMITTED, CONSTRUCT CRUSHED AGGREGATE IF IN DGA BASE LAYER.
- ④ AT SUPERELEVATED LOCATIONS, THE CRUSHED LESTONE SHOULD BE SLOPED AWAY FROM THE CENTERLINE TO AVOID TRAPPING WATER AT THE CENTERLINE OF THE ROADWAY. THE LOCATIONS TO BE DETERMINED BY THE ENGINEER.

HSIP PROJECT - KY 22 - GRANT COUNTY			
MILEPOST 5.758 TO 10.630			
ITEM NO. 6-9019.00			
GENERAL SUMMARY			
SHEET 1 OF 2			
ITEM NUMBER	ITEM	UNIT	QUANTITY
1	DGA (1)	TON	320
78	CRUSHED AGGREGATE SIZE NO 2 (7)(B)	TON	1,030
80	CRUSHED AGGREGATE SIZE NO 23 (1)	TON	1,515
100	ASPHALT SEAL AGGREGATE (1)	TON	30
103	ASPHALT SEAL COAT (1)	TON	3.9
190	LEVELING & WEDGING PG64-22 (1)	TON	784
212	CL2 ASPH BASE 1.00D PG64-22 (1)	TON	1,923
356	ASPHALT MATERIAL FOR TACK (1)	TON	22
440	ENTRANCE PIPE-15 IN (5)	LF	334
461	CULVERT PIPE-15 IN (4)	LF	16
462	CULVERT PIPE-18 IN (4)(6)	LF	210
464	CULVERT PIPE-24 IN (4)	LF	90
1000	PERFORATED PIPE-4 IN (7)	LF	626
1010	NON-PERFORATED PIPE-4 IN (7)	LF	125
1028	PERF PIPE HEADWALL TY 3-4 IN (7)	EACH	5
1204	PIPE CULVERT HEADWALL-18 IN (4)	EACH	1
1208	PIPE CULVERT HEADWALL-24 IN (4)	EACH	2
1310	REMOVE PIPE (4)(5)	LF	201
1381	METAL END SECTION TY 2-18 IN (6)	EACH	2
1490	DROP BOX INLET TYPE 1 (4)	EACH	2
1691	FLUME INLET TYPE 2 (14)	EACH	1
1728	SAFETY BOX INLET-18 IN DBL SDB-5 (4)	EACH	5
1811	STANDARD CURB AND GUTTER MOD (14)	LF	250
1987	DELINEATOR FOR GUARDRAIL (B/W) (6)	EACH	55
2159	TEMPORARY DITCH	LF	12,862
2160	CLEAN TEMPORARY DITCH	LF	6,431
2230	EMBANKMENT IN PLACE (4)(6)	CUYD	235
2237	DITCHING (4)	LF	20
2360	GUARDRAIL TERMINAL SECTION NO 1 (6)	EACH	3
2367	GUARDRAIL END TREATMENT TYPE 1 (6)	EACH	9
2373	GUARDRAIL END TREATMENT TYPE 3 (6)	EACH	2
2381	REMOVE GUARDRAIL (6)	LF	2,475
2391	GUARDRAIL END TREATMENT TYPE 4A (6)	EACH	2
2483	CHANNEL LINING CLASS II (4)(6)(14)(A)	TON	170
2562	TEMPORARY SIGNS	SQFT	190
2569	DEMOBILIZATION	LS	1
2575	DITCHING AND SHOULDERING (2)(5)(6)(10)	LF	4,695
2599	FABRIC-GEOTEXTILE TYPE IV (B)	SQYD	1,485
2625	REMOVE HEADWALL (4)	EACH	11
2650	MAINTAIN & CONTROL TRAFFIC	LS	1
2671	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	2
2676	MOBILIZATION FOR MILL & TEXT	LS	1
2677	ASPHALT PAVE MILLING & TEXTURING (1)	TON	2,657
2697	EDGE LINE RUMBLE STRIPS (1)	LF	38,084
(1) CARRIED OVER FROM THE PAVING SUMMARY			
(2) CARRIED OVER FROM THE SUPERELEVATION SUMMARY			
(4) CARRIED OVER FROM THE PIPE DRAINAGE SUMMARY			
(5) CARRIED OVER FROM THE ENTRANCE PIPE SUMMARY			
(6) CARRIED OVER FROM THE GUARDRAIL SUMMARY			
(7) CARRIED OVER FROM THE PAVEMENT FAILURE REPAIR SUMMARY			
(10) CARRIED OVER FROM THE DITCHING AND SHOULDERING SUMMARY			
(14) CARRIED OVER FROM THE CURB & GUTTER INSIDE CURVE #5 SUMMARY			
(A) INCLUDES 100 TON AT THE DISCRETION OF THE ENGINEER			
(B) INCLUDES QUANTITY FOR POTENTIAL BASE FAILURE REPAIR UNDERCUTTING AT THE DISCRETION OF THE ENGINEER			

HSIP PROJECT - KY 22 - GRANT COUNTY			
MILEPOST 5.758 TO 10.630			
ITEM NO. 6-9019.00			
GENERAL SUMMARY			
SHEET 2 OF 2			
ITEM NUMBER	ITEM	UNIT	QUANTITY
2701	TEMPORARY SILT FENCE	LF	12,862
2703	SILT TRAP TYPE A	EACH	8
2704	SILT TRAP TYPE B	EACH	8
2705	SILT TRAP TYPE C	EACH	8
2706	CLEAN SILT TRAP TYPE A	EACH	8
2707	CLEAN SILT TRAP TYPE B	EACH	8
2708	CLEAN SILT TRAP TYPE C	EACH	8
2726	STAKING	LS	1
3262	CLEAN PIPE STRUCTURE (4)	EACH	2
4933	TEMP SIGNAL 2 PHASE	EACH	1
5950	EROSION CONTROL BLANKET	SQYD	1,000
5952	TEMPORARY MULCH	SQYD	25,321
5953	TEMP SEEDING AND PROTECTION	SQYD	18,991
5963	INITIAL FERTILIZER	TON	0.25
5964	MAINTENANCE FERTILIZER	TON	0.42
5985	SEEDING AND PROTECTION	SQYD	7,982
5989	SPECIAL SEEDING CROWN VETCH	SQYD	500
5992	AGRICULTURAL LIMESTONE	TON	5
6406	SBM ALUM SHEET SIGNS .080 IN (12)	SQFT	128
6407	SBM ALUM SHEET SIGNS .125 IN (12)	SQFT	7
6410	STEEL POST TYPE 1 (2) (12)	LF	369
6511	PAVE STRIPING-TEMP PAINT-6 IN (3)	LF	63,144
8100	CONCRETE-CLASS A (4) (6)	CUYD	8.7
10020NS	FUEL ADJUSTMENT	DOLL	8,455
10030NS	ASPHALT ADJUSTMENT	DOLL	21,237
20191ED	OBJECT MARKER TY 3 (6)	EACH	11
20603ED	SOIL NAIL WALL (8)	SQFT	4,630
20748ED	SHOULDER MILLING/TRENCHING (1)	SQYD	54
21134ND	REMOVE-STORE AND REINSTALL SIGN (2) (C)	EACH	28
21373ND	REMOVE SIGN (13)	EACH	33
21802EN	G/R STEEL W BEAM-S FACE (7 FT POST) (6)	LF	2,848
21819NN	FITTINGS (15" RCP TO PROPOSED 15" CULVERT PIPE) (4)	EACH	2
21819NN	FITTINGS (18" RCP TO PROPOSED 18" CULVERT PIPE) (4)	EACH	8
21819NN	FITTINGS (24" RCP TO PROPOSED 24" CULVERT PIPE) (4)	EACH	3
22938ND	SAFETY BOX INLET-15 IN (4)	EACH	1
22978EN	ROADWAY EXCAVATION-SPECIAL (B)	CUYD	495
24575ES610	HEADWALL (SLOPED & MITERED CONCRETE - 15 IN) (4)	EACH	1
24575ES610	HEADWALL (SLOPED & MITERED CONCRETE - 24 IN) (4)	EACH	3
24631EC	BARCODE SIGN INVENTORY (12)	EACH	24
24685EC	CL2 ASPH SURF 0.38A PG64-22 (1)	TON	2,725
24785EC	FIBER REINFORCEMENT FOR HMA (1)	TON	1,842
24894EC	REMOVE (RAILROAD RAIL ABOVE ANY GROUNDLINE BY TORCH CUTTING) (9)	EACH	26
24995EC	PAVE STRIPING-SPRAY THERMO-6 IN W (11)	LF	51,248
24996EC	PAVE STRIPING-SPRAY THERMO-6 IN Y (11)	LF	41,061
(1) CARRIED OVER FROM THE PAVING SUMMARY			
(2) CARRIED OVER FROM THE SUPERELEVATION SUMMARY			
(3) CARRIED OVER FROM THE RESURFACE SUMMARY			
(4) CARRIED OVER FROM THE PIPE DRAINAGE SUMMARY			
(6) CARRIED OVER FROM THE GUARDRAIL SUMMARY			
(8) CARRIED OVER FROM THE SOIL NAIL WALL SUMMARY			
(9) CARRIED OVER FROM THE CUT RAILS SUMMARY			
(11) CARRIED OVER FROM THE STRIPING SUMMARY			
(12) CARRIED OVER FROM THE SIGNING SUMMARY			
(13) CARRIED OVER FROM THE REMOVE SIGN SUMMARY			
(B) INCLUDES QUANTITY FOR POTENTIAL BASE FAILURE REPAIR UNDERCUTTING AT THE DISCRETION OF THE ENGINEER			
(C) INCLUDES 10 REMOVE, STORE AND REINSTALL SIGNS AT THE DISCRETION OF THE ENGINEER			

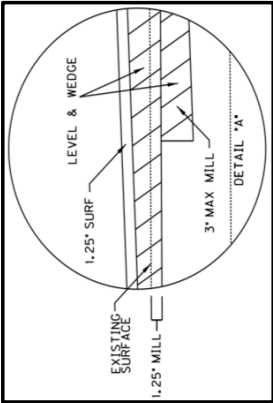
HSIP PROJECT - GRANT COUNTY - KY 22			
MILEPOST 5.758 - 10.630			
ITEM NO. 6-9019.00			
PAVING SUMMARY			
PAVING AREAS		PAVING QUANTITIES	
ITEM	TOTAL	ITEM	TOTAL
SUPERELEVATION IMPROVEMENTS (1)		SUPERELEVATION IMPROVEMENTS (1) TON	
LEVELING & WEDGING PG64-22		LEVELING & WEDGING PG64-22	523
ASPHALT PAVE MILLING & TEXTURING		ASPHALT PAVE MILLING & TEXTURING	163
	SY		
2" DGA BASE	333	DGA BASE	40
ASPHALT SEAL AGGREGATE	332	ASPHALT SEAL AGGREGATE	4.2
ASPHALT SEAL COAT	332	ASPHALT SEAL COAT	0.3
ASPHALT MATERIAL FOR TACK	1,002	ASPHALT MATERIAL FOR TACK	0.9
RESURFACE IMPROVEMENTS (2)		RESURFACE IMPROVEMENTS (2) TON	
1.25" CL2 ASPH SURF 0.38A PG64-22	36,248	CL2 ASPH SURF 0.38A PG64-22	2,494
ASPHALT MATERIAL FOR TACK	36,248	ASPHALT MATERIAL FOR TACK	16
	CY		
ASPHALT PAVE MILLING & TEXTURING	1,510	ASPHALT PAVE MILLING & TEXTURING	2,494
	LF		
EDGE LINE RUMBLE STRIPS	31,572		
PIPE / CULVERT EXTENSIONS (3)		PIPE / CULVERT EXTENSIONS (3) TON	
10.5" CL2 ASPH BASE 1.00D PG64-22	10	CL2 ASPH BASE 1.00D PG64-22	6
ASPHALT MATERIAL FOR TACK	10	ASPHALT MATERIAL FOR TACK	0.1
ENTRANCE PAVING (4)		ENTRANCE PAVING (4) TON	
4" DGA BASE	626	DGA BASE	144
2" CL2 ASPH BASE 1.00D PG64-22	626	CL2 ASPH BASE 1.00D PG64-22	75
1.25" CL2 ASPH SURF 0.38A PG64-22	626	CL2 ASPH SURF 0.38A PG64-22	48
ASPHALT MATERIAL FOR TACK	626	ASPHALT MATERIAL FOR TACK	0.3
GUARDRAIL - ADDITIONAL DGA (5)		GUARDRAIL - ADDITIONAL DGA (5) TON	
4" DGA BASE	201	DGA BASE	47
ASPHALT SEAL AGGREGATE	201	ASPHALT SEAL AGGREGATE	5
ASPHALT SEAL COAT	201	ASPHALT SEAL COAT	0.6
PAVEMENT FAILURE REPAIR (6)		PAVEMENT FAILURE REPAIR (6) TON	
4" CRUSHED AGGREGATE SIZE NO 23	3,713	CRUSHED AGGREGATE SIZE NO 23	1,515
1.25" LEVELING & WEDGING PG64-22	3,713	LEVELING & WEDGING PG64-22	261
9" CL2 ASPH BASE 1.00D PG64-22	3,713	CL2 ASPH BASE 1.00D PG64-22	1,842
1.25" CL2 ASPH SURF 0.38A PG64-22	2,615	CL2 ASPH SURF 0.38A PG64-22	183
FIBER REINFORCEMENT FOR HMA	3,713	FIBER REINFORCEMENT FOR HMA	1,842
ASPHALT MATERIAL FOR TACK	3,713	ASPHALT MATERIAL FOR TACK	4.7
	LF		
EDGE LINE RUMBLE STRIPS	6,512		
CURB AND GUTTER INSIDE CURVE #5 (7)		CURB AND GUTTER INSIDE CURVE #5 (7) TON	
DGA BASE	193	DGA BASE	89
ASPHALT SEAL AGGREGATE	834	ASPHALT SEAL AGGREGATE	21
ASPHALT SEAL COAT	834	ASPHALT SEAL COAT	3
SHOULDER MILLING/TRENCHING	54		
PAVING SUMMARY			
CODE	ITEM	UNITS	PROJECT TOTAL
1	DGA BASE	TON	320
80	CRUSHED AGGREGATE SIZE NO 23	TON	1,515
100	ASPHALT SEAL AGGREGATE	TON	30
103	ASPHALT SEAL COAT	TON	3.9
190	LEVELING & WEDGING PG64-22	TON	784
212	CL2 ASPH BASE 1.00D PG64-22	TON	1,923
356	ASPHALT MATERIAL FOR TACK	TON	22
2677	ASPHALT PAVE MILLING & TEXTURING	TON	2,657
2697	EDGE LINE RUMBLE STRIPS	LF	38,084
20748ED	SHOULDER MILLING/TRENCHING	SY	54
24685EC	CL2 ASPH SURF 0.38A PG64-22	TON	2,725
24785EC	FIBER REINFORCEMENT FOR HMA	TON	1,842
NOTES:			
All asphalt mixtures shall be estimated at 110 lbs. per SQ. YD. per inch of depth unless noted otherwise			
DGA Base shall be estimated at 115 lbs. per SQ. YD. per inch of depth			
Seal Coat: First course estimated at 3.2 lbs. per SQ. YD. Second course estimated at 2.8 lbs. per SQ. YD.			
Seal Aggregate: First course estimated at 30 lbs. per SQ. YD. Second course estimated at 20 lbs. per SQ. YD.			
(1) Carried over from Superelevation Improvement Summary			
(2) Carried over from Resurface Improvement Summary			
(3) Carried over from Pipe Drainage Summary			
(4) Carried over from Entrance Pipe Summary			
(5) Carried over from Guardrail Summary			
(6) Carried over from Pavement Failure Repair Summary			
(7) Carried over from Curb & Gutter Inside Curve #5 Summary			

HSIP PROJECT - KY 22 - GRANT COUNTY MILEPOST 5.758 TO 10.630 ITEM NO. 6-9019.00																
SUPERELEVATION IMPROVEMENT SUMMARY																
CURVE # PI STATION (X-SECTION)	MP	DIRECTION	RADIUS (FT)	CURVE LENGTH (FT)	EXISTING CROSS SLOPE LEFT	EXISTING CROSS SLOPE RIGHT	DESIRED FULL SUPER CROSS SLOPE	LEVELING & WEDGING PG64-22 (TONS)	CL2 ASPH SURF 0.38A PG64-22 (TONS)	ASPHALT PAVE MILLING & TEXTURING (TONS)	STEEL POST TYPE 1 (LF)	REMOVE- STORE AND REINSTALL SIGN	DGA BASE (TONS)	DITCHING AND SHOULDERING (LF)	Comment / Recommendation	
											1	1				
CURVE 2 STA. 311+50 to Sta. 317+50 high side. Overlay both lanes of the curve following the superlevation improvement. Utilize Edge Keys at each end of the overlay. Construct Edgeline Rumble Strips following overlay.	5.98	RT	669'	208'	3.50% 	8.10% 	8.00% 	85	*	21	33	3	1	8	600	
CURVE 4A STA. 337+91 CURVE 4B STA. 343+17	6.40 6.50	RT	946' 1017'	552' 504'	1.00% 	5.30% 	5.2%  5.0% 	284	*	83	88	8		18	1336	Improve superlevation from Sta. 333+50 to Bridge Approach high side. Overlay both lanes of the curve following the superlevation improvement. Utilize Edge Keys at each end of the overlay. Construct Edgeline Rumble Strips following overlay.
CURVE 9 STA. 442+73	8.39	LT	650'	658'	3.00% 	5.00% 	8.00% 	154	*	59	77	7		14	1050	Improve superlevation from Sta. 437+00 to Sta. 447+50 both sides. Overlay both lanes of the curve following the superlevation improvement. Utilize Edge Keys at each end of the overlay. Construct Edgeline Rumble Strips following overlay.
SUPERELEVATION IMPROVEMENT SUMMARY TOTALS:								523	*	163	198	18	40	2,986		
1 ADJUST ANY SIGN WITHIN THE SUPERELEVATION IMPROVEMENT DUE TO THE RAISED PAVEMENT. STEEL POST TYPE 1 QUANTITY HAS BEEN INCLUDED TO ADJUST SIGNS TO MEET MINIMUM CLEAR HEIGHT ABOVE EDGE OF PAVEMENT. EXISTING YELLOW REFLECTIVE SIGN POST PANEL TO BE REINSTALLED ON PROPOSED STEEL POST.																

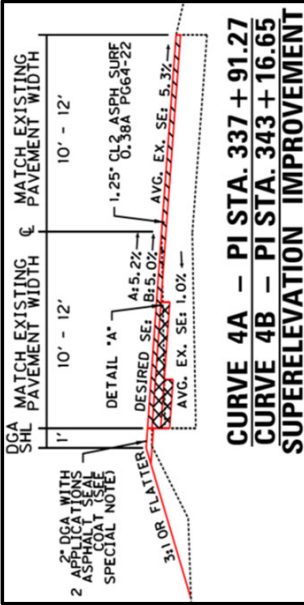
NOTE:  
A. SUPERELEVATION IMPROVEMENT QUANTITIES INCLUDE RUNOFF AND RUNOUT LENGTHS. REFER TO THE PLAN SHEET CONSTRUCTION NOTES FOR SUPERELEVATION TRANSITIONS.  
B. SHOULDERING HAS BEEN INCLUDED FOR THE LENGTH OF SUPERELEVATION IMPROVEMENTS.  
C. THESE NUMBERS ARE FOR ESTIMATING PURPOSES ONLY. FINAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

ITEM	DESCRIPTION	UNIT	QUANTITY
1	DGA BASE	TON	40
100	ASPHALT SEAL AGGREGATE	TON	4.2
103	ASPHALT SEAL COAT	TON	0.3
190	LEVELING & WEDGING PG64-22	TON	523
2575	DITCHING AND SHOULDERING	LF	2,986
2677	ASPHALT PAVE MILLING & TEXTURING	TON	163
2697	EDGE LINE RUMBLE STRIPS	LF	*
6410	STEEL POST TYPE 1	LF	198
21134ND	REMOVE-STORE AND REINSTALL SIGN	EACH	18
2468SEC	CL2 ASPH SURF 0.38A PG64-22	TON	*
24970EC	ASPHALT MATERIAL FOR TACK	TON	0.9

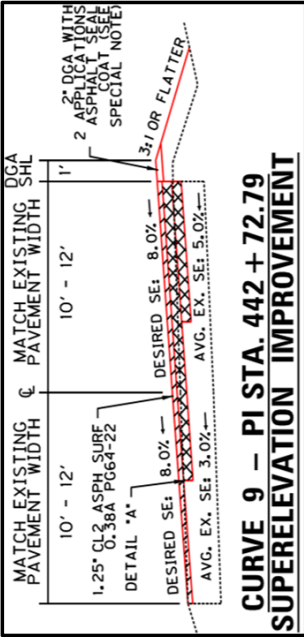
This quantity is for the additional milling and texturing lifts as shown on the Typical Sections.  
This quantity is accounted for on the Resurfacing Improvement Summary.  
This quantity is for the additional milling and texturing lifts as shown on the Typical Sections.



**CURVE 2 – PI STA. 315 + 87.97  
SUPERELEVATION IMPROVEMENT**

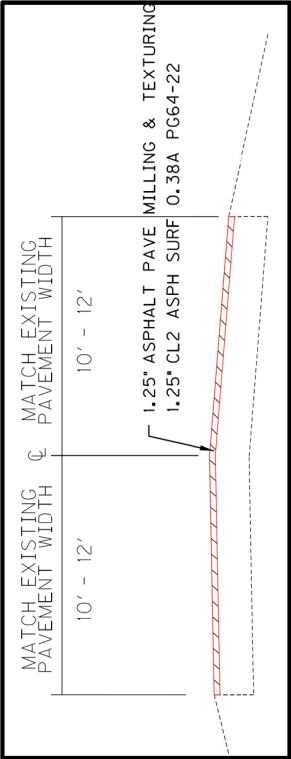


**CURVE 4A – PI STA. 337 + 91.27  
CURVE 4B – PI STA. 343 + 16.65  
SUPERELEVATION IMPROVEMENT**



**CURVE 9 – PI STA. 442 + 72.79  
SUPERELEVATION IMPROVEMENT**

KY 22 - GRANT COUNTY HSIP PROJECT - MILEPOST 5.758 TO 10.630 ITEM NO. 6-9019.00 RESURFACE IMPROVEMENT SUMMARY										
BEGIN STATION	BEGIN MP	END STATION	END MP	AVG WIDTH (FT)	RESURFACE AREA (SQUARE YARDS)	DEPTH (IN)	CL2 ASPH SURF 0.38A PG64-22 (TONS)	ASPHALT PAVE MILLING & TEXTURING (TONS)	EDGE LINE RUMBLE STRIPS (LF)	Comment / Recommendation
306+50	5.80	346+86	6.57	21.0	9550	1.25	657	2677	2697	BEGIN EAST OF KY 36 AND TIE IN RESURFACING WITH EASTBOUND APPROACH TO BRIDGING KY PROJECT OVER CLARKS CREEK AND BATON ROUGE RD. UTILIZE EDGE KEY AT BEGIN OF OVERLAY. (INCLUDES CURVES #1, #2, #3, AND #4)
352+00	6.67	379+00	7.18	21.0	6302	1.25	434	434	5,400	TIE IN RESURFACING WITH WESTBOUND APPROACH TO BRIDGING KY PROJECT OVER CLARKS CREEK AND BATON ROUGE RD. UTILIZE EDGE KEY AT END OF OVERLAY. (INCLUDES CURVES #5 AND #6)
403+00	7.63	447+00	8.47	20.0	9712	1.25	668	668	8,800	TIE IN RESURFACING WITH EXISTING PAVEMENT. UTILIZE EDGE KEYS AT BEGIN AND END OF OVERLAY. (INCLUDES CURVES #7, #8, AND #9)
467+00	8.84	475+00	9.00	20.5	1829	1.25	126	126	1,600	TIE IN RESURFACING WITH EXISTING PAVEMENT. UTILIZE EDGE KEYS AT BEGIN AND END OF OVERLAY. (INCLUDES CURVE #10)
508+50	9.63	547+00	10.36	21.0	8855	1.25	609	609	7,700	TIE IN RESURFACING WITH EXISTING PAVEMENT. UTILIZE EDGE KEYS AT BEGIN AND END OF OVERLAY. (INCLUDES CURVES #11, #12, AND #13)
RESURFACE IMPROVEMENT SUMMARY TOTALS:							2,494	2,494	31,572	
NOTE: A. QUANTITY FOR PAVE STRIPING-TEMP PAINT HAS BEEN INCLUDED IN BELOW SUMMARY. REFER TO THE STRIPING SUMMARY FOR PERMANENT STRIPING LAYOUT AND QUANTITY. B. QUANTITY FOR ASPHALT MATERIAL FOR TACK NON-TRACKING HAS BEEN INCLUDED IN BELOW SUMMARY. C. RESURFACE FOLLOWING COMPLETION OF SOIL NAIL WALL INSTALLATION, SUPERELEVATION IMPROVEMENT, PAVEMENT REPAIRS AND ANY OTHER IMPROVEMENT THAT IMPACTS ROADWAY D. THESE NUMBERS ARE FOR ESTIMATING PURPOSES ONLY. FINAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.										

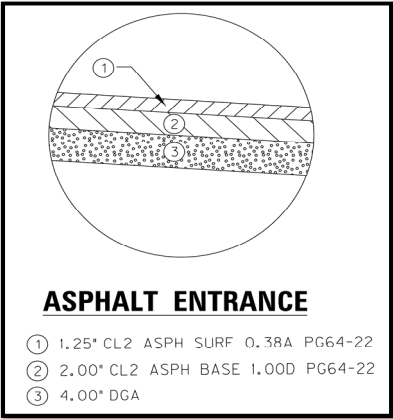
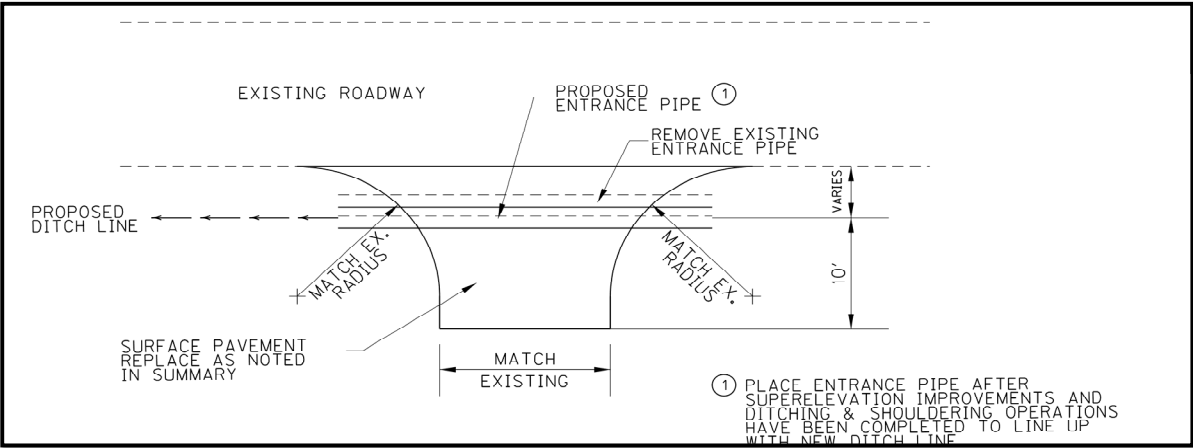


ITEM	DESCRIPTION	UNIT	QUANTITY
2677	ASPHALT PAVE MILLING & TEXTURING	TON	2,494
2697	EDGE LINE RUMBLE STRIPS	LF	31,572
24685EC	CL2 ASPH SURF 0.38A PG64-22	TON	2,494
24970EC	ASPHALT MATERIAL FOR TACK	TON	16
6511	PAVE STRIPING-TEMP PAINT-6 IN	LF	63,144

**NOTES:**



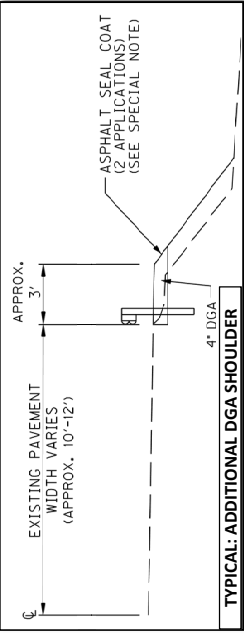
HSIP PROJECT - KY 22 - GRANT COUNTY										
MILEPOST 5.758 TO 10.630										
ITEM NO. 6-9019.00										
ENTRANCE PIPE AND ENTRANCE PAVING SUMMARY										
STATION	MILE POINT	OFFSET	ENTRANCE PAVEMENT TYPE	ENTRANCE PIPE		ENTRANCE PAVING			DITCHING AND SHOULDERING	REMARKS
				ENTRANCE PIPE-15 IN	REMOVE PIPE	DGA BASE	CL2 ASPH BASE 1.00D PG64-22	CL2 ASPH SURF 0.38A PG64-22		
BID ITEM				440	1310	1	212	24685EC	2575	
UNITS				LF		TON			LF	
383+15	7.26	RT	ASPHALT	52		23	11	7	100	Install Entrance Pipe
396+85	7.52	RT	ASPHALT	40		11	6	4	100	Install Entrance Pipe
400+30	7.58	RT	ASPHALT	20		5	3	2	100	Install Entrance Pipe
405+80	7.69	RT	ASPHALT	19		12	6	4	100	Install Entrance Pipe
440+90	8.35	RT	ASPHALT	58	24	15	8	5	30	Pave Entrance and Replace Pipe Following Superelevation Improvement
443+40	8.40	RT	ASPHALT	26	24	20	10	6	15	Pave Entrance and Replace Pipe Following Superelevation Improvement
443+75	8.40	RT	ASPHALT	38	36	24	12	8	15	Pave Entrance and Replace Pipe Following Superelevation Improvement
464+05	8.79	LT	ASPHALT	23	23	5	3	2		Replace Pipe Following Ditching and Shouldering Improvement
467+55	8.86	LT	ASPHALT	20		11	6	4		Install Entrance Pipe Following Ditching and Shouldering Improvement
506+80	9.60	LT	ASPHALT	25		10	5	3		Install Entrance Pipe Following Ditching and Shouldering Improvement
507+22	9.61	LT	ASPHALT	13		8	5	3		Install Entrance Pipe Following Ditching and Shouldering Improvement
TOTALS:				334	107	144	75	48	460	
NOTE: THESE NUMBERS ARE FOR ESTIMATE PURPOSES ONLY. ACTUAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.										



Guardrail Summary      HSIP PROJECT - Grant County      KY 22 (Taft Hwy)

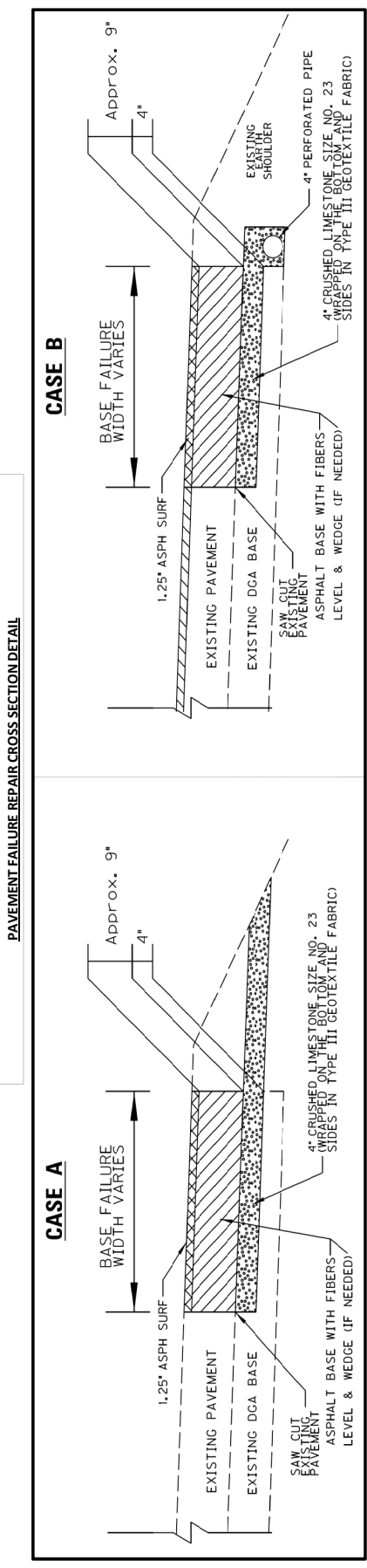
Notes: Begin/End Milepoints are estimated to include the entire length of the Rail AND the End Treatments. The Engineer may adjust the proposed guardrail termini to ensure proper installation of the guardrail system.															
Proposed Guardrail to be Constructed								Existing Guardrail to be Removed							
Side of Road	Proposed BEGINNING Treatment	Approx. BEGIN Station	Approx. BEGIN Milepoint	Approx. END Station	Approx. END Milepoint	Proposed ENDING Treatment	Proposed Length (LF)	Number of Radius Rail	Remarks	Side of Road	Approx. BEGIN Station	Approx. BEGIN Milepoint	Approx. END Station	Approx. END Milepoint	Existing Length (LF)
RT	Type 3	320+30	6.066	323+75	6.132	Type 4A	312.50	0	Additional materials are included for TY 3 ET (see below Summary). Install Guardrail following the construction of soil nail wall.	RT	320+30	6.066	323+75	6.132	350.00
LT	Type 3	321+00	6.080	325+40	6.163	Type 1	400.00	0	Additional materials are included for TY 3 ET (see below Summary). Install Guardrail following the construction of soil nail wall.	---	---	---	---	---	---
LT	Type 4A	336+85	6.380	339+62	6.432	Type 1	200.00	0	Guardrail installed in existing soil nail wall. Extend GR 75' Back Station with TY 4A End Treatment	LT	337+60	6.394	339+62	6.432	212.50
LT	Type 1	354+46	6.713	360+22	6.822	Type 1	487.50	0		LT	354+46	6.713	360+22	6.822	587.50
RT	Terminal Section 1	354+97	6.723	358+57	6.791	Terminal Section 1	370.00	2		RT	354+97	6.723	358+57	6.791	362.50
LT	Type 1	441+00	8.352	443+50	8.400	Type 1	250.00	0	Install Guardrail following the construction of soil nail wall.	---	---	---	---	---	---
RT	Terminal Section 1	466+82	8.841	472+61	8.951	Type 1	552.50	4	Additional DGA included in GR Summary (See Typical for more information). 579 LF of Ditching and Shouldering has been included.	RT	466+82	8.841	472+61	8.951	587.50
LT	Type 1	483+45	9.156	487+13	9.226	Type 1	275.00	0		LT	483+45	9.156	487+13	9.226	375.00

Summary of Additional Materials Associated with Guardrail End Treatment Type 3							
Side of Road	Approx. Milepoint of Prop. ET Type 3	Approx. Station of Proposed ET Type 3	18" Pipe (LF)	Concrete for End Anchor (CY)	Metal End Section TY 2 - 18" (EACH)	Embankment in Place (CY)	Channel Lining Class 2 (TON)
RT	6.07	320+30	90	0.44	1	20	10
LT	6.08	321+00	60	0.44	1	20	10
			150	0.88	2	40	20



Summary of Items				
G/R Steel W Beam-S Face (7 FT Post)	2,847.50	LF		
Remove Guardrail	2,475.00	LF		
End Treatment Type 1	9	EACH		
End Treatment Type 3	2	EACH		
End Treatment Type 4A	2	EACH		
Terminal Section No. 1	3	EACH		
Concrete-Class A	0.88	CY		
Embankment in Place	20	CY		
Ditching and Shouldering	579	LF		

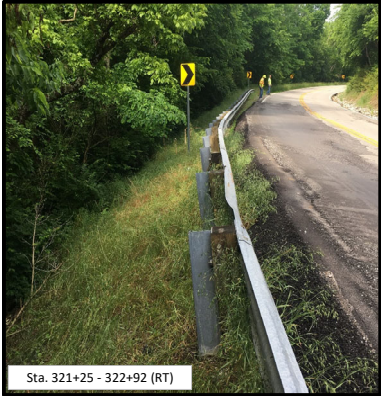
HSIP PROJECT - GRANT - KY 22 MILEPOST 5.758 TO 10.630 ITEM NO. 6-9019.00 PAVEMENT FAILURE REPAIR IMPROVEMENTS																				
STATION		CASE	OFFSET	LENGTH (FT)	WIDTH (FT)	DEPTH (IN)	CRUSHED AGGREGATE SIZE NO 23 TON	LEVELING & WEDGING PG64-22 TON	CL2 ASPH BASE 1.00D PG64-22 TON	CL2 ASPH SURF 0.38A PG64-22 TON	PERFORATED PIPE-4 IN LF	NON- PERFORATED PIPE-4 IN LF	PERF PIPE HEADWALL TY 3-4 IN EACH		CRUSHED AGGREGATE SIZE NO 2 TON	EDGELINE RUMBLE STRIPS LF	FIBER REINFORCEMENT FOR HMA TON			
UNIT TO BID																				
ITEM CODE																				
320+58	TO	323+81	CASE A	LT	323	10	10.5	166	25	178	*					78	2697	24785EC		
321+11	TO	322+71	CASE A	RT	160	10	10.5	82	13	88	*						*	178		
324+70	TO	325+70	CASE A	LT	100	10	10.5	52	8	55	*						*	88		
366+40	TO	368+63	CASE A	LT & RT	223	24	10.5	274	41	295	41						446	295		
416+43	TO	417+60	CASE A	RT	117	10	10.5	60	9	65	9						117	65		
428+42	TO	429+78	CASE A	LT	136	10	10.5	70	11	75	*						*	75		
438+69	TO	439+30	CASE B	LT	61	10	10.5	19	5	34	*	61	25	1	1		*	34		
440+83	TO	442+91	CASE A	LT	208	10	10.5	108	16	115	*						*	115		
456+83	TO	458+86	CASE B	LT & RT	203	24	10.5	135	38	268	38	203	25	1	1		406	268		
462+28	TO	462+88	CASE B	LT	60	10	10.5	19	5	33	5	60	25	1	1		60	33		
463+86	TO	466+18	CASE B	LT	232	10	10.5	72	18	128	18	232	25	1	1		232	128		
484+04	TO	487+59	CASE A	LT & RT	355	24	10.5	436	66	469	66						710	469		
520+00	TO	520+70	CASE B	RT	70	10	10.5	22	6	39	6	70	25	1	1		70	39		
PAVEMENT FAILURE REPAIR IMPROVEMENTS TOTAL:											1,515	261	1,842	183 (1)	626	125	5	5	6,512 (2)	1,842
NOTES:																				
THESE NUMBERS ARE FOR ESTIMATE PURPOSES ONLY. ACTUAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.																				
(1) QUANTITY FOR ASPH SURF HAS BEEN INCLUDED ON THE RESURFACING IMPROVEMENT SUMMARY FOR PAVEMENT REPAIRS LOCATED IN AREAS OF RESURFACING.																				
(2) AN ADDITIONAL QUANTITY OF 4.471 LF FOR A TOTAL OF 6.512 LF OF SAWED EDGELINE RUMBLE STRIPS HAS BEEN INCLUDED FOR EXISTING PAVEMENT FAILURE PATCHES NOT LISTED IN THIS SUMMARY. SAWED RUMBLE STRIPS SHALL BE CONSTRUCTED TO ALL PAVEMENT FAILURE LOCATIONS; TO BOTH EXISTING PATCHES NOT BEING IMPROVED AND TO PROPOSED FULL DEPTH REPAIR LOCATIONS. ACTUAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.																				



HSIP PROJECT - KY 22 - GRANT COUNTY  
MILEPOST 5.758 TO 10.630  
ITEM NO. 6-9019.00  
SOIL NAIL WALL IMPROVEMENT SUMMARY

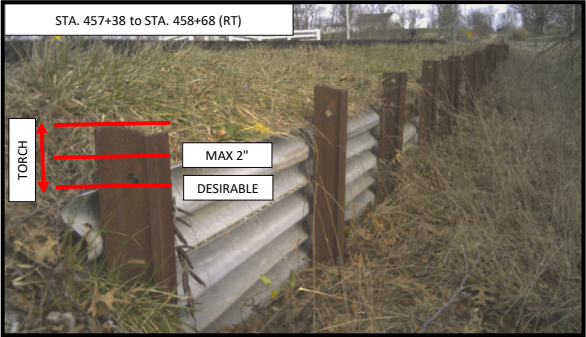
OFFSET	BEGIN MILE POINT	BEGIN STATION	END MILE POINT	END STATION	LENGTH (FT)	HEIGHT OF WALL (FT)	SOIL NAIL WALL (SF)	COMMENTS
RT	6.08	321+25	6.12	322+92	167	10	1,670	Soil nail wall includes all specialty work involved with construction of soil nail wall including mobilization, 20ft drilled/launched soil nail, 8" shotcrete, lightweight backfill, and horizontal drains. Any other item associated with repair, such as excavation, will be incidental to Soil Nail Wall.  Guardrail has been included in the Guardrail Summary. Paving operations has been included in the Superelevation and/or Resurfacing Summaries.  Refer to the Special Note for Soil Nail Walls for more information.
LT	6.10	322+05	6.12	323+37	132	10	1,320	
LT	8.36	441+39	8.39	443+03	164	10	1,640	
SOIL NAIL WALL (ITEM # 20603ED):							4,630	

NOTE: There are existing railroad rails and cribbing that are to be removed from Sta. 441+39 to 443+03 and is incidental to Soil Nail Wall.



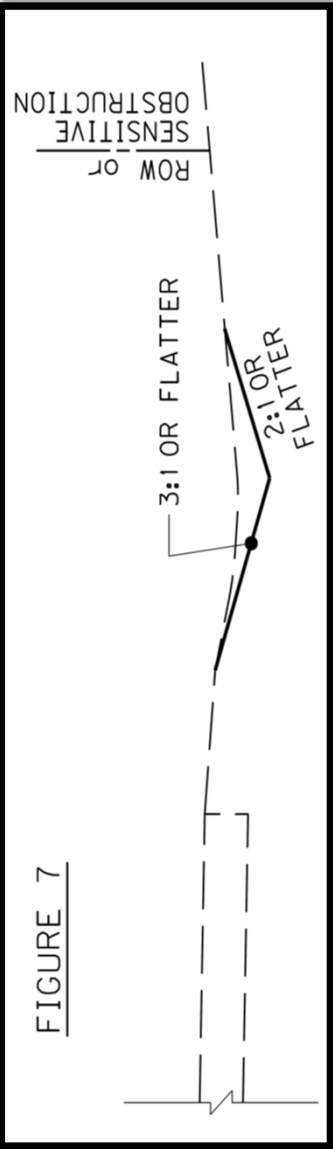
HSIP PROJECT - KY 22 - GRANT COUNTY  
MILEPOST 5.758 TO 10.630  
ITEM NO. 6-9019.00  
CUT RAILS IMPROVEMENT SUMMARY

OFFSET	BEGIN MILE POINT	BEGIN STATION	END MILE POINT	END STATION	LENGTH (FT)	APPROX. # OF RAILS	COMMENTS
RT	8.66	457+38	8.69	458+68	130	26	Contractor shall cut railroad rails by torch cutting rails as close to the existing ground line as possible and at a maximum of within 2" of existing ground line. Disposal of the rails will be incidental.
REMOVE (RAILROAD RAIL ABOVE ANY GROUND LINE BY TORCH CUTTING) (ITEM # 24894EC)						26	<b>Note:</b> These numbers are for estimate purposes only. Actual locations and quantities will be determined by the engineer in the field.

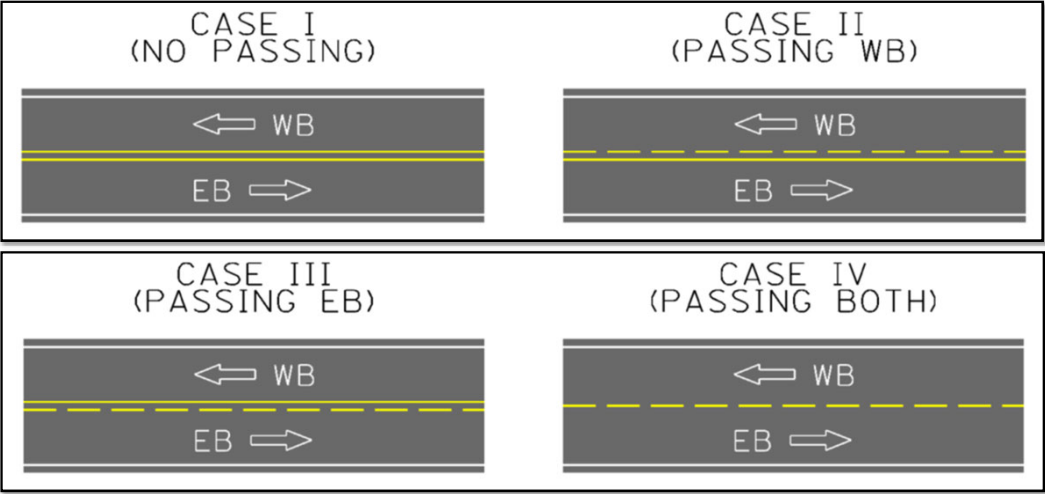


Ditching & Shouldering Summary										HSIP PROJECT - GRANT County		KY 22	
Notes:	* The "Figure References" noted below refer to the Figure number within the Ditching & Shouldering Detail Sheet that is the closest representation of the intended Ditching & Shouldering.												
	** The Estimated Volumes of Excavation and Embankment are provided for informational purposes ONLY. The Department gives no guarantee to the accuracy of the estimated volumes. The Bidder must draw his/her own conclusion. Payment will be based on the Linear Footage of Ditching & Shouldering performed, regardless of the accuracy of the Estimated Volumes of Excavation and Embankment.												
Side of Road	LOCATION			Length (LF)	Estimated Excavation Volume** (CU YD)	Estimated Embankment Volume** (CU YD)	Ditching & Shouldering Detail Sheet Figure Ref. *	Remarks					
	Approx. BEGIN Station	Approx. END Station	Approx. END Milepoint										
LT	464+20	467+40	8.852	320	16	---	Figure 7	Provided positive drainage away from entrance at approximate Sta. 467+50					
LT	505+20	508+70	9.634	350	17	---	Figure 7	Do Not Disturb Manholes or underground Sanitary Sewer at this location.					

Summary of Items		
Ditching & Shouldering	670	LF



HSIP Project - KY 22 - GRANT COUNTY						
MILEPOST 5.758 TO 10.630						
ITEM NO. 6-9019.00						
STRIPING SUMMARY						
BEGIN STATION	END STATION	BEGIN MILEPOINT	END MILEPOINT	PASSING ZONE LENGTH		STRIPING LAYOUT CASE
				EB	WB	
304+76	376+27	5.76	7.13			CASE I (NO PASSING)
376+27	385+65	7.13	7.30	2,224		CASE III (PASSING EB)
385+65	398+51	7.30	7.55		2,075	CASE IV (PASSING BOTH)
398+51	406+40	7.55	7.70			CASE II (PASSING WB)
406+40	444+77	7.70	8.42			CASE I (NO PASSING)
444+77	453+72	8.42	8.59	1,760		CASE III (PASSING EB)
453+72	462+37	8.59	8.76		1,607	CASE IV (PASSING BOTH)
462+37	469+79	8.76	8.90			CASE II (PASSING WB)
469+79	472+71	8.90	8.95			CASE I (NO PASSING)
472+71	485+68	8.95	9.20	2,970		CASE III (PASSING EB)
485+68	502+41	9.20	9.52		1,673	CASE IV (PASSING BOTH)
502+41	561+00	9.52	10.63			CASE I (NO PASSING)



NOTE: The proposed striping layout eliminates six existing passing zone locations. Follow the striping layout as presented in this summary. No Passing Zone signs to be removed are listed in the Remove Sign Summary.

NOTE: For public roads, break the striping on the outside white line and centerline yellow lines of KY 22 along the length of the public approach road.

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
24995EC	PAVE STRIPING-SPRAY THERMO-6 IN W	LF	51,248
24996EC	PAVE STRIPING-SPRAY THERMO-6 IN Y	LF	41,061

PASSING ZONES BEING REMOVED			
DIRECTION	BEGIN STATION	END STATION	LENGTH
EB	409+91	416+54	663
WB	419+54	424+11	457
EB	425+55	430+92	537
WB	434+94	439+89	495
EB	513+08	521+95	887
WB	522+88	528+85	597



Horizontal Alignment Sign Summary																GRANT County				KY 22 - HSIP PROJECT			
Side of Road	Approx. Station	Approx. Mile Point	Facing Traffic Traveling	MUTCD Code	Sign Description	Sign Text / Remarks	Sign Dimensions (in x in)	SHEETING		SBM Alum Sheet Signs 0.125 IN (SQ FT)	Installation Type	# of Sign Posts	Estimated Length of 2" Post (ft)	TOTAL Estimated Sign Post Length (LF)	Barcode Sign Inv. (EACH)								
								Text/ Symbol Color	Background Color							Sheeting Type							
RT	312+50	5.919	EB	W1-4R	Right Reverse Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	15	1								
				W13-1P	XX MPH (Advisory Speed)				FL Yellow	IX						2.25							
RT	321+75	6.094	WB	W1-8L	Left Chevron	Install following Soil Nail Wall Construction	18 x 24	Black	FL Yellow	IX	3.00	Strnd w/ Soil Plate	1	11	1								
				W1-8R	Right Chevron				FL Yellow	IX						3.00							
RT	322+75	6.113	WB	W1-8L	Left Chevron	Install following Soil Nail Wall Construction	18 x 24	Black	FL Yellow	IX	3.00	Strnd w/ Soil Plate	1	11	1								
				W1-8R	Right Chevron				FL Yellow	IX						3.00							
LT	327+30	6.199	WB	W1-4L	Left Reverse Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	15	1								
				W13-1P	XX MPH (Advisory Speed)				FL Yellow	IX						2.25							
RT	332+20	6.292	EB	W13-1P	XX MPH (Advisory Speed)	Contact D6 Traffic Before Ordering Sign. Install on Existing Curve Sign.	18 x 18	Black	FL Yellow	IX	2.25												
RT	334+20	6.330	EB	W1-2aR	Right Curve XX	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	14	1								
LT	351+10	6.650	WB	W1-2aL	Left Curve XX	Contact D6 Traffic Before Ordering Sign. Install on Existing post.	36 x 36	Black	FL Yellow	IX	9.00				1								
RT	354+00	6.705	EB	W1-2aL	Left Curve XX	Contact D6 Traffic Before Ordering Sign. Install on Existing Post.	36 x 36	Black	FL Yellow	IX	9.00				1								
LT	359+75	6.813	WB	W1-2aR	Right Curve XX	Contact D6 Traffic Before Ordering Sign. Install on Existing Post.	36 x 36	Black	FL Yellow	IX	9.00				1								
LT	361+00	6.837	WB	W13-1P	XX MPH (Advisory Speed)	Contact D6 Traffic Before Ordering Sign. Install on Existing Curve Sign.	18 x 18	Black	FL Yellow	IX	2.25				1								
LT	449+20	8.508	WB	W13-1P	XX MPH (Advisory Speed)	Contact D6 Traffic Before Ordering Sign. Install on Existing Curve Sign.	18 x 18	Black	FL Yellow	IX	2.25				1								
RT	467+25	8.849	EB	W1-2R	Right Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	14	1								
LT	469+00	8.883	EB / WB	Sign Post Panels	Reflective Sign Post Panel	Install Yellow Reflective Sign Post Panel on Existing Chevron Steel Post. Intsall Sign Post Panel on Each Side of Steel Post.	2 x 60	---	FL Yellow	IX	1.67												
LT	470+25	8.906	EB / WB		FL Yellow				IX	1.67													
LT	471+45	8.929	EB / WB		FL Yellow				IX	1.67													
LT	472+80	8.955	EB / WB		Reflective Sign Post Panel		2 x 60	---	FL Yellow	IX	1.67												
LT	474+10	8.979	WB	W1-2L	Left Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	15	1								
				W13-1P	XX MPH (Advisory Speed)		18 x 18	Black	FL Yellow	IX	2.25												
RT	539+00	10.208	EB	W1-2L	Left Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	14	1								
LT	546+50	10.350	WB	W1-2R	Right Curve	Contact D6 Traffic Before Ordering Sign	36 x 36	Black	FL Yellow	IX	9.00	Strnd w/ Soil Plate	1	14	1								

Object Marker Sign Summary																	GRANT County				KY 22			
Side of Road	Approx of Station	Approx. Mile Point	Facing Traffic Traveling	MUTCD Code	Sign Description	Sign Text / Remarks	Sign Dimensions (in x in)	SHEETING			SBM Alum Sheet Signs 0.080 IN (SQ FT)	Installation Type	# of Sign Posts	Estimated Length of 2" Post (ft)	TOTAL Estimated Sign Post Length (LF)	Barcode Sign Inv. (EACH)								
								Text/ Symbol Color	Background Color	Sheeting Type														
LT	535+05	10.134	EB	OM3-L	Object Marker Type 3 Left	TYPE 3 OBJECT MARKERS (OM3-L AND OM3-R) TO BE USED PER MUTCD GUIDELINES (ALTERNATING BLACK AND REFLECTIVE YELLOW STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES TOWARD THE SIDE OF THE OBSTRUCTION WHICH TRAFFIC IS TO PASS).	12 x 36	Black	Yellow	III or IV	3.00		1	12	12	1								
LT	535+15	10.135	WB	OM3-R	Object Marker Type 3 Right		12 x 36	Black	Yellow	III or IV	3.00		1	12	12	1								
LT	549+55	10.408	EB	OM3-L	Object Marker Type 3 Left		12 x 36	Black	Yellow	III or IV	3.00		1	12	12	1								
LT	549+65	10.410	WB	OM3-R	Object Marker Type 3 Right		12 x 36	Black	Yellow	III or IV	3.00		1	12	12	1								



Summary of Items			
SBM Alum Sheet Signs 0.080 INCH	127.50	SQ FT	
SBM Alum Sheet Signs 0.125 INCH	6.67	SQ FT	
Barcode Sign Inventory	24	EACH	
Steel Post - Type 1	171	LF	

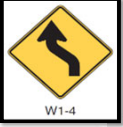


HSIP PROJECT - KY 22 - GRANT COUNTY MILEPOST 5.758 - 10.630 ITEM NO. 6-9019.00 REMOVE SIGNING SUMMARY					
STATION	SIGN SPECIFICATION	SIGN LOCATION		REMOVE SIGN (EACH)	COMMENTS
		SIDE OF ROAD	FACING TRAFFIC TRAVELING		
308+45	W8-5	RT	EB	1	Remove Existing Slippery When Wet and Plaque Sign
	W16-4P				
311+15	W8-8	RT	EB	1	Remove Existing Rough Road Sign
312+50	W1-4	RT	EB	1	Remove Existing Curve and Speed Plaque Sign
	W13-1P				
314+25	OM3	LT	EB / WB	1	Remove Existing Object Marker
327+30	W1-4	LT	WB	1	Remove Existing Curve and Speed Plaque Sign
	W13-1P				
332+20	W13-1P	RT	EB	1	Remove Speed Plaque Sign. Do Not Disturb Curve Sign. Do Not Disturb Existing Sign Steel Post.
333+20	OM3	RT	EB / WB	1	Remove Existing Object Marker
333+85	W1-2a	RT	EB	1	Remove Existing Curve Sign
335+10	W8-5	RT	EB	1	Remove Existing Slippery When Wet Sign
336+45	OM3	RT	EB / WB	1	Remove Existing Object Marker
351+10	W1-2a	LT	WB	1	Remove Curve Sign. Do Not Disturb Chevron. Do Not Disturb Existing Sign Steel Post.
353+35	W8-8	LT	WB	1	Remove Existing Rough Road Sign
354+00	W1-8	RT	EB	1	Remove Existing Chevron Sign. Do Not Disturb Existing Sign Steel Post or Chevron facing traffic traveling WB.
359+75	W1-2a	LT	WB	1	Remove Existing Curve Sign. Do Not Disturb Existing Sign Steel Post.
361+00	W13-1P	LT	WB	1	Remove Speed Plaque Sign. Do Not Disturb Curve Sign. Do Not Disturb Existing Sign Steel Post.
365+10	W8-5	LT	WB	1	Remove Existing Slippery When Wet and Plaque Sign
	W16-4P				
377+85	W1-2	LT	WB	1	Remove Existing Curve and Speed Plaque Sign
	W13-1P				
418+20	W1-2	RT	EB	1	Remove Existing Curve Sign
419+54	W14-3	RT	WB	1	Remove Existing No Passing Zone Sign
430+92	W14-3	LT	EB	1	Remove Existing No Passing Zone Sign
433+15	W1-2	LT	WB	1	Remove Existing Curve Sign
434+94	W14-3	RT	WB	1	Remove Existing No Passing Zone Sign
449+20	W13-1P	LT	WB	1	Remove Speed Plaque Sign. Do Not Disturb Curve Sign. Do Not Disturb Existing Sign Steel Post.
464+10	W1-2	RT	EB	1	Remove Existing Curve and Speed Plaque Sign
	W13-1P				
474+10	W1-2	LT	WB	1	Remove Existing Curve and Speed Plaque Sign
	W13-1P				
489+25	OM3	RT	EB / WB	1	Remove Existing Object Marker
493+45	W8-8 MOD	LT	WB	1	Remove Break in Pavement Sign
504+90	W1-2	RT	EB	1	Remove Existing Curve Sign
520+50	W1-2	LT	WB	1	Remove Existing Curve Sign
521+95	W14-3	LT	EB	1	Remove Existing No Passing Zone Sign
522+88	W14-3	RT	WB	1	Remove Existing No Passing Zone Sign
533+50	W1-2	RT	EB	1	Remove Existing Curve Sign
549+40	W1-2	LT	WB	1	Remove Existing Curve Sign

BID ITEM	ITEM DESCRIPTION	QUANTITY	UNIT
21373ND	REMOVE SIGN	33	EACH

SPECIAL NOTES:  
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.

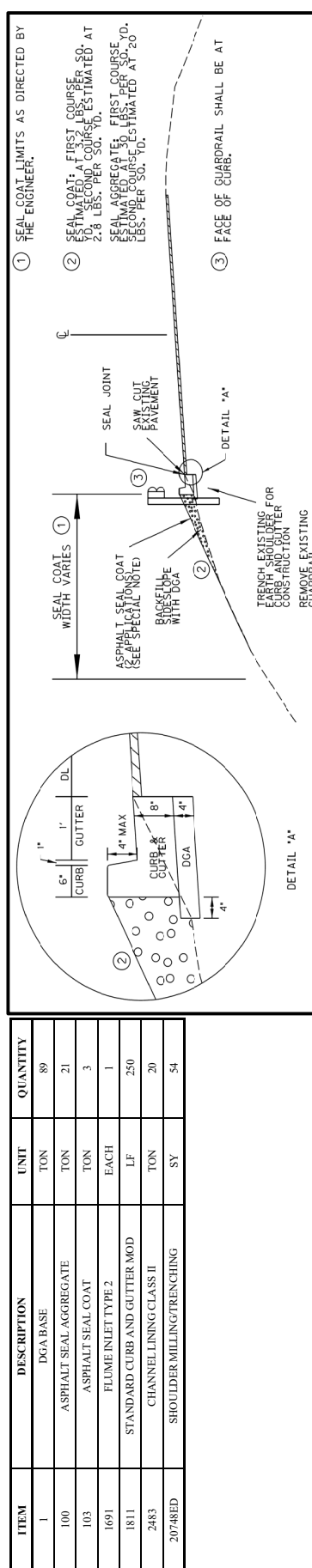
REFER TO THE GENERAL NOTES, SPECIAL NOTE FOR SIGNING, SPECIAL NOTE FOR SIGNAGE, SPECIAL NOTE FOR STAKING, SPECIAL NOTE FOR BARCODES ON PERMANENT SIGNS, STANDARD SIGNING DETAIL SHEETS, AND SIGNING PLAN SHEETS FOR MORE INFORMATION.



NOTE:  
A. CHANNEL LINING TO BE INSTALLED AT BEGIN STATION DUE TO DRAINAGE FROM CURB AND GUTTER.  
B. THESE NUMBERS ARE FOR ESTIMATING PURPOSES ONLY. FINAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

**NOTE:**  
A. CHANNEL LINING TO BE INSTALLED AT BEGIN STATION DUE TO DRAINAGE FROM CURB AND GUTTER.

3. THESE NUMBERS ARE FOR ESTIMATING PURPOSES ONLY. FINAL LOCATIONS AND QUANTITIES WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.



2016 STANDARD DRAWINGS THAT APPLY  
ON HSIP PROJECT

06-9019.00 GRANTY KY 22

ROADWAY  
~ *BARRIERS* ~

TYPICAL BARRIER INSTALLATIONS

TYPICAL GUARDRAIL INSTALLATIONS .....	SEPIA-024
TYPICAL GUARDRAIL INSTALLATIONS .....	RBI-002-07
INSTALLATION OF GUARDRAIL END TREATMENT TYPE 1 .....	SEPIA-025

GUARDRAIL HARDWARE

STEEL BEAM GUARDRAIL (W-BEAM) .....	SEPIA-027
GUARDRAIL COMPONENTS .....	RBR-005-11
GUARDRAIL TERMINAL SECTIONS .....	RBR-010-06
STEEL GUARDRAIL POSTS .....	SEPIA-028
GUARDRAIL END TREATMENT TYPE 1 .....	SEPIA-029
GUARDRAIL END TREATMENT TYPE 3 .....	RBR-030-05
GUARDRAIL END TREATMENT TYPE 3 PIPE DRAINAGE DETAIL .....	RBR-031-01
GUARDRAIL END TREATMENT TYPE 3 ALTERNATE ANCHOR .....	RBR-032
GUARDRAIL END TREATMENT TYPE 4A .....	SEPIA-030
DELINEATORS FOR GUARDRAIL .....	SEPIA-032

~ *DRAINAGE* ~  
BOX INLETS AND OUTLETS

DROP BOXES

DROP BOX INLET TYPE 1 .....	RDB-001-12
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SLOPED BOXES

METAL END SECTION TYPE 1 & 2 (PARALLEL STRUCTURES) .....	RDB-150-02
METAL END SECTION TYPE 3 & 4 (CROSS STRUCTURES) .....	RDB-155-02
DIMENSIONS FOR METAL END SECTIONS .....	RDB-160-02

PAVED DITCHES, FLUME INLETS AND CHANNEL LININGS

FLUME INLET TYPE 2 .....	RDD-021-07
CHANNEL LINING CLASS II AND III .....	RDD-040-05

PIPE AND BOX CULVERT HEADWALLS

12" – 27" - SINGLE LINE PIPE

CONCRETE HEADWALLS FOR 12" - 27" CIRCULAR PIPE CULVERTS .....	RDH-005-02
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TYPICAL DRAINAGE INSTALLATIONS

CULVERT, ENTRANCE & STORM SEWER PIPE TYPES & COVER HEIGHTS (12" – 24" PIPE) .....	RDI-001-10
PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER PIPE .....	RDI-020-09
PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER, REINFORCED CONC. PIPE .....	RDI-021-01
EROSION CONTROL BLANKET SLOPE INSTALLATION .....	RDI-040-01
EROSION CONTROL BLANKET CHANNEL INSTALLATION .....	RDI-041-01

PERFORATED PIPE

PERFORATED PIPE TYPES AND COVER HEIGHTS .....	RDP-001-06
PERFORATED PIPE FOR SUBGRADE DRAINAGE ON TWO-LANE (CLASS 2) AND	

Standard Drawings That Apply  
Page 2 of 2

MULTI-LANE ROADS .....	RDP-005-05
PERFORATED PIPE HEADWALLS.....	RDP-010-09

MISCELLANEOUS DRAINAGE

INTERMEDIATE AND END ANCHORS FOR CIRCULAR PIPE .....	RDX-060-04
SECURITY DEVICES FOR FRAMES, GRATES AND LIDS.....	RDX-160-06
TEMPORARY SILT FENCE.....	RDX-210-03
SILT TRAP - TYPE A .....	RDX-220-05
SILT TRAP - TYPE B.....	RDX-225-01
SILT TRAP - TYPE C.....	RDX-230-01

*~ GENERAL ~*

CURVE WIDENING AND SUPERELEVATION

CURVE WIDENING AND SUPERELEVATION TRANSITIONS .....	RGS-001-07
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*~ PAVEMENT ~*

MEDIANS, CURBS, APPROACHES, ENTRANCES, ETC.

CURB AND GUTTER, CURBS AND VALLEY GUTTER.....	RPM-100-10
APPROACHES, ENTRANCES, AND MAIL BOX TURNOUT .....	RPM-110-07

MISCELLANEOUS PAVING

SHOULDER & EDGELINE RUMBLE STRIP DETAILS .....	SEPIA-005
EDGELINE RUMBLE STRIP DETAILS TWO LANE ROADWAYS .....	SEPIA-006

*~ TEMPORARY ~*

TRAFFIC CONTROL

LANE CLOSURE TWO-LANE HIGHWAY .....	TTC-100-04
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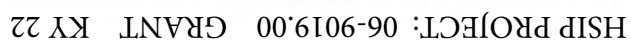
DEVICES

PAVEMENT CONDITION WARNING SIGNS.....	TTD-125-02
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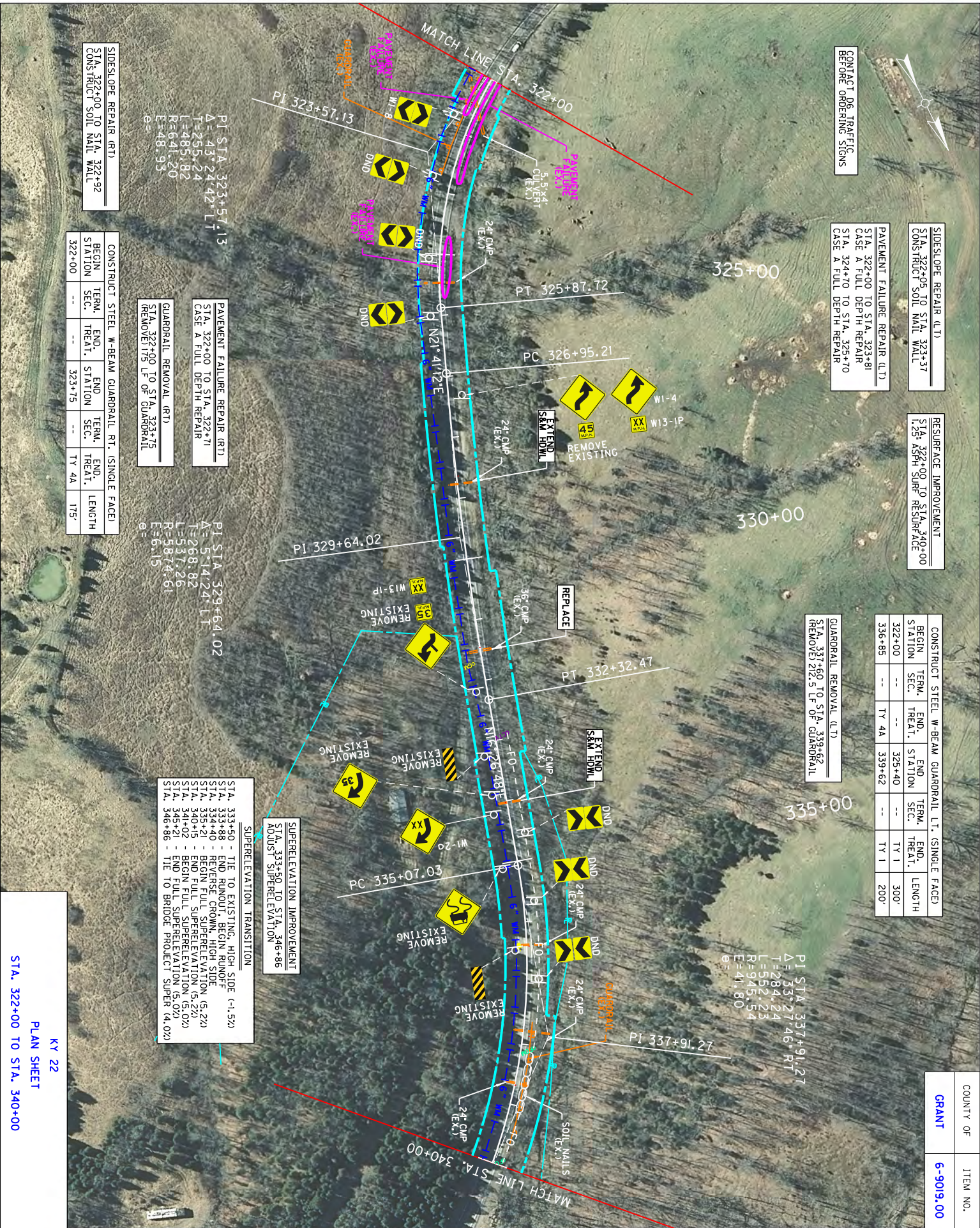
STRIPING OPERATIONS

MOBILE OPERATION FOR PAINT STRIPING CASE II .....	TTS-105-02
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CONTACT D6 TRAFFIC  
BEFORE ORDERING SIGNS

SIDE SLOPE REPAIR (L.T.)  
STA. 322+05 TO STA. 323+37  
CONSTRUCT SOIL NAIL WALL

PAVEMENT FAILURE REPAIR (L.T.)  
STA. 322+00 TO STA. 323+81  
CASE A FULL DEPTH REPAIR  
STA. 324+70 TO STA. 325+70  
CASE A FULL DEPTH REPAIR

RESURFACE IMPROVEMENT  
STA. 322+00 TO STA. 340+00  
1.25" ASPH SURF RESURFACE

BEGIN STATION	TERM. SEC.	END STATION	TERM. TREAT.	END STATION	TERM. TREAT.	LENGTH
322+00	--	--	--	325+40	--	300'
325+85	--	TY 4A	339+62	--	TY 1	200'

GUARDRAIL REMOVAL (L.T.)  
STA. 337+60 TO STA. 339+62  
(REMOVE) 212.5 LF OF GUARDRAIL

PI STA. 337+91.27  
A= 73°27'46" RT  
T=284.24  
L=552.23  
R=945.54  
E=41.80  
e=

SUPERELEVATION IMPROVEMENT  
STA. 333+50 TO STA. 346+86  
ADJUST SUPERELEVATION

SUPERELEVATION TRANSITION  
STA. 333+50 - TIE TO EXISTING, HIGH SIDE (-1.5%)  
STA. 333+88 - END RUNOUT, BEGIN RUNOUT  
STA. 334+40 - REVERSE CROWN, HIGH SIDE  
STA. 335+21 - BEGIN FULL SUPERELEVATION (5.2%)  
STA. 335+22 - BEGIN FULL SUPERELEVATION (5.2%)  
STA. 341+02 - BEGIN FULL SUPERELEVATION (5.0%)  
STA. 345+21 - END FULL SUPERELEVATION (5.0%)  
STA. 346+86 - TIE TO BRIDGE PROJECT SUPER (4.0%)

PAVEMENT FAILURE REPAIR (RT)  
STA. 322+00 TO STA. 322+71  
CASE A FULL DEPTH REPAIR  
PI STA. 329+64.02  
A= 5°14'24" LT  
T=268.82  
L=537.26  
R=5874.61  
E=6.15  
e=

PI STA. 323+57.13  
A= 43°24'42" LT  
T=255.24  
L=485.82  
R=641.20  
E=48.93  
e=

GUARDRAIL REMOVAL (RT)  
STA. 322+00 TO STA. 323+75  
(REMOVE) 175 LF OF GUARDRAIL

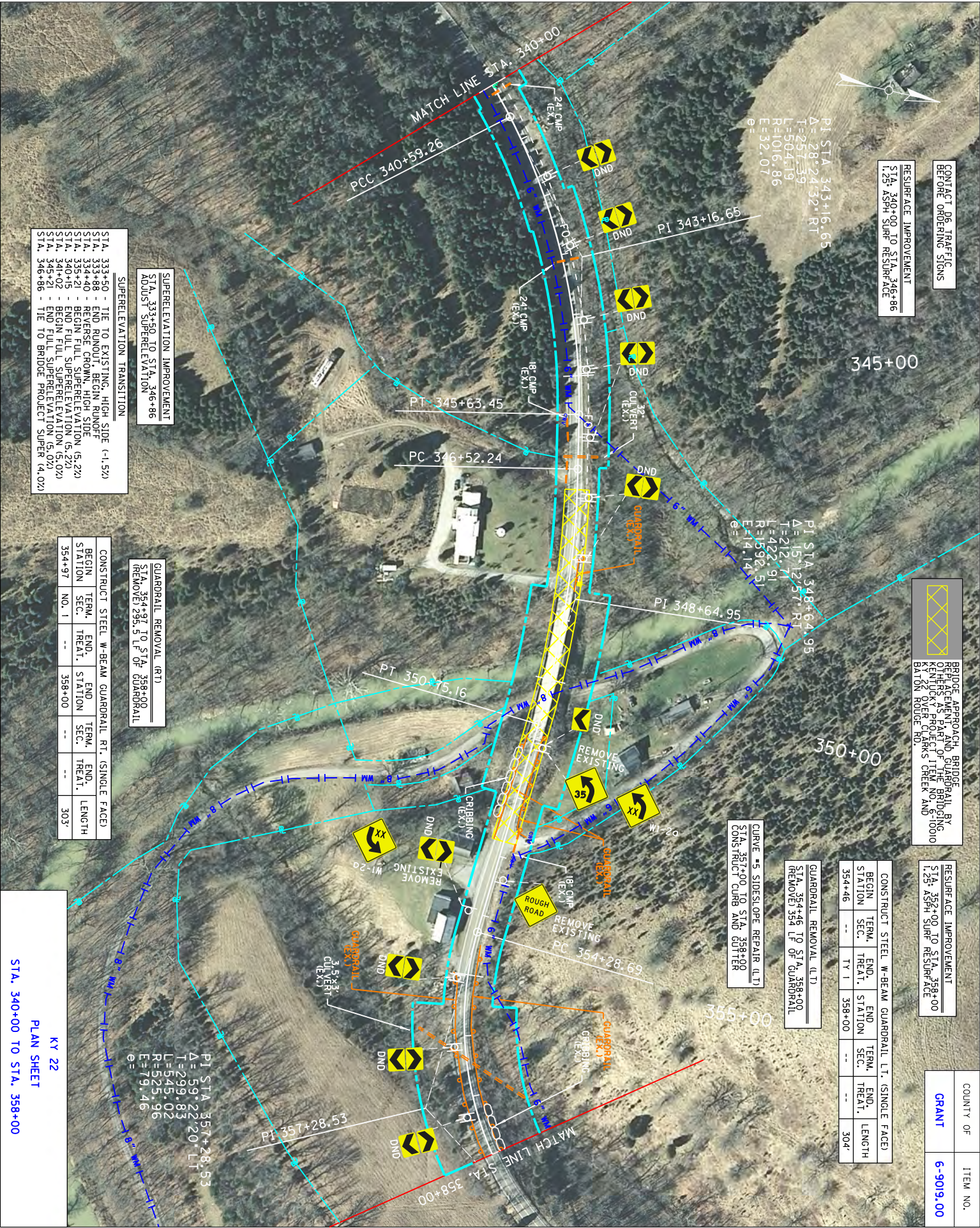
SIDESLOPE REPAIR (RT)  
STA. 322+00 TO STA. 322+92  
CONSTRUCT SOIL NAIL WALL

BEGIN STATION	TERM. SEC.	END STATION	TERM. TREAT.	END STATION	TERM. TREAT.	LENGTH
322+00	--	--	--	323+75	--	175'

GRANT  
COUNTY OF  
ITEM NO.  
6-9019.00

PLAN SHEET  
KY 22  
STA. 322+00 TO STA. 340+00





CONTACT D6 TRAFFIC  
BEFORE ORDERING SIGNS  
STA. 340+00 TO STA. 346+86  
1.25" ASPH SURF RESURFACING

345+00

350+00

355+00

BRIDGE APPROACH, BRIDGE  
DECK, AND GUARDRAIL BY  
KENTUCKY PROJECT ITEM NO. 610010  
BATON ROUGE, LA

RESURFACING IMPROVEMENT				
STA. 352+00 TO STA. 358+00 (REMOVED) 354 LF OF GUARDRAIL				
BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	LENGTH
354+46	--	358+00	--	304'

COUNTY OF	ITEM NO.
GRANT	6-9019.00

CURVE #5 SIDESLOPE REPAIR (LT)  
STA. 357+00 TO STA. 358+00  
CONSTRUCT CURB AND GUTTER

SUPERELEVATION IMPROVEMENT  
STA. 333+50 TO STA. 346+86  
MODIFY SUPERELEVATION

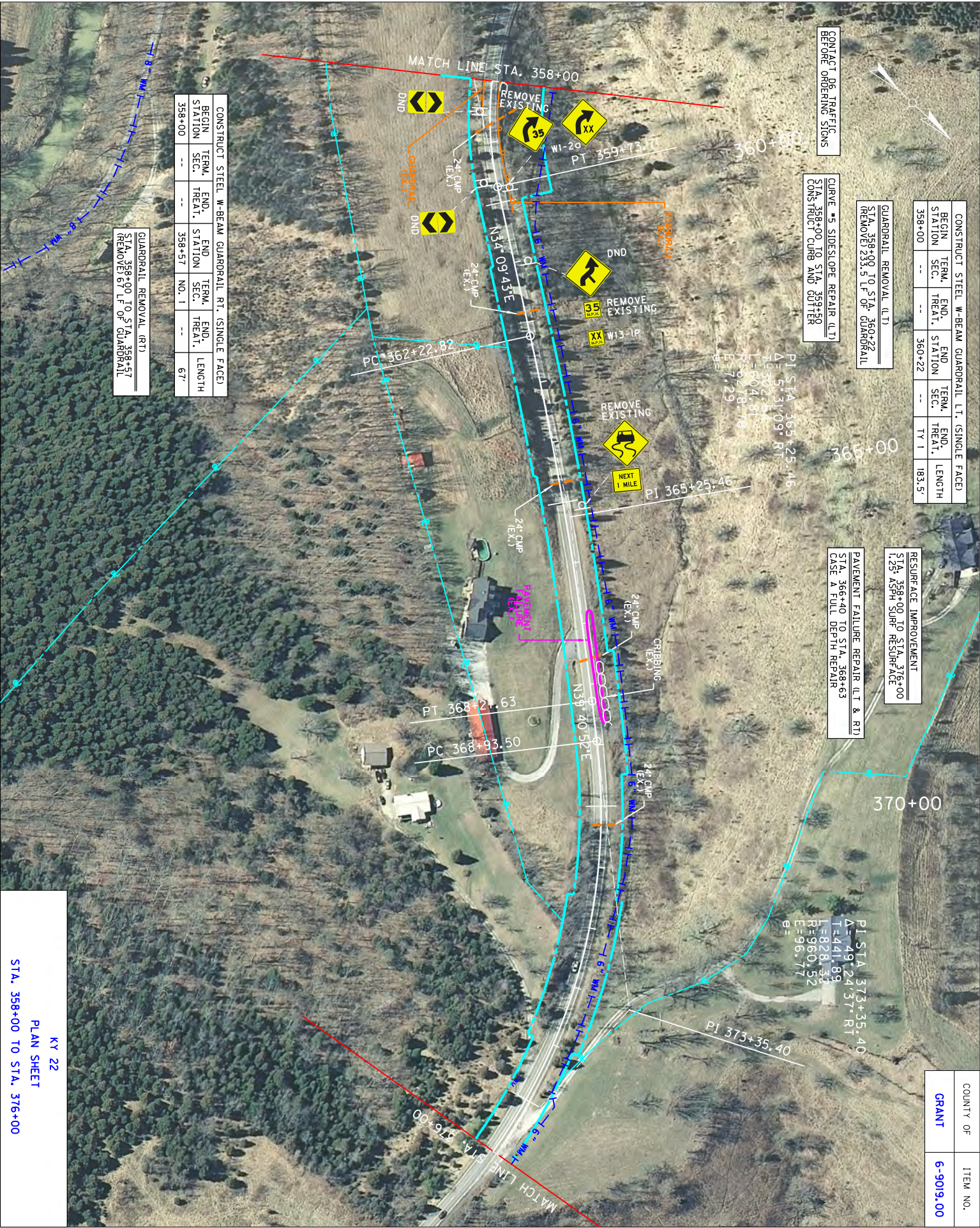
SUPERELEVATION TRANSITION  
STA. 333+50 - TIE TO EXISTING, HIGH SIDE (-1.5%)  
STA. 333+88 - END RUNOUT, BEGIN RUNOFF  
STA. 334+40 - REVERSE CROWN, HIGH SIDE  
STA. 335+21 - BEGIN FULL SUPERELEVATION (5.2%)  
STA. 340+15 - END FULL SUPERELEVATION (5.2%)  
STA. 341+02 - BEGIN FULL SUPERELEVATION (5.0%)  
STA. 345+21 - END FULL SUPERELEVATION (5.0%)  
STA. 346+86 - TIE TO BRIDGE PROJECT SUPER (4.0%)

GUARDRAIL REMOVAL (RT)  
STA. 354+87 TO STA. 358+00  
REMOVED 295.5 LF OF GUARDRAIL

CONSTRUCT STEEL W-BEAM GUARDRAIL, RT. (SINGLE FACE)				
BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	LENGTH
354+97	--	358+00	--	303'

KY 22  
PLAN SHEET  
STA. 340+00 TO STA. 358+00





CONTACT D6 TRAFFIC SIGNS BEFORE ORDERING SIGNS

CURVE #5 SIDESLOPE REPAIR (L/T)  
STA 358+00 TO STA 359+50  
CONSTRUCT CURB AND CUTTER

GUARDRAIL REMOVAL (L/T)  
STA 358+00 TO STA 360+22  
(REMOVE) 233.5 LF OF GUARDRAIL

BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	END LENGTH
358+00	--	360+22	--	183.5'

PAVEMENT FAILURE REPAIR (L/T & RT)  
STA 366+40 TO STA 368+63  
CASE A FULL DEPTH REPAIR

RESURFACE IMPROVEMENT  
STA 358+00 TO STA 376+00  
1.25" ASPH SURF RESURFACE

PI STA 373+35.40  
L=49'24.37" RT  
L=441.89  
L=828.32  
R=960.52  
E=96.77  
E=

COUNTY OF	ITEM NO.
GRANT	6-9019.00

BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	END LENGTH
358+00	--	358+57	--	67'

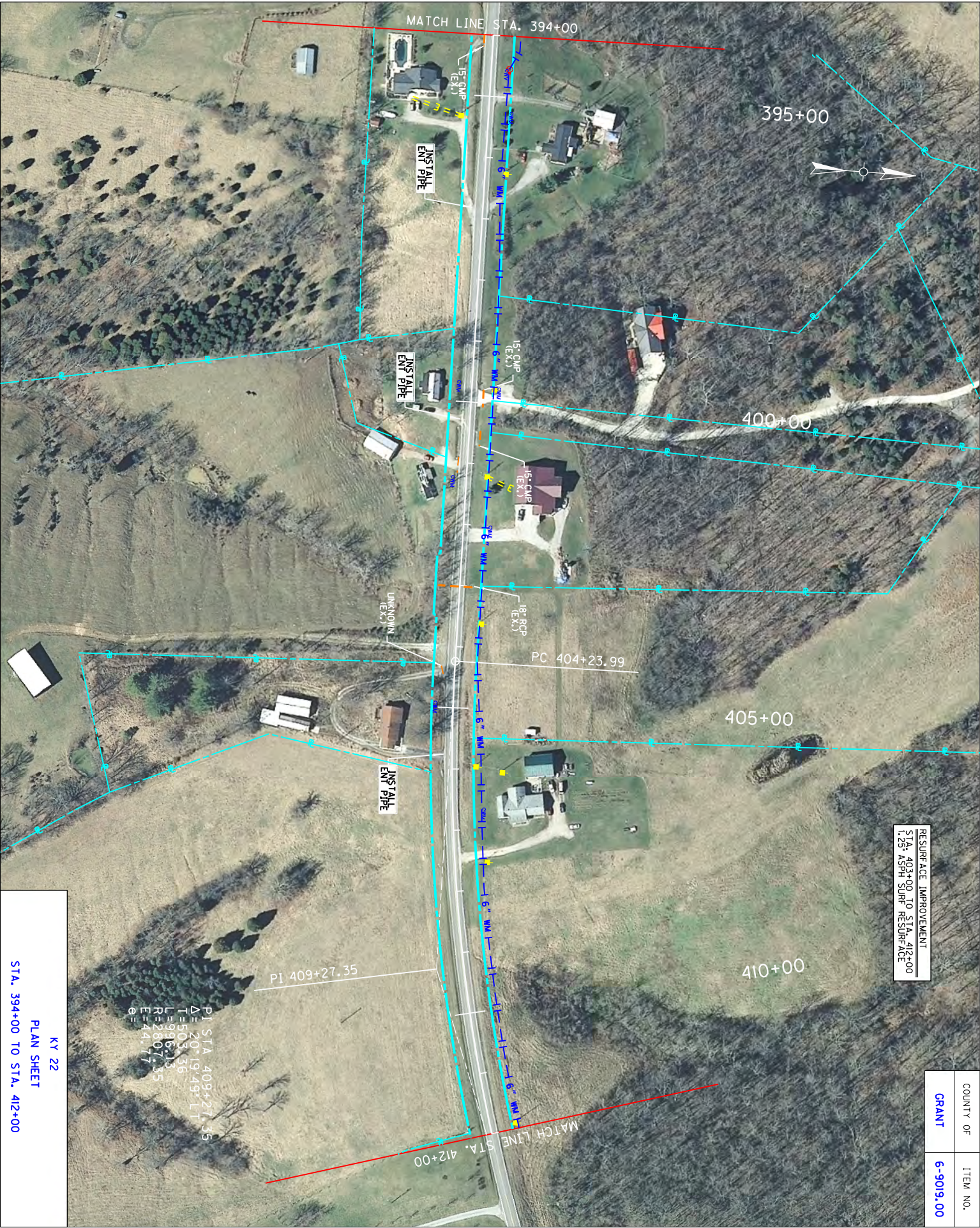
GUARDRAIL REMOVAL (RT)  
STA 358+00 TO STA 358+57  
(REMOVE) 67 LF OF GUARDRAIL

KY 22  
PLAN SHEET  
STA. 358+00 TO STA. 376+00









RESURFACE IMPROVEMENT  
STA. 403+00 TO STA. 412+00  
1.5% ASPH SURF RESURFACE

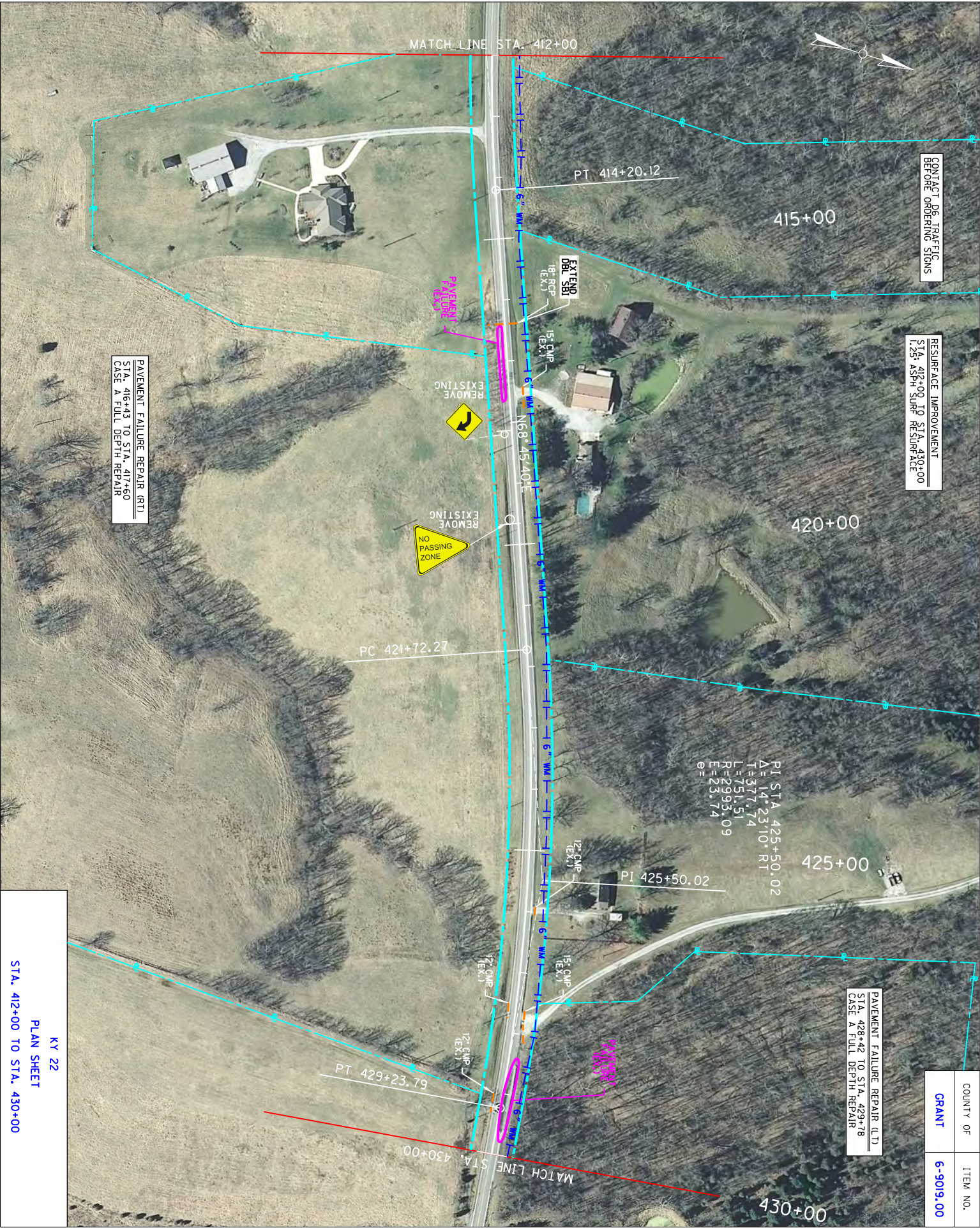
COUNTY OF	ITEM NO.
GRANT	6-3019.00

PI STA. 409+27.35  
Δ = 20°19'49" L  
T = 503.36  
L = 916.13  
R = 2897.35  
E = 441.77  
G =

PLAN SHEET  
KY 22  
STA. 394+00 TO STA. 412+00



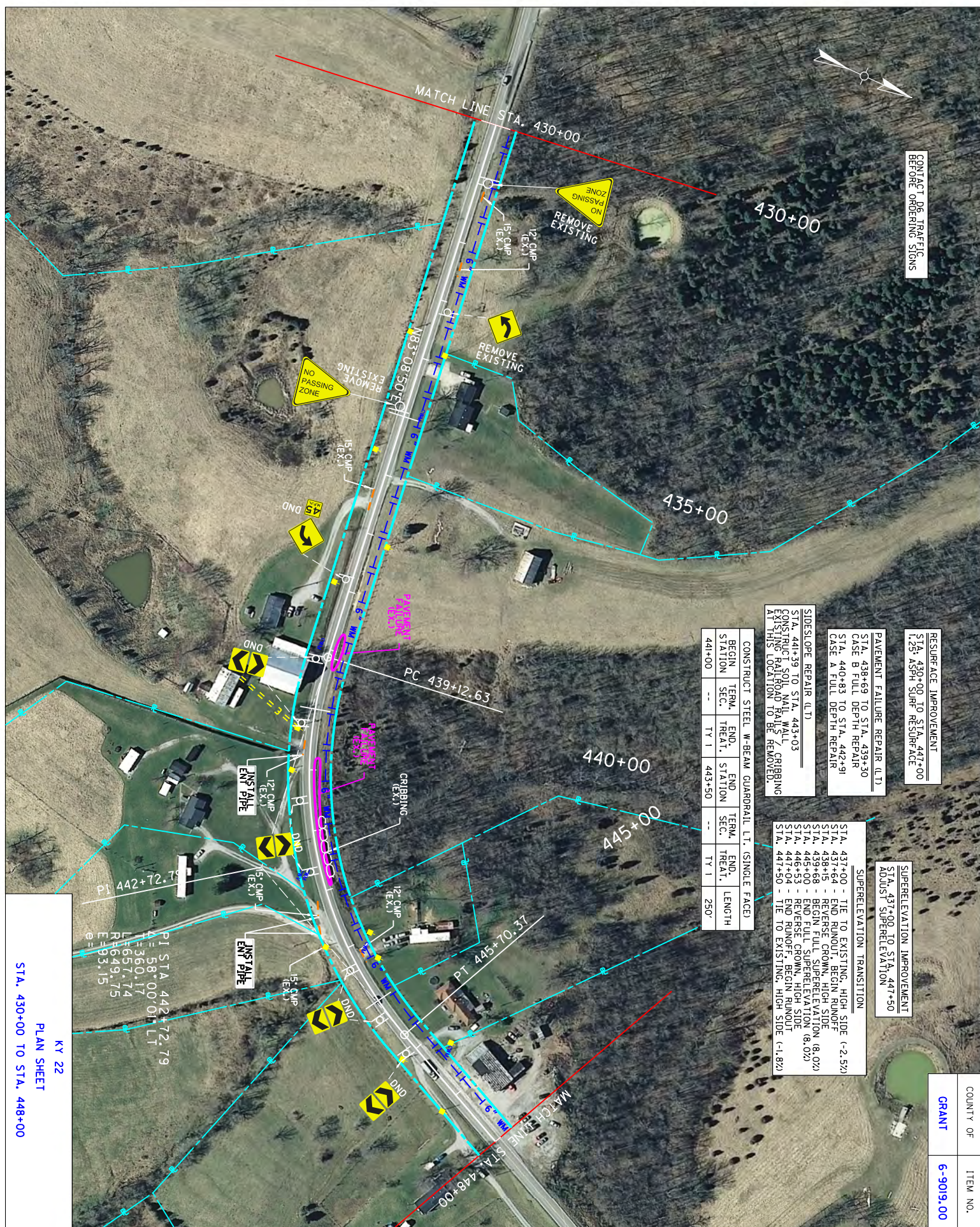
HSIP PROJECT: 06-9019.00 GRANT KY 22



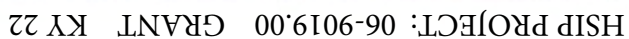
COUNTY OF	ITEM NO.
GRANT	6-9019.00

KY 22  
PLAN SHEET  
STA. 412+00 TO STA. 430+00

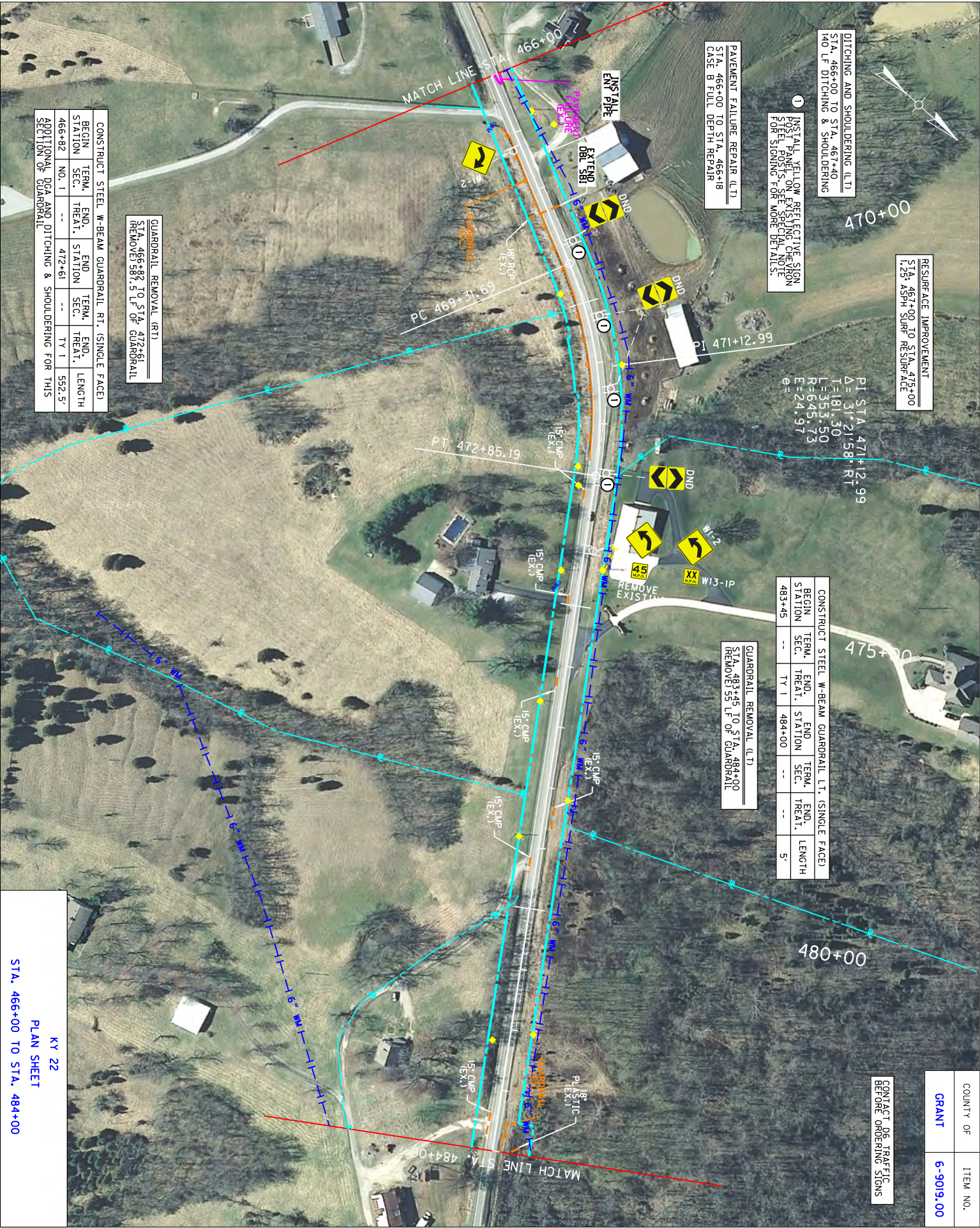












PAVEMENT FAILURE REPAIR (LT)  
STA. 466+00 TO STA. 466+18  
CASE B FULL DEPTH REPAIR

1. INSTALL YELLOW REFLECTIVE SIGN POST PANEL ON EXISTING CHEVRON STEEL POSTS. SEE SPECIAL NOTE FOR SIGNING FOR MORE DETAILS.

DITCHING AND SHOULDERING (LT)  
STA. 466+00 TO STA. 467+40  
140' LF DITCHING & SHOULDERING

RESURFACE IMPROVEMENT  
STA. 467+00 TO STA. 475+00  
1.25' ASPH SURF RESURFACE

PI STA. 471+12.99  
 $\Delta = 31^{\circ}21'58''$  RT  
 $L = 181.30$   
 $R = 353.50$   
 $E = 24.97$   
 $G =$

BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	LENGTH
483+45	--	484+00	--	5'

GUARDRAIL REMOVAL (LT)  
STA. 483+45 TO STA. 484+00  
REMOVED 55' LF OF GUARDRAIL

GUARDRAIL REMOVAL (RT)  
STA. 466+82 TO STA. 472+61  
REMOVED 587.3' LF OF GUARDRAIL

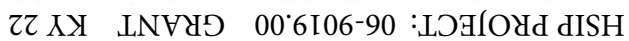
BEGIN STATION	TERM. SEC.	END STATION	TERM. SEC.	LENGTH
466+82	--	472+61	--	552.5'

KY 22  
PLAN SHEET  
STA. 466+00 TO STA. 484+00

COUNTY OF	ITEM NO.
GRANT	6-9019.00

CONTACT DE GRANT COUNTY  
BEFORE ORDERING SIGNS









KY 22  
PLAN SHEET  
STA. 502+00 TO STA. 520+00

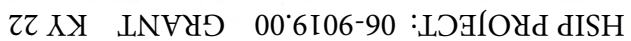
CONTACT D6 TRAFFIC  
BEFORE ORDERING SIGNS

RESURFACE IMPROVEMENT  
STA. 508+50 TO STA. 520+00  
1.25\"/>

PI STA. 513+04.41  
 $\Delta = 19^\circ 36' 07''$  RT  
T=334.11  
L=661.68  
R=1934.07  
E=28.65

COUNTY OF	ITEM NO.
GRANT	6-3019.00

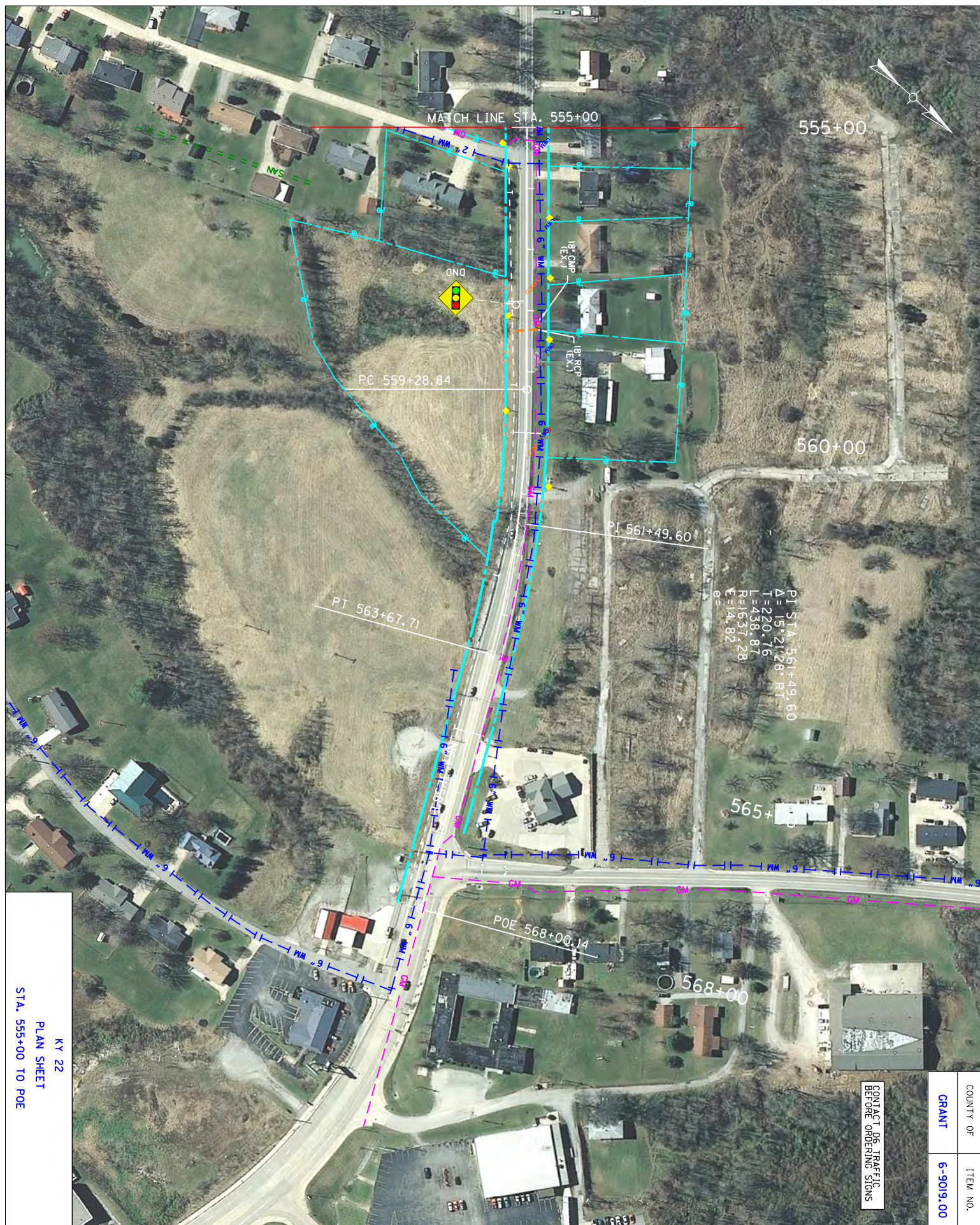








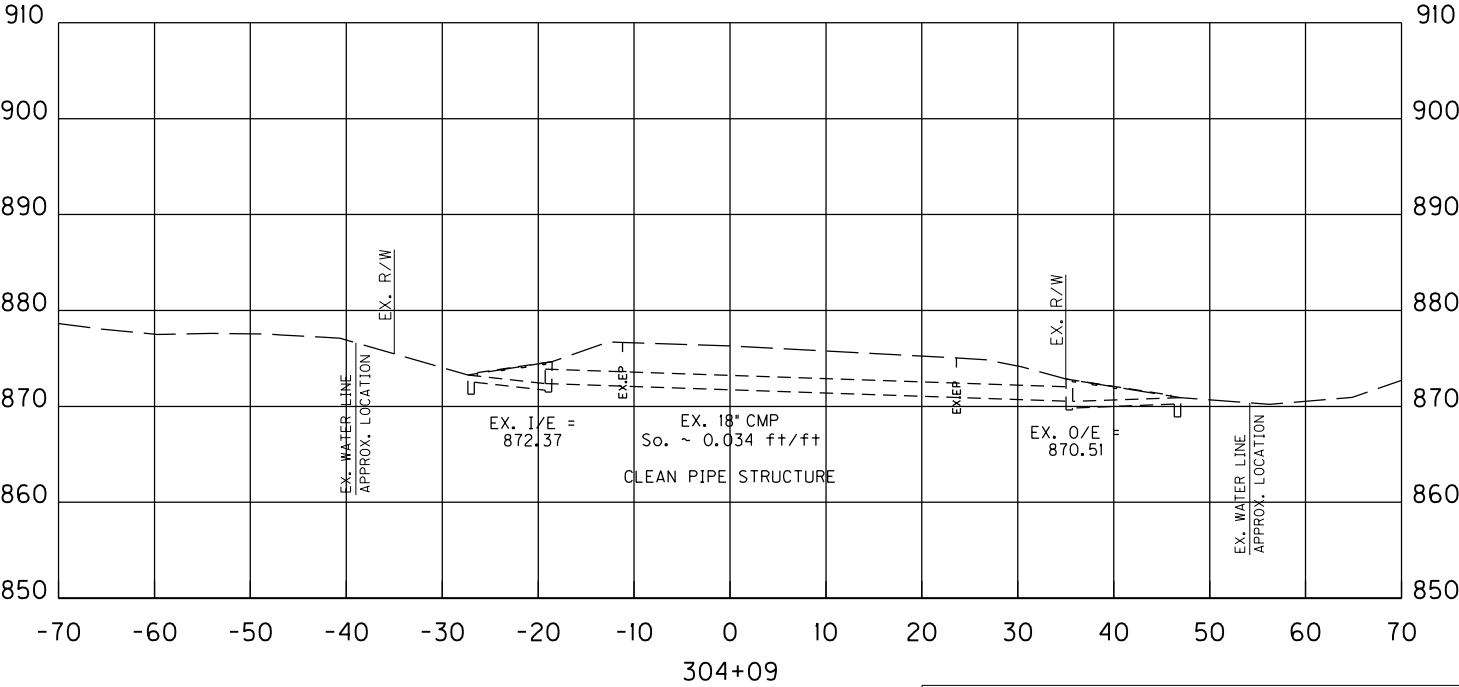
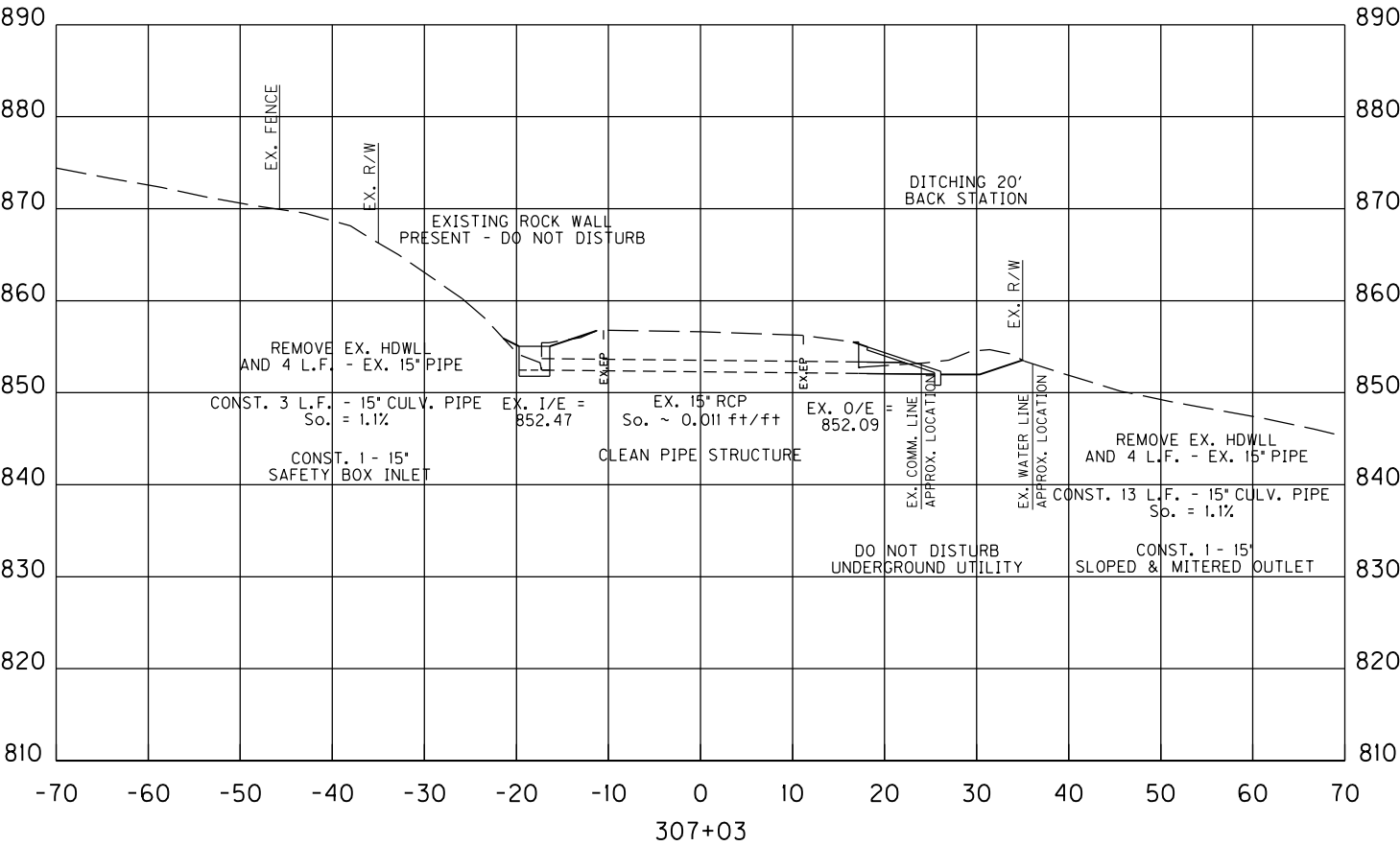






HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00



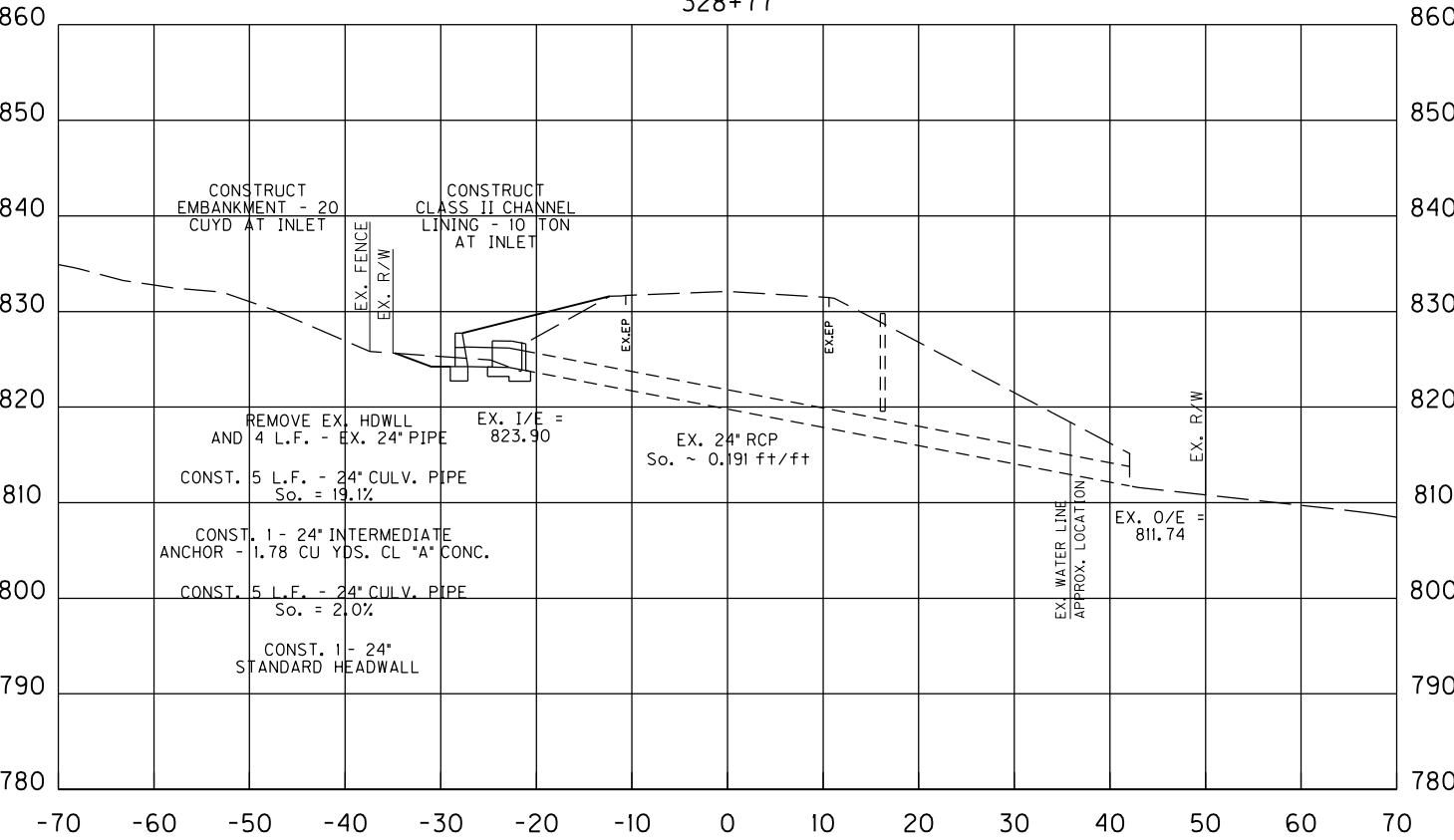
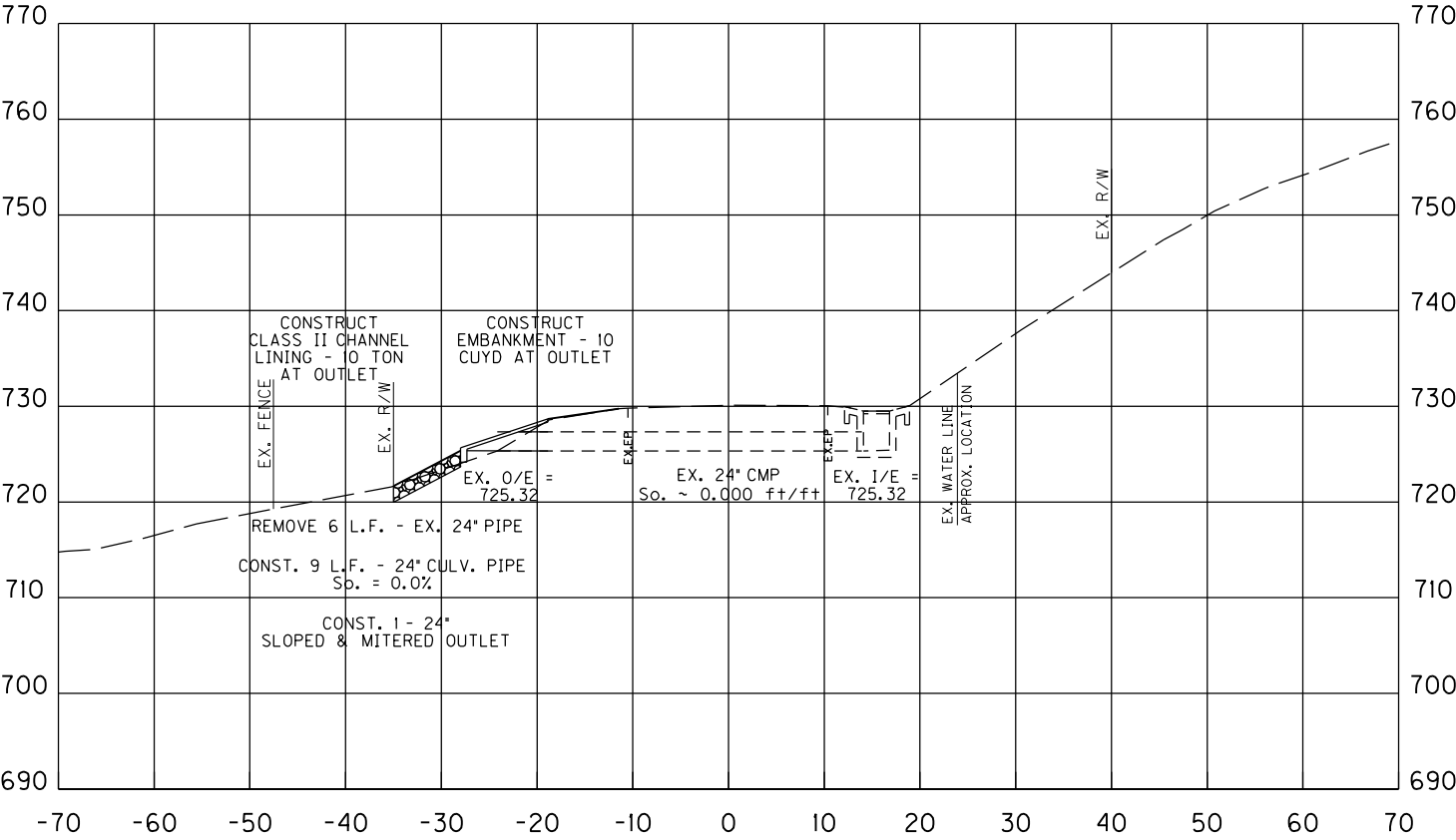
SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 304+09 & STA. 307+03  
PIPE SECTIONS



HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00

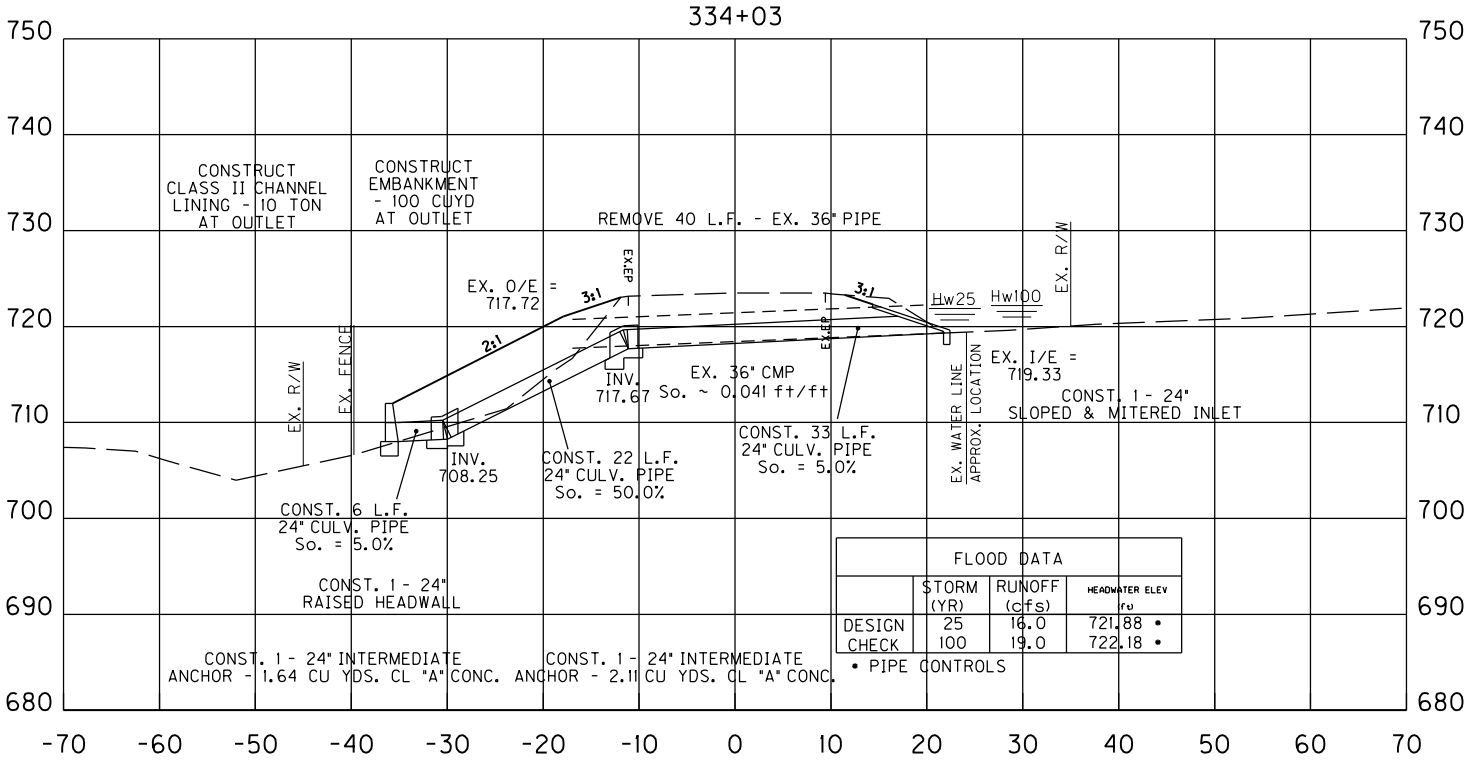
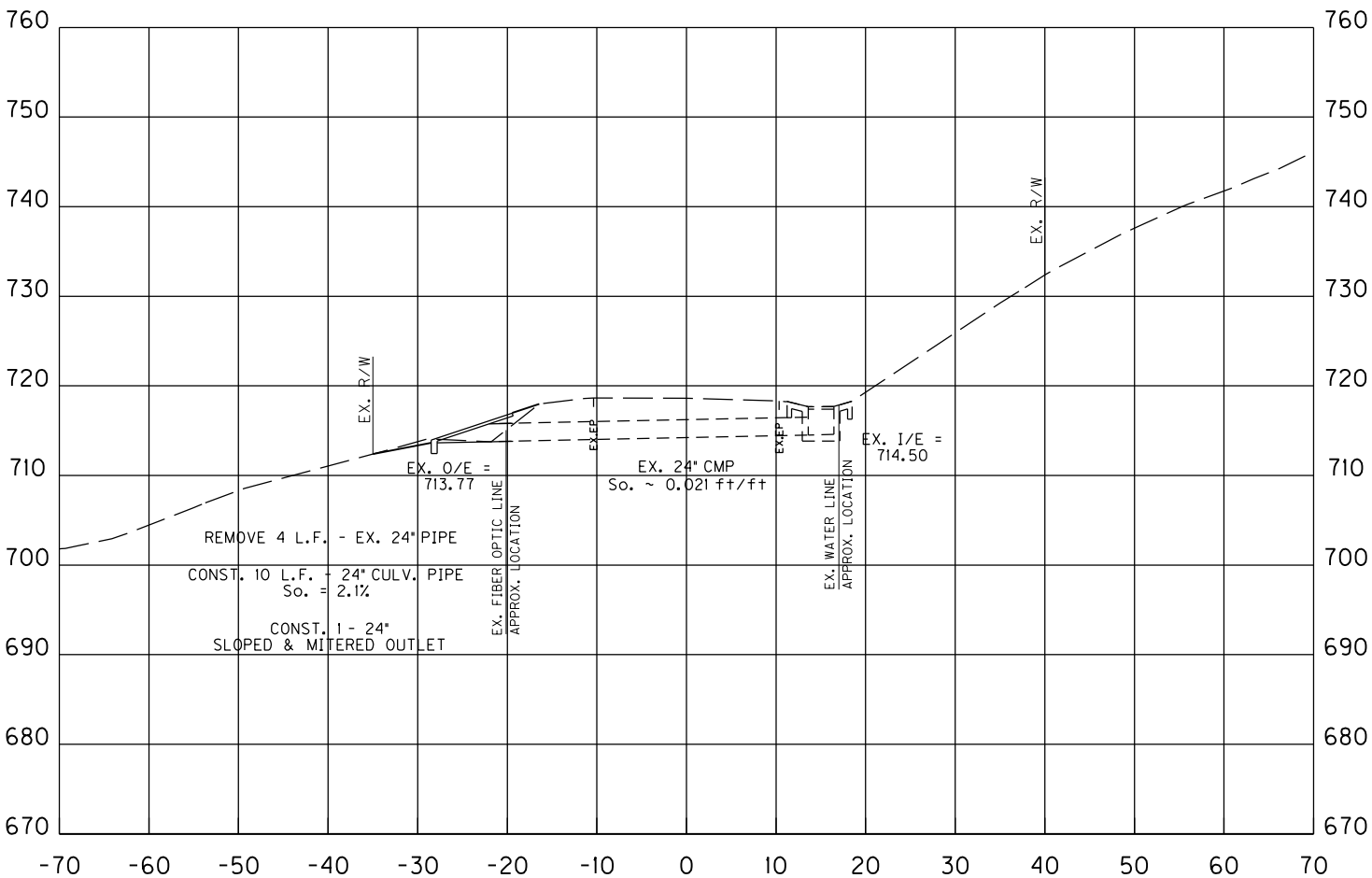


SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 310+46 & STA. 328+77  
PIPE SECTIONS

HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00



FLOOD DATA			
	STORM (YR)	RUNOFF (cfs)	HEADWATER ELEV (ft)
DESIGN	25	16.0	721.88 •
CHECK	100	19.0	722.18 •

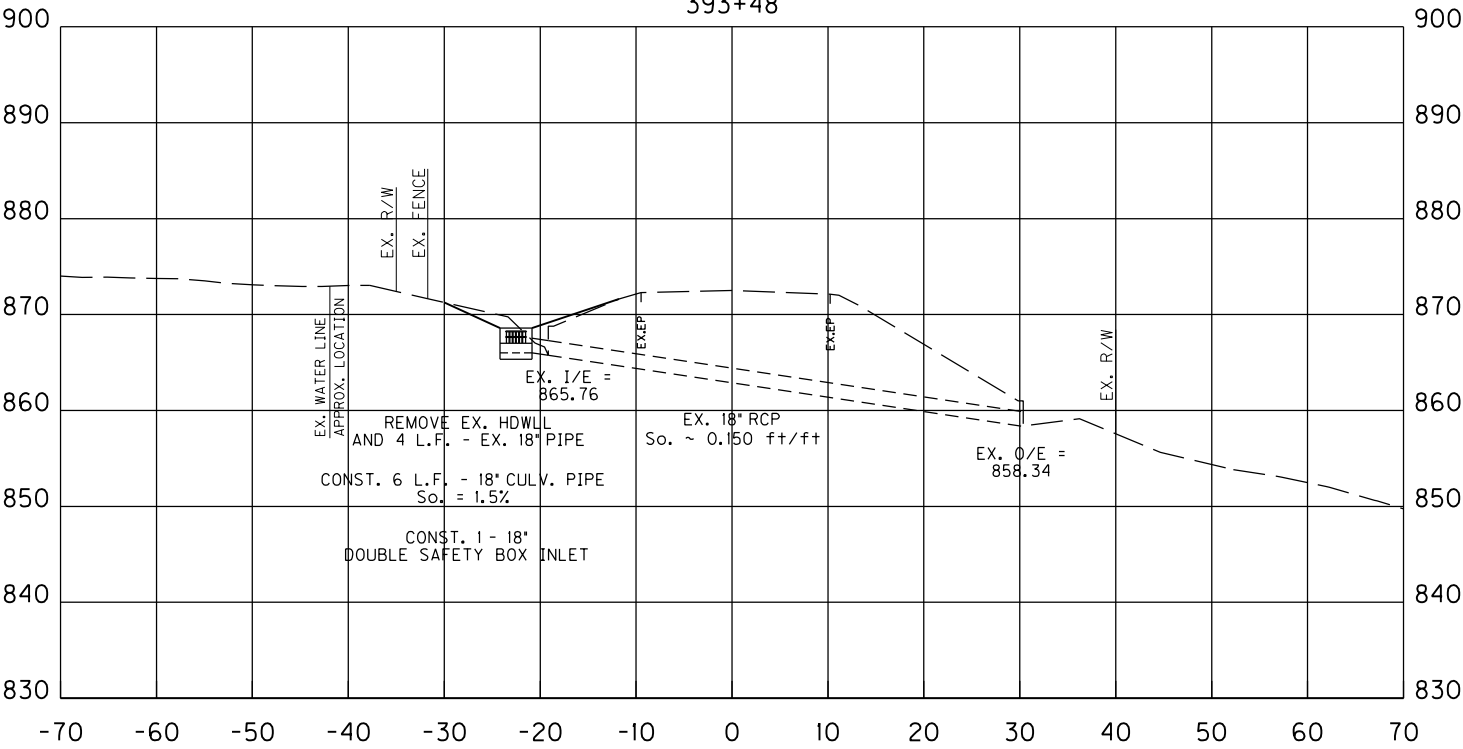
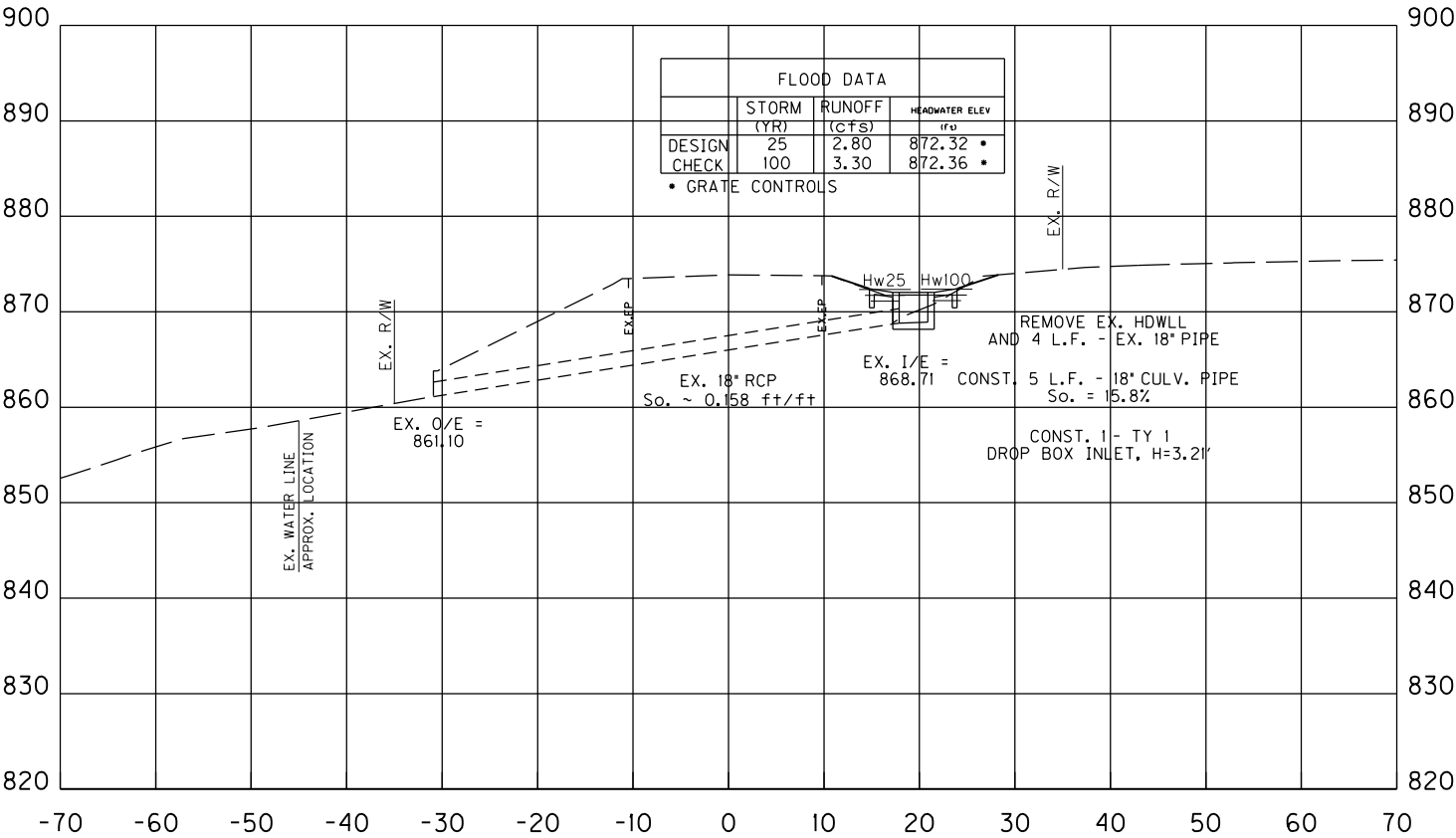
• PIPE CONTROLS

SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 331+51 & 334+03  
PIPE SECTIONS

HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00

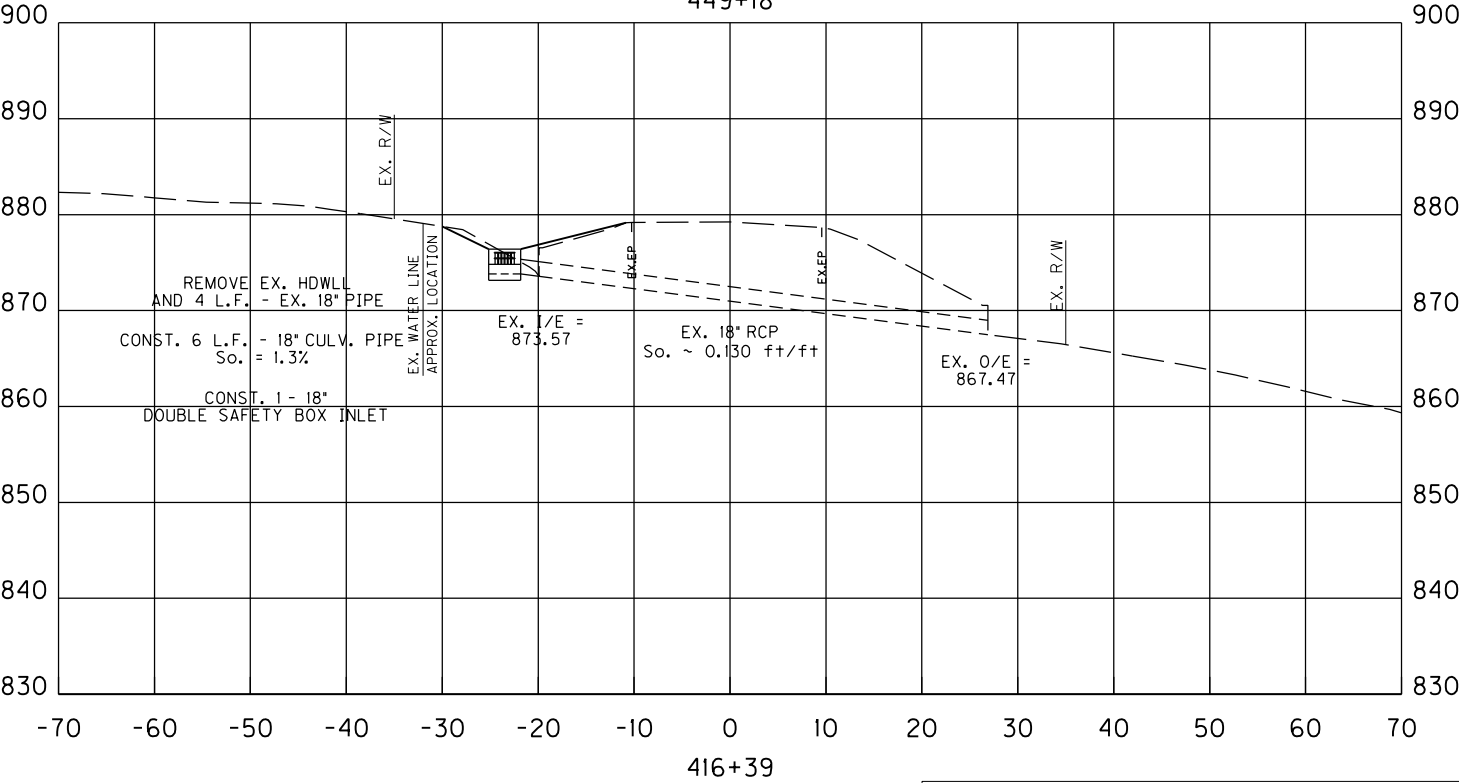
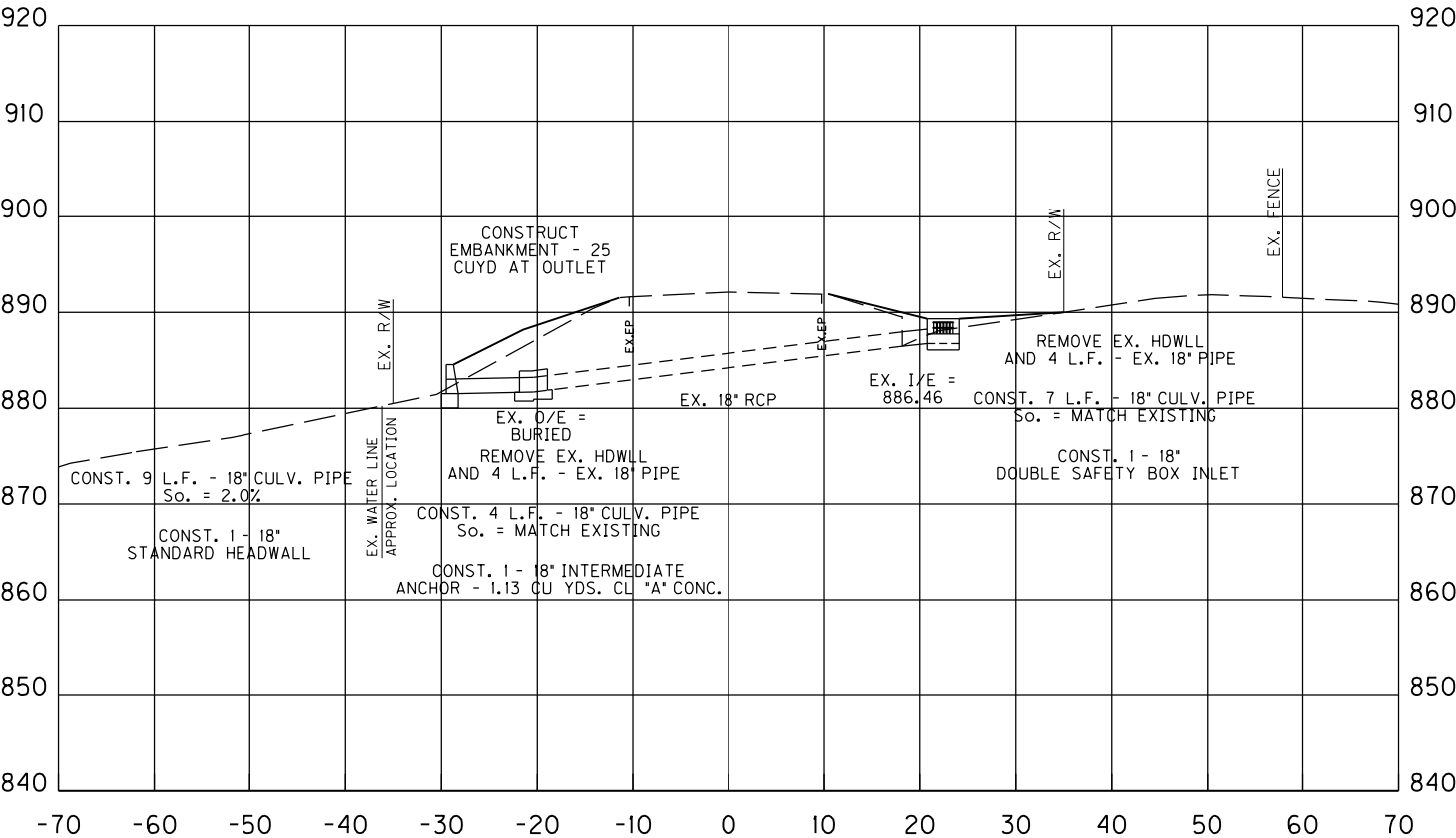


SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 386+77 & 393+48  
PIPE SECTIONS

HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00

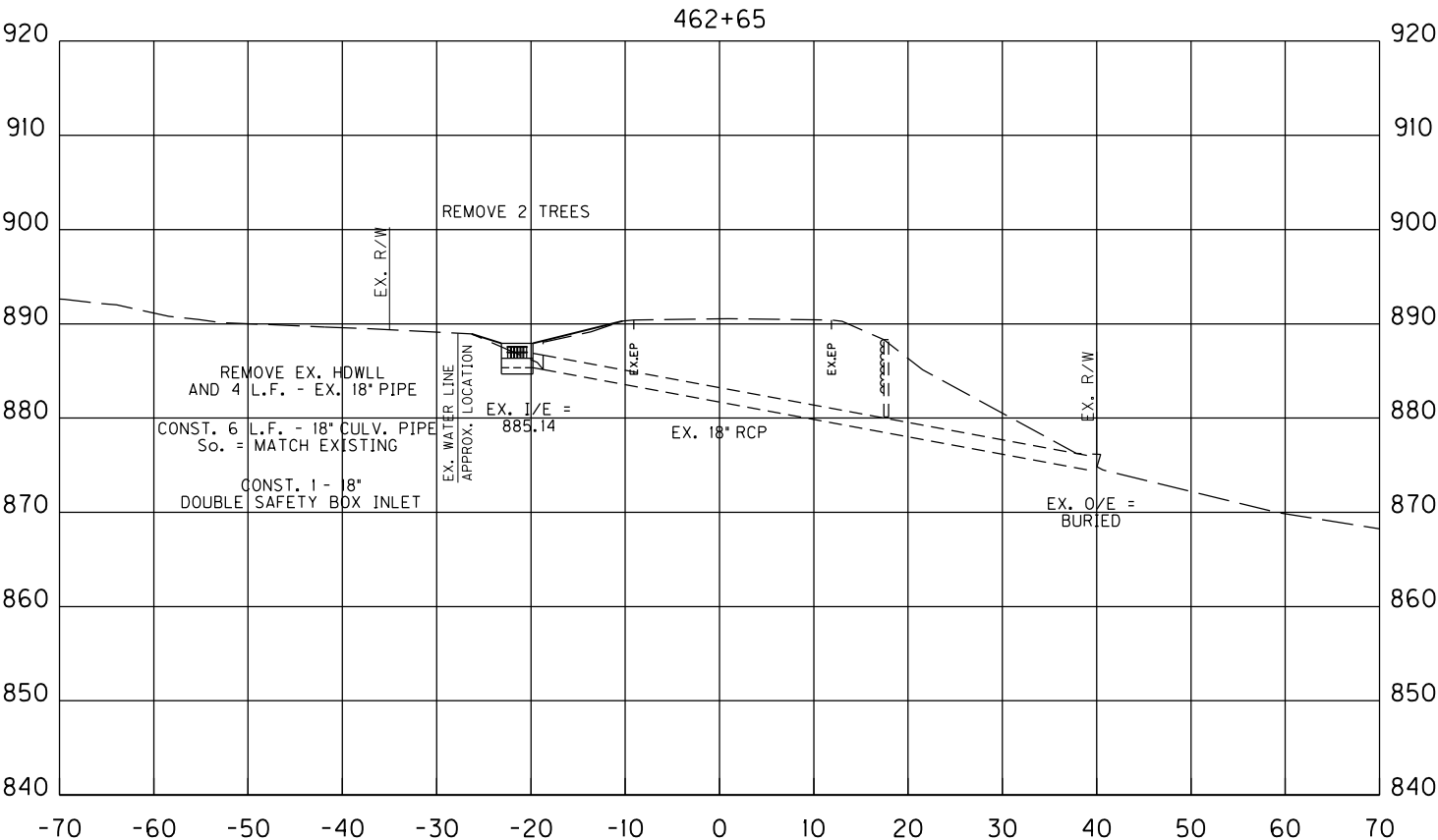
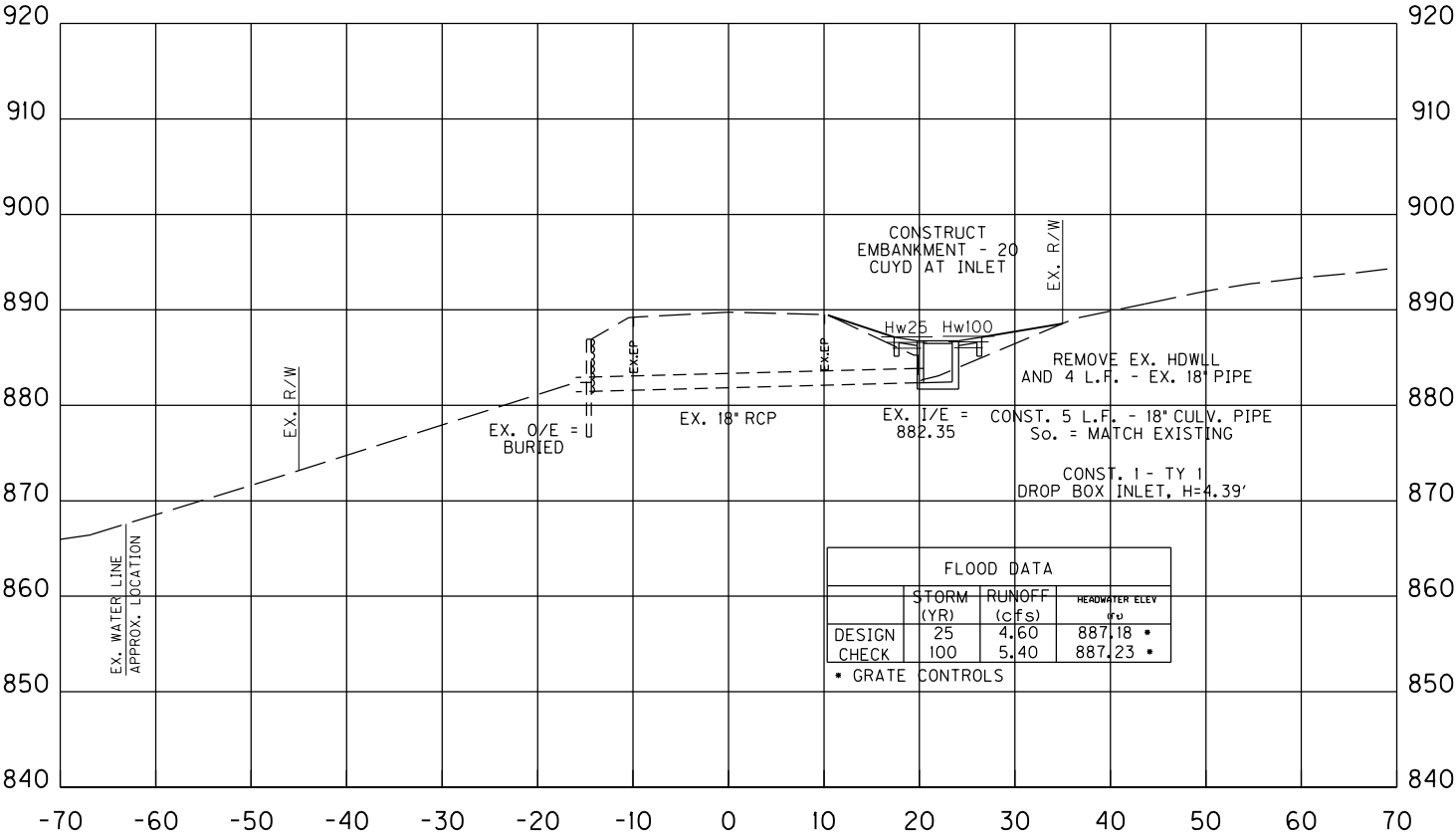


SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 416+39 & 449+18  
PIPE SECTIONS

HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00

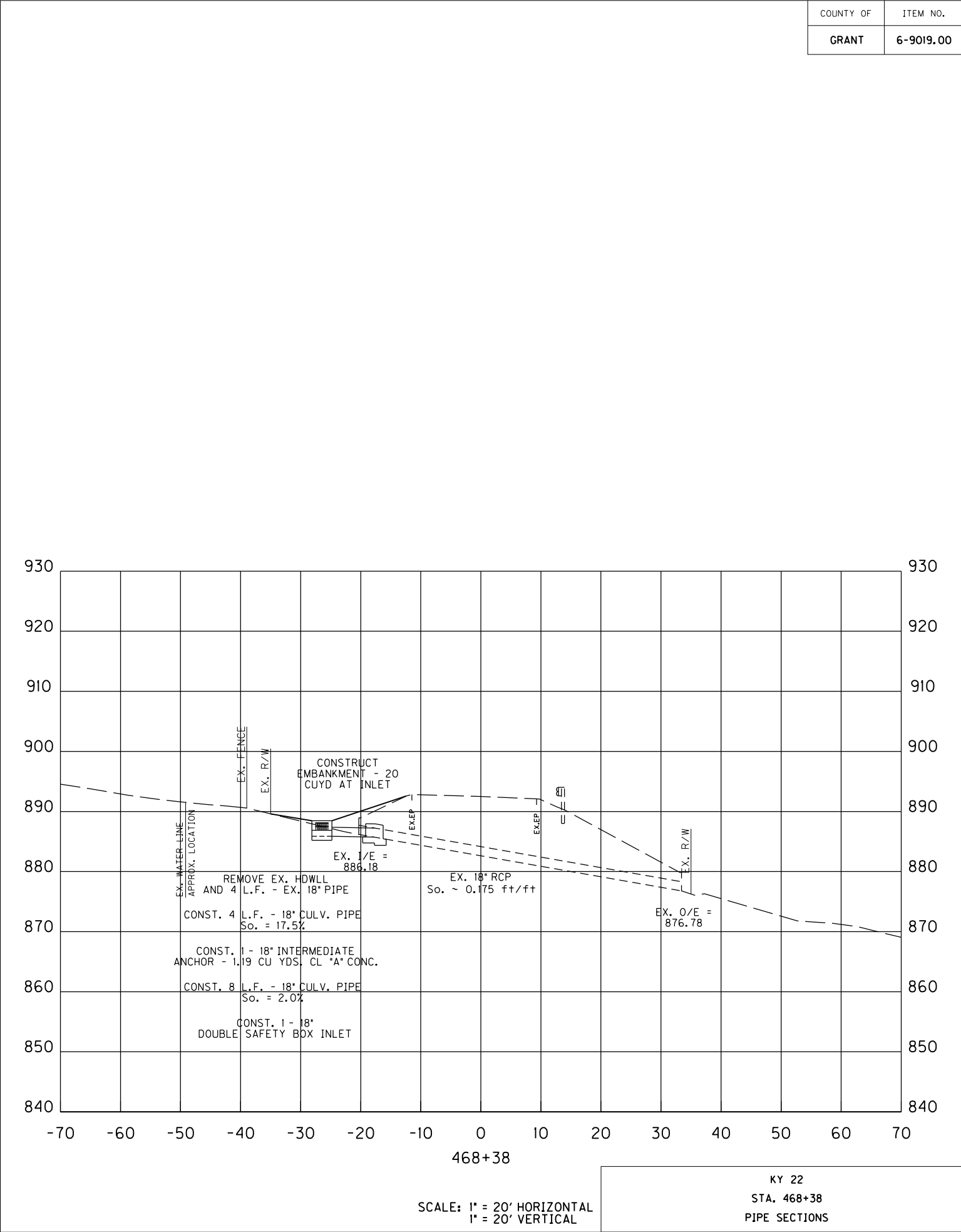


SCALE: 1" = 20' HORIZONTAL  
1" = 20' VERTICAL

KY 22  
STA. 457+66 & STA. 462+65  
PIPE SECTIONS

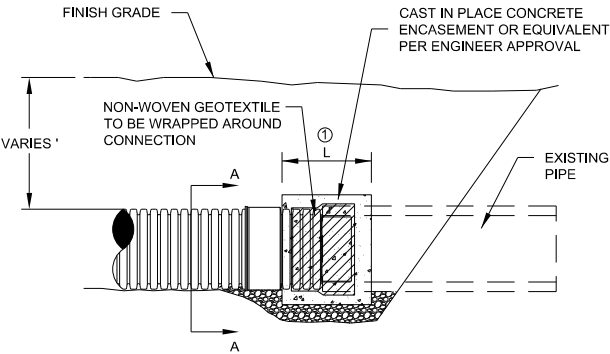
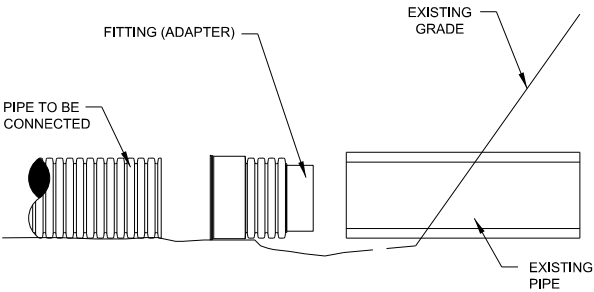
HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	ITEM NO.
GRANT	6-9019.00



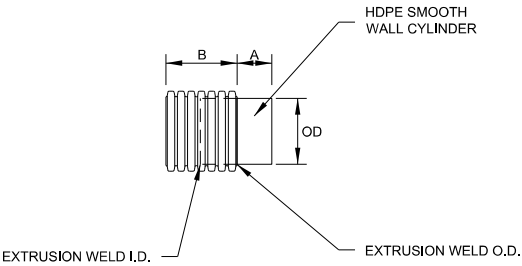
PIPE EXTENSION DUAL WALL ADAPTER FITTING DETAILS

ADAPTER TO DISSIMILAR MATERIAL

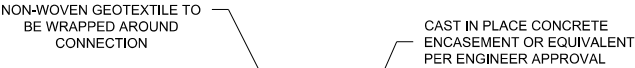


PIPE	L
18"	24.8"
24"	29.6"

DUAL WALL ADAPTER FITTING



PIPE	A	B	OD
18"	6"	13.4"	18"
24"	8"	15.8"	24"



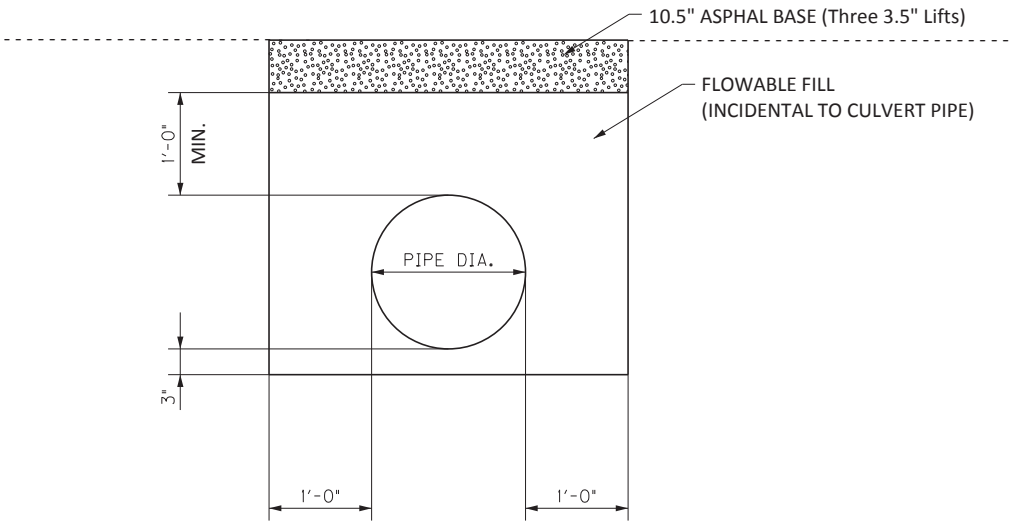
SECTION "A-A"

CAST IN PLACE CONCRETE ENCASEMENT	
APPROXIMATE QUANTITIES	
PIPE	CLASS "A" CONC. (CUYD)
18"	0.95
24"	1.40



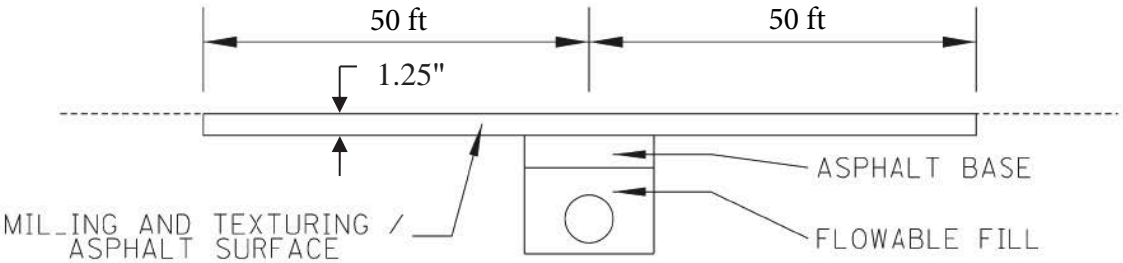
CULVERT PIPE REPLACEMENT DETAIL  
ON HSIP PROJECT

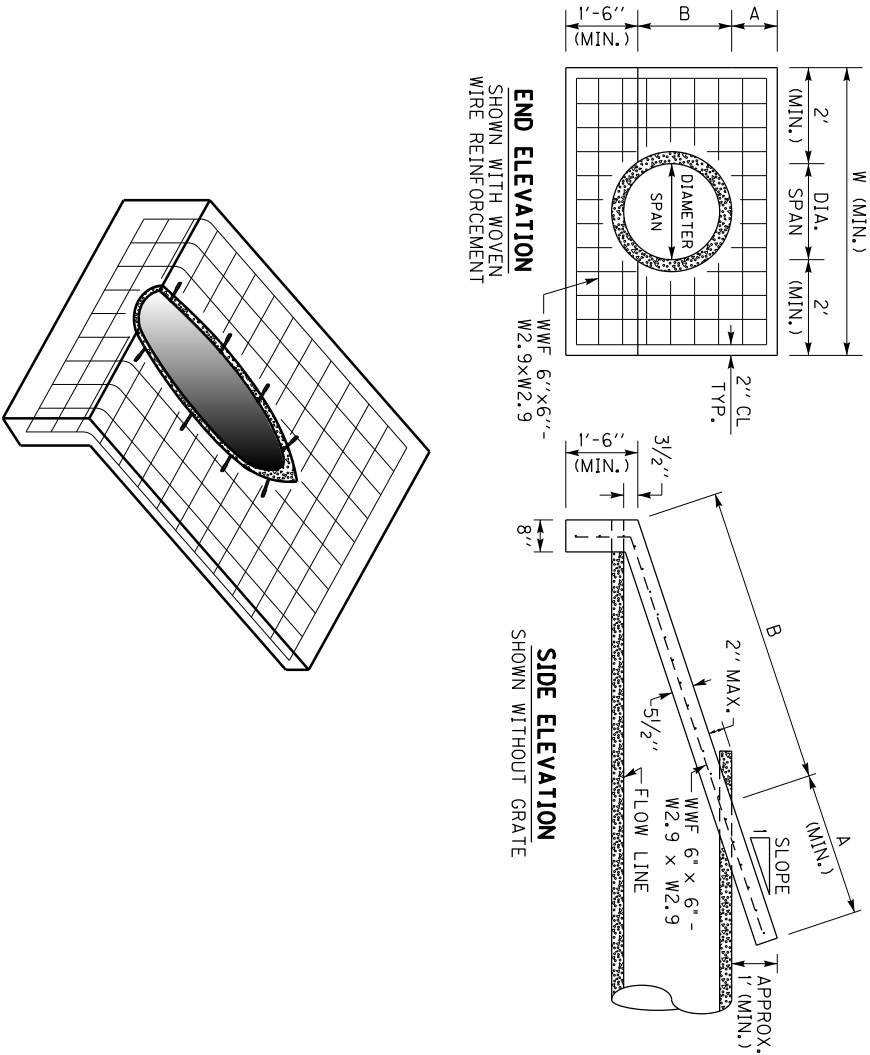
06-9019.00 GRANTY KY 22



CULVERT PIPE REPLACEMENTS - INITAL BACKFILL

Culvert Pipe Replacements shall be constructed according to the Inital 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.





**ISOMETRIC VIEW**  
SHOWN WITH WOVEN  
WIRE REINFORCEMENT  
AND WEDGE ANCHORS

**DIMENSIONS AND CONCRETE QUANTITIES**

PIPE SIZE	3:1 SLOPE				4:1 SLOPE				6:1 SLOPE				GRATE REQUIRED
	A	B	W	CU. YDS. CONCRETE	A	B	W	CU. YDS. CONCRETE	A	B	W	CU. YDS. CONCRETE	
15"	3'	3'-7 1/2"	5'-3"	0.74	4'	4'-8 3/4"	5'-3"	0.93	6'	6'-11 3/4"	5'-3"	1.29	NO
18"	3'	4'-5 3/4"	5'-6"	0.85	4'	5'-10"	5'-6"	1.05	6'	8'-7 1/4"	5'-6"	1.48	NO
24"	3'	6'-2 1/2"	6'-0"	1.05	4'	8'-1"	6'-0"	1.32	6'	11'-11"	6'-0"	1.87	SEE ⑦
30"	3'	7'-10 3/4"	6'-6"	1.43	4'	10'-3 3/4"	6'-6"	1.80	6'	15'-2 1/2"	6'-6"	2.28	SEE ⑦

NOTE: CONCRETE QUANTITIES ARE LISTED FOR INFORMATIONAL PURPOSES ONLY.

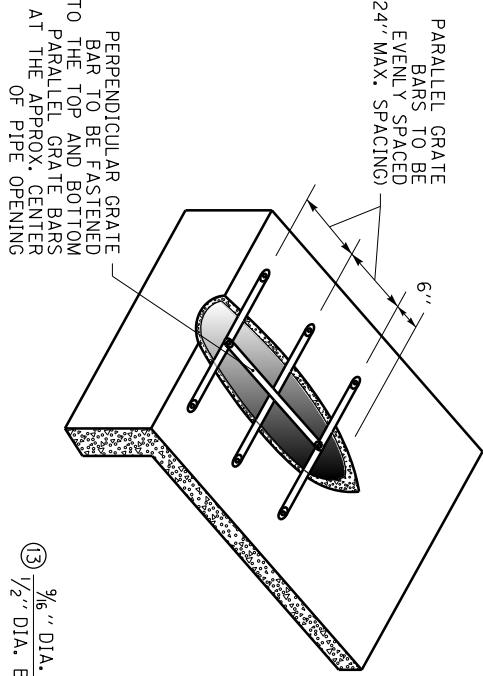
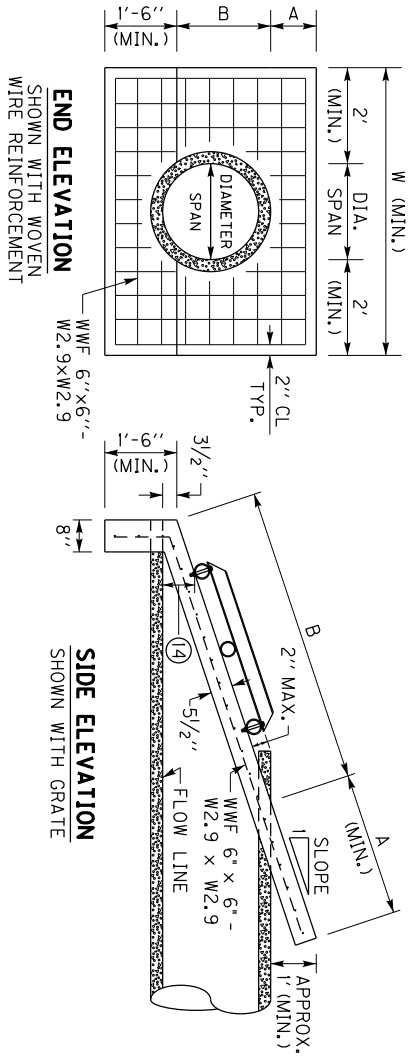
~ NOTES ~

- BID ITEM AND UNIT TO BID: 245TSES610 HEADWALL (SLOPED & MITERED CONCRETE-FOR 1" INCH PIPE) - EACH
- THE EMBANKMENT FILL MATERIAL IS TO BE PLACED, COMPACTED, AND GRADED AROUND THE PIPE BEFORE THE CONCRETE SLOPE PAVING IS PLACED. THE INTENT IS FOR THE SLOPED & MITERED HEADWALL TO MATCH THE FINAL EMBANKMENT SLOPE.
- THE PIPE SHALL BE MITERED AFTER THE CONCRETE SLOPE PAVING HAS BEEN PLACED AND SUFFICIENTLY CURED. THE PIPE SHOULD BE MITERED AS CLOSE TO FLUSH WITH THE SLOPE PAVING AS POSSIBLE, AND NO HIGHER THAN 2" ABOVE THE SLOPE PAVING. HAND FINISHING AND/OR CUTTING MAY BE NECESSARY.
- THE DIMENSION 'A' IS BASED ON THE FINAL GRADED SLOPE. THE DIMENSION 'B' IS BASED ON CIRCULAR REINFORCED CONCRETE PIPE AT 0° SKEW FOR THE LISTED SLOPE. THE DIMENSION 'W' IS BASED ON THE DIAMETER, OR SPAN, OF THE PIPE. NOTE: THE HEADWALL DIMENSIONS AND CONCRETE QUANTITIES MAY VARY BASED ON THE FINAL GRADED SLOPE, PIPE SKEW, AND/OR TYPE OF PIPE.
- WOVEN WIRE REINFORCEMENT (WWF 6"x6" - W2.9xW2.9) IS REQUIRED FOR THE SLOPE PAVING AND TOE WALL. UTILIZE 2" CLEARANCE FROM ALL EDGES.
- CONCRETE QUANTITIES SHOWN ARE FOR ONE (1) HEADWALL.
- AFTER THE PIPE HAS BEEN MITERED, ANCHOR THE PIPE TO THE CONCRETE SLOPE PAVING BY CORE DRILLING AND INSTALLING 1/2" DIAMETER x 7" LENGTH STEEL WEDGE ANCHORS (3" MINIMUM EMBEDMENT) ON 18" CENTERS ALONG THE SIDES OF THE PIPE. HOLE SIZE & DEPTH, TORQUE, & INSTALLATION PROCEDURES PER RECOMMENDATION OF ANCHOR MANUFACTURE. NOTE: STEEL WEDGE ANCHORS ARE NOT REQUIRED FOR REINFORCED CONCRETE PIPE.
- THE FOLLOWING SITUATIONS REQUIRE A HEADWALL WITH A GRATE: -24" DIAMETER PIPE ON GREATER THAN 30° SKEW -30" DIAMETER PIPE ON GREATER THAN 15° SKEW -PIPE WITH GREATER THAN 30" DIAMETER. -ELLIPTICAL PIPE GREATER THAN 24" EQUIVALENT DIAMETER SEE SHEET 2 FOR GRATE DETAILS
- ALL BOLTS AND HARDWARE SHALL BE RUST RESISTANT: ZINC PLATED, STAINLESS STEEL, OR STEEL THAT HAS BEEN GALVANIZED IN ACCORDANCE WITH AASHTO M 232.

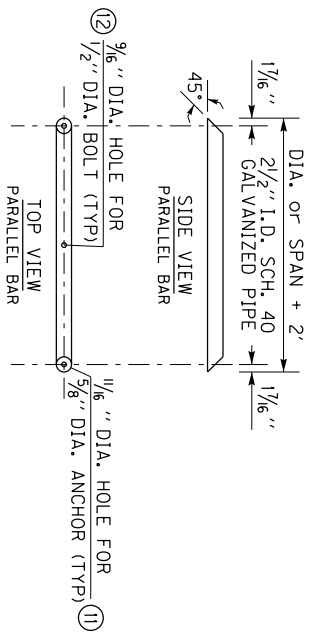
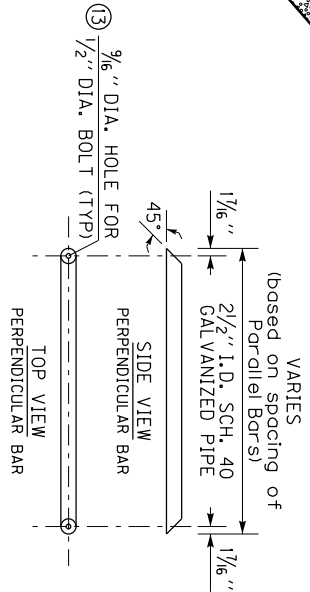
NOT TO SCALE

<b>KENTUCKY</b>
<b>DEPARTMENT OF HIGHWAYS</b>
SLOPED & MITERED CONCRETE HEADWALL (SHEET 1 OF 2)

SEE SHEET 2 FOR  
DIMENSIONS OF  
HEADWALLS FOR PIPE  
OVER 30" DIAMETER



ISOMETRIC VIEW  
SHOWING HEADWALL  
WITH GRATE



PIPE FOR GRATE DETAILS  
SEE NOTE 6 TO DETERMINE  
IF GRATE IS REQUIRED

COUNTY OF	TITLE NO.	SHEET NO.
-----------	-----------	-----------

- ~ NOTES ~
- BID ITEM AND UNIT TO BID: 24575ES610 HEADWALL (SLOPED & MITERED CONCRETE-FOR 1 INCH PIPE) - EACH SEE SHEET 1 FOR NOTES 1 THRU 5
- THE FOLLOWING SITUATIONS REQUIRE A HEADWALL WITH A GRATE:
7. 24" DIAMETER PIPE ON GREATER THAN 30° SKEW
  8. 30" DIAMETER PIPE ON GREATER THAN 15° SKEW
  9. PIPE WITH GREATER THAN 30" DIAMETER
  10. ELLIPTICAL PIPE GREATER THAN 24" EQUIVALENT DIAMETER
  11. ALL BOLTS AND HARDWARE SHALL BE RUST RESISTANT: ZINC PLATED, STAINLESS STEEL, OR STEEL THAT HAS BEEN GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
  12. THE PIPE USED TO CONSTRUCT THE GRATE SHALL BE STEEL, SCHEDULE 40, CONFORMING TO ASTM A53, AND GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AFTER FABRICATION.
  13. ANY RAW METAL EXPOSED BY FIELD CUTTING AND/OR DRILLING SHALL BE TREATED WITH A COLD GALVANIZING COMPOUND.
  14. FASTEN PARALLEL BARS TO HEADWALL WITH 5/8" DIA. x 4 1/2" LENGTH STEEL WEDGE ANCHORS, MINIMUM EMBEDMENT = 2 3/4" HOLE SIZE AND DEPTH, TORQUE, & INSTALLATION PROCEDURES PER RECOMMENDATION OF ANCHOR MANUFACTURE
  15. CENTER BOLT HOLE SHALL ONLY BE DRILLED IN THE TOP AND BOTTOM PARALLEL BARS.
  16. FASTEN THE PERPENDICULAR BAR TO THE TOP AND BOTTOM PARALLEL BARS WITH 1/2" DIA. x 4" LENGTH HEX HEAD BOLTS, HEX HEAD NUTS, & FLAT WASHERS.
  17. THE BOTTOM PARALLEL BAR IS TO BE PLACED SO THAT IT IS APPROX. 6" ABOVE THE FLOWLINE OF THE PIPE.

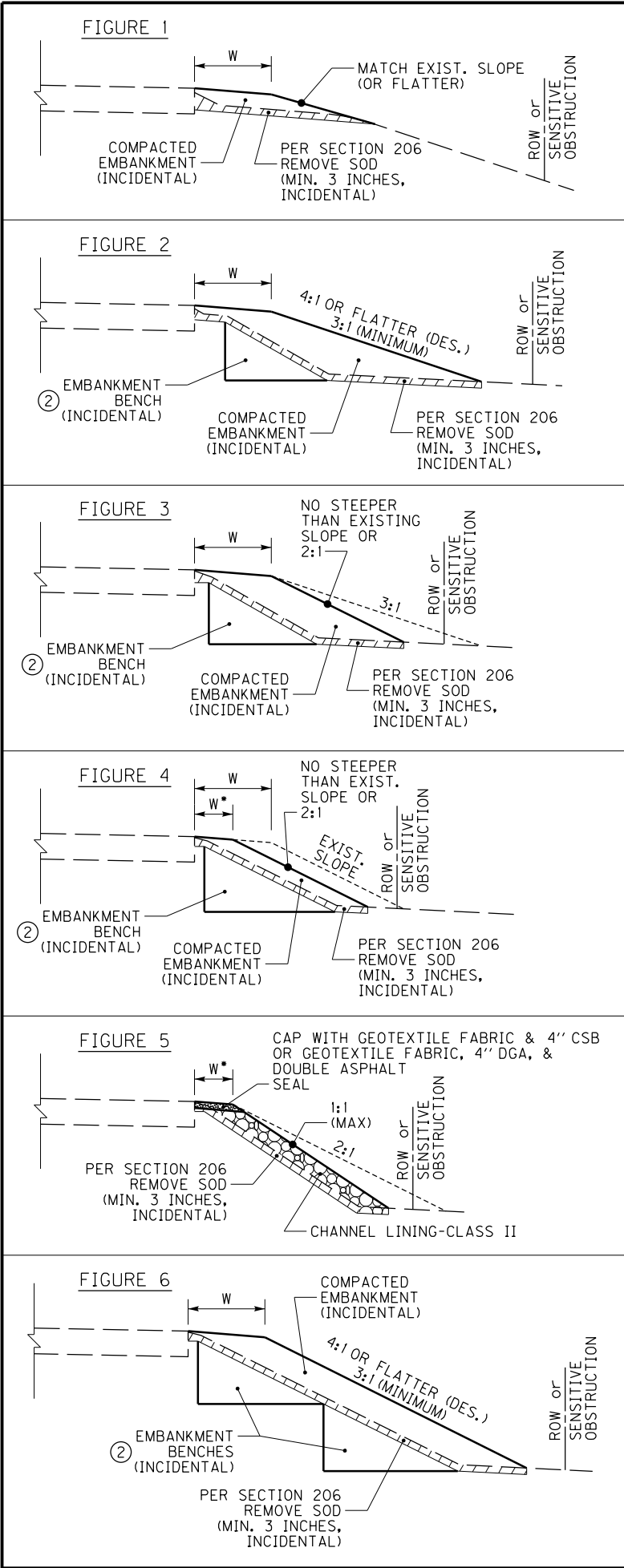
DIMENSIONS AND CONCRETE QUANTITIES													
PIPE SIZE	3:1 SLOPE			4:1 SLOPE			6:1 SLOPE			GRATE REQUIRED			
	A	B	W	CU. YDS. CONCRETE	A	B	W	CU. YDS. CONCRETE	A		B	W	CU. YDS. CONCRETE
36"	3'	9'-7 $\frac{1}{2}$ "	7'-0"	1.51	4'	12'-6 $\frac{1}{2}$ "	7'-0"	1.91	6'	18'-6"	7'-0"	2.42	YES
42"	3'	11'-4"	7'-6"	1.76	4'	14'-9 $\frac{1}{4}$ "	7'-6"	2.23	6'	21'-9 $\frac{1}{2}$ "	7'-6"	3.19	YES

NOTE: CONCRETE QUANTITIES ARE LISTED FOR INFORMATIONAL PURPOSES ONLY.

DEPARTMENT OF HIGHWAYS
KENTUCKY
SLOPED & MITERED CONCRETE HEADWALL (SHEET 2 OF 2)

SEE SHEET 1 FOR  
DIMENSIONS OF  
HEADWALLS FOR PIPE  
30" DIAMETER & LESS

NOT TO SCALE



~ 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

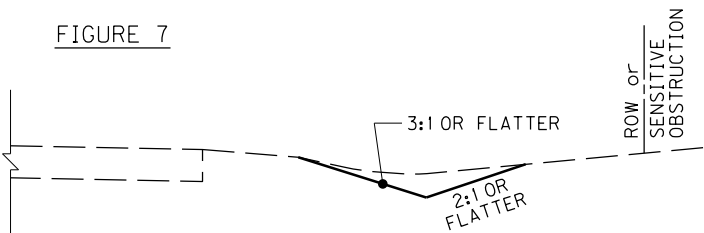


FIGURE 8

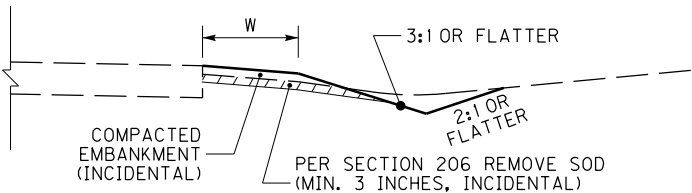


FIGURE 9

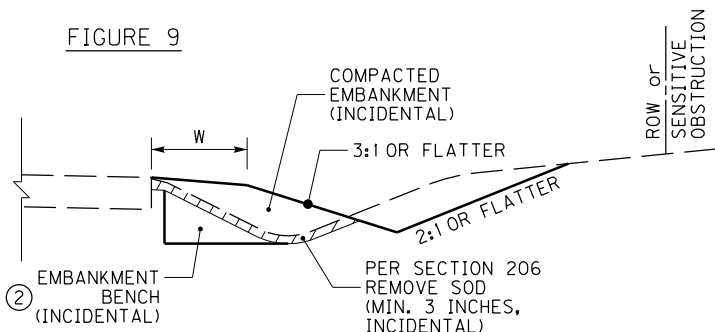


FIGURE 10

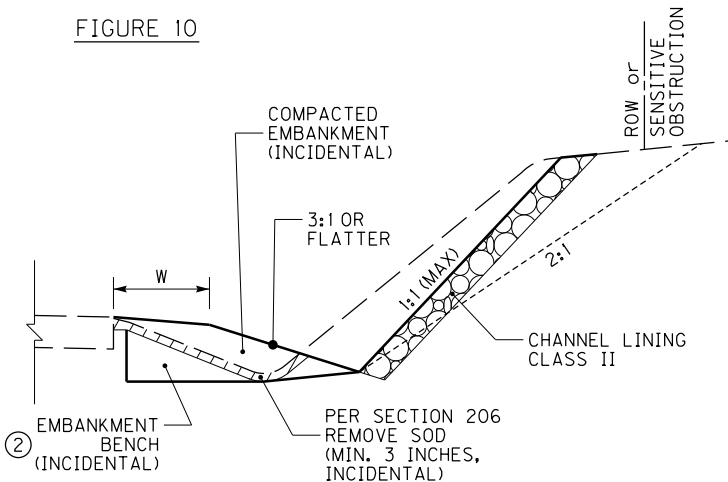
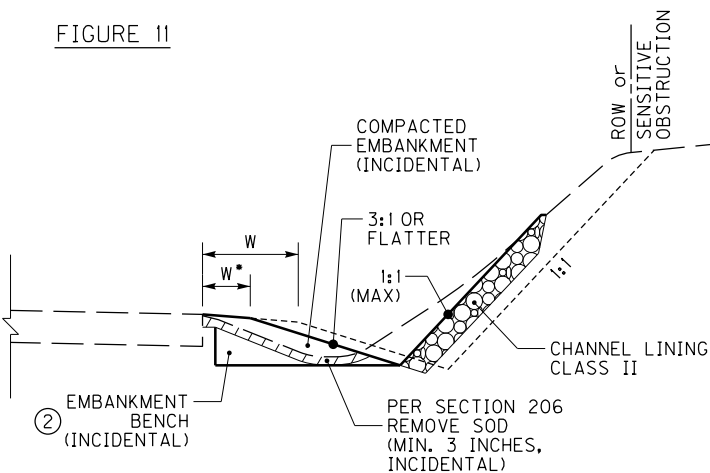


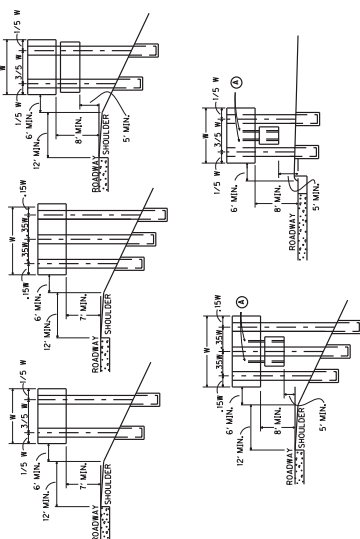
FIGURE 11



- ~ 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 1 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.

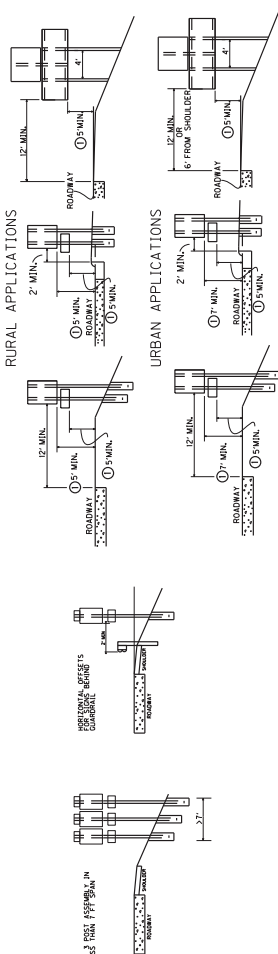


## MILEPOST MARKERS



5) ATTACHMENT OF SECONDARY SIGN TO MAJOR SIGN IS TO BE MADE WITH TWO (2) 3" X 3" X  $\frac{3}{4}$ " ANGLES OF SUFFICIENT LENGTH TO EXTEND FROM THE LOWER EDGE OF THE SECONDARY SIGN TO AT LEAST THREE FEET UP THE BACK OF THE MAJOR SIGN. A MINIMUM OF ONE POST CLIP PER FOOT SHALL BE USED IN ATTACHING EXTRUSIONS TO EACH ANGLE.

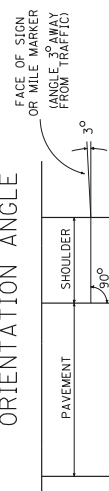
## SHEETING SIGNS



NOTE: SHOULD A SIGN BE LOCATED AT A POINT WHERE GUARDRAIL IS CALLED FOR OR EXISTING, ALL SIGN SUPPORTS SHALL BE PLACED BEHIND THE GUARDRAIL AND LATERAL OFFSET SHALL BE MEASURED FROM THE GUARDRAIL.

① NOT TO EXCEED 8' IN URBAN AREAS AND 6' IN RURAL AREAS UNLESS SPECIFIED BY THE ENGINEER.

## ORIENTATION ANGLE

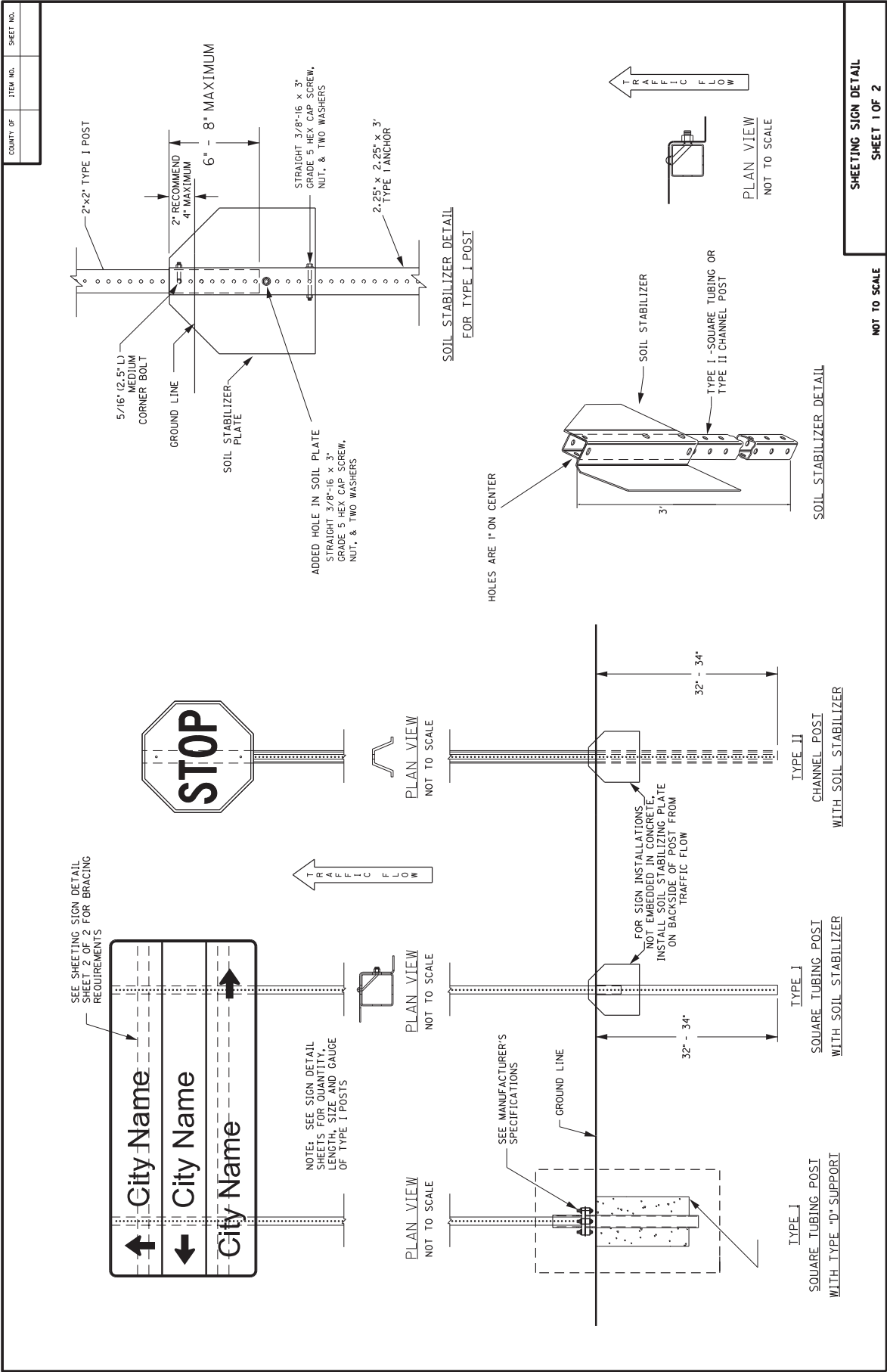


NOTE: STATION NUMBERS ARE GIVEN FOR NOTED DIRECTION OF TRAVEL ONLY. CORRESPONDING MILEPOST MARKERS FOR OTHER DIRECTION SHOULD BE PLACED DIRECTLY OPPOSITE THOSE FOR WHICH STATION NUMBERS ARE GIVEN.

IN JEFFERSON COUNTY, FINAL LOCATION OF MILEPOST MARKERS SHALL BE VERIFIED BY TRIMARC, NOTIFY TRIMARC AT LEAST TWO WEEKS PRIOR TO BEGINNING WORK ON THIS ITEM;

901 WEST MAIN STREET  
LOUISVILLE, KY 40202  
502-587-6624  
270-307-7456

HSIP PROJECT: 06-9019.00 GRANT KY 22



SHEETING SIGN DETAIL  
SHEET 1 OF 2

NOT TO SCALE

SOIL STABILIZER DETAIL

## HSIP PROJECT: 06-9019.00 GRANT KY 22

COUNTY OF	SHEET NO.
ITEM NO.	

FOR ATTACHMENT OF SIGNS LESS THAN 72" IN WIDTH USING MANUFACTURED 3/8" HOLES ALIGNED TO 2014 STANDARD HIGHWAY SIGNS BLANK STANDARDS PGS 7-1 THRU 7-6

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE  
USING 3/8" DRIVE RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE  
USING 3/8" DRIVE RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

FOR ATTACHMENT OF SIGNS GREATER THAN, OR EQUAL TO, 72" IN WIDTH.  
RIVETS SHALL BE COLOR CODED TO MATCH SHEETING IN ORDER TO MINIMIZE GLARE FROM RIVETS

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

FOR ATTACHMENT OF SIGNS GREATER THAN, OR EQUAL TO, 72" IN WIDTH.  
RIVETS SHALL BE COLOR CODED TO MATCH SHEETING IN ORDER TO MINIMIZE GLARE FROM RIVETS

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

NOTE:  
ALUMINUM SIGN BRACING  
2" MOUNTING SURFACE x 7/8" DEPTH x 1/8"  
NOMINAL WALL THICKNESS  
6061-T6 ALUMINUM ALLOY, PUNCHED WITH  
3/8" DIAMETER HOLES ON 1" CENTERS FOR  
ATTACHMENT OF SIGN SUBSTRATE USING RIVETS

1/8" NOMINAL WALL THICKNESS

2"

7/8"

3/8" DRIVE RIVET ATTACHED ON 6" CENTERS CODED TO MATCH SIGN SHEETING

1"

1"

1"

1"

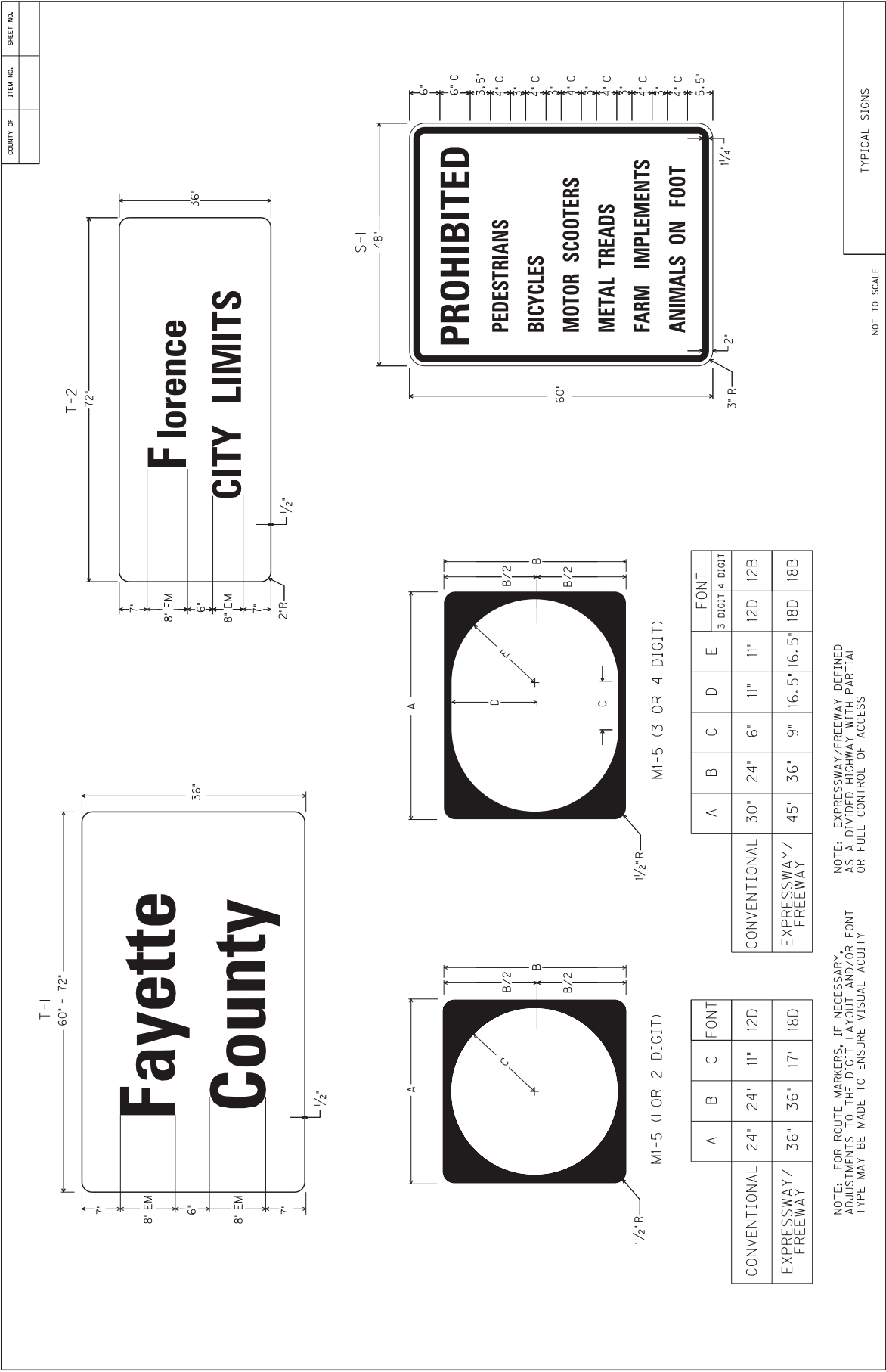
SIGN BRACE

TYPE I SQUARE POST

SQUARE POST CLAMP & BRACE

FOR ATTACHMENT OF SIGNS GREATER THAN, OR EQUAL TO, 72" IN WIDTH.  
RIVETS SHALL BE COLOR CODED TO MATCH SHEETING IN ORDER TO MINIMIZE GLARE FROM RIVETS

HSIP PROJECT: 06-9019.00 GRANT KY 22



Contract Id: \_\_\_\_\_ Contractor: \_\_\_\_\_

Section Engineer: \_\_\_\_\_ District & County: \_\_\_\_\_

DESCRIPTION	UNIT	QTY LEAVING PROJECT	QTY RECEIVED@BB YARD
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: \_\_\_\_\_



COUNTY OF	ITEM NO.	SHEET

NOTES

- ITEM CODE

BID ITEM

UNIT
- 1726

SAFETY BOX INLET-18 INCH SDB-1

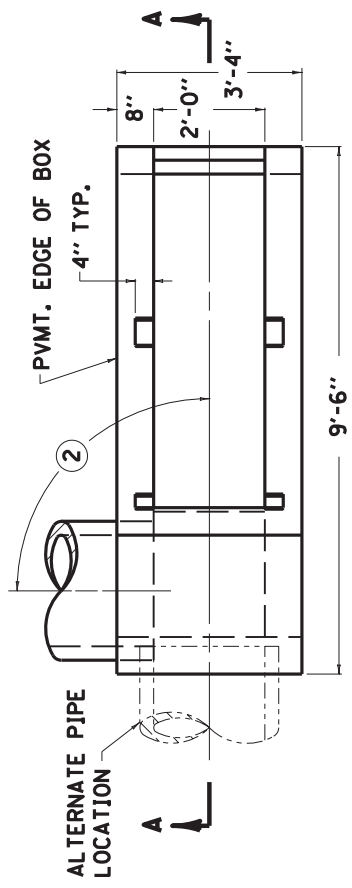
EACH
- 1727

SAFETY BOX INLET-24 INCH SDB-1

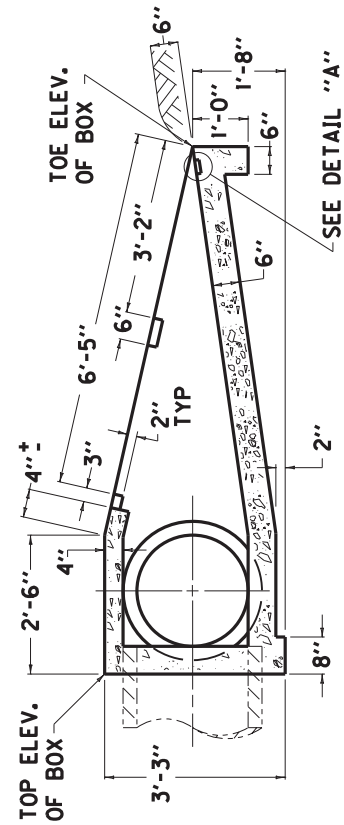
EACH
- THE UNIT BID FOR EACH STRUCTURE SHALL INCLUDE ALL CONCRETE, STRUCTURAL STEEL GRATING, EXCAVATION, LABOR AND INCIDENTALS NECESSARY FOR ITS CONSTRUCTION AS DETAILED ON THIS SHEET.
- ①

TOE OF BOX SHALL BE RAISED OR LOWERED TO FIT EXISTING FIELD CONDITIONS.
- ②

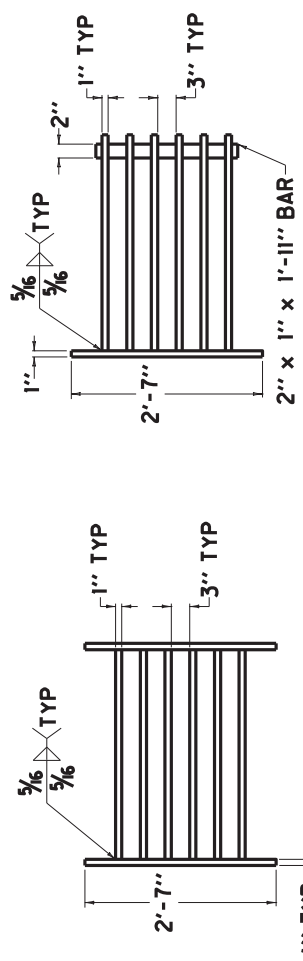
SKEW OF BOX SHALL VARY TO FIT EXISTING FIELD CONDITIONS.



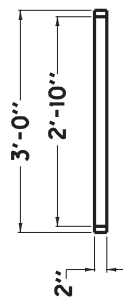
PLAN VIEW



SECTION A-A



GRATE NO. 1  
PLAN VIEW

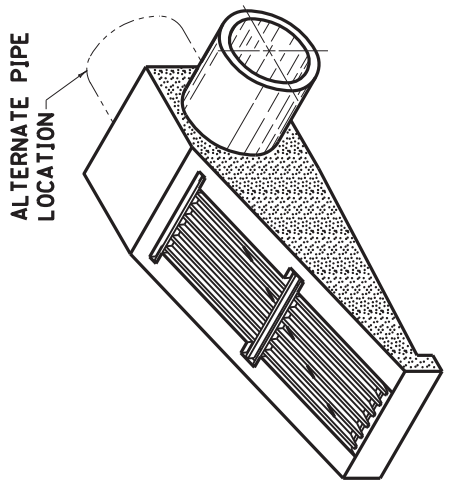


GRATE NO. 1  
SIDE ELEVATION

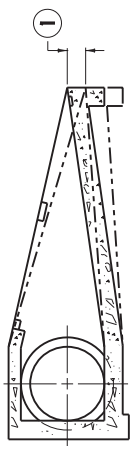
GRATE NO. 2  
PLAN VIEW



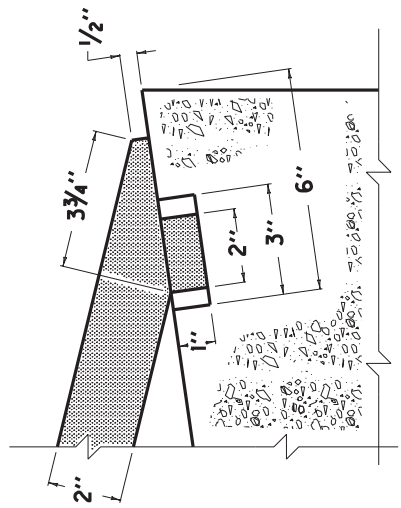
GRATE NO. 2  
SIDE ELEVATION



ISOMETRIC VIEW



SECTIONAL VIEW



DETAIL "A"

KENTUCKY  
DEPARTMENT OF HIGHWAYS

SAFETY TYPE  
BOX INLET  
(18" OR 24")

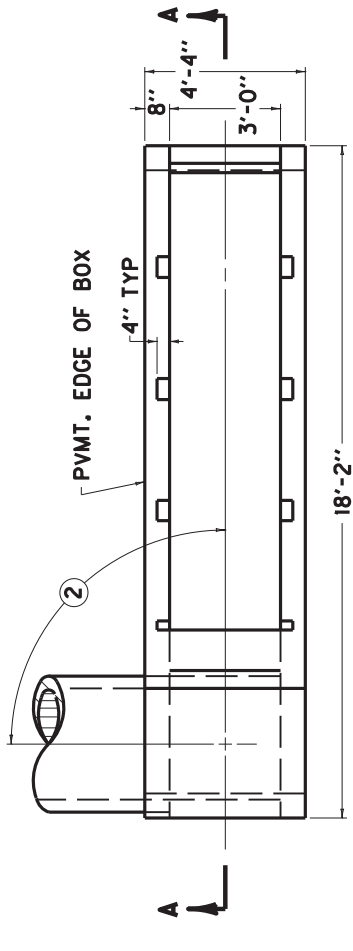
APPROVED  
  
ENGINEER

Contract 195152  
Page 22 of 502  
06-04-2008

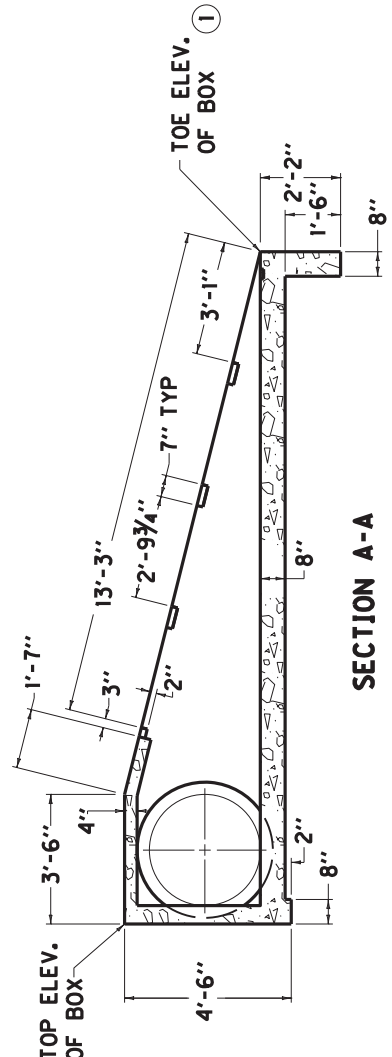
COUNTY OF	ITEM NO.	SHEET NO.

NOTES

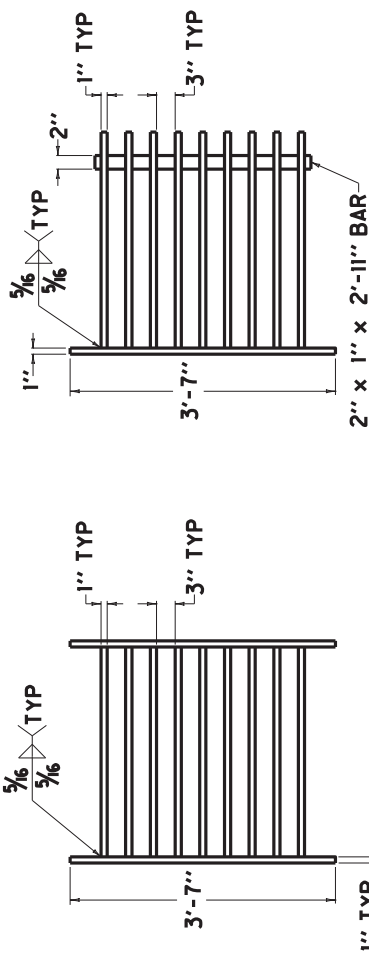
- ITEM CODE    BID ITEM    UNIT
- 23044NS710    SAFETY BOX INLET-36 INCH SDB-1    EACH
- THE UNIT BID FOR EACH STRUCTURE SHALL INCLUDE ALL CONCRETE, STRUCTURAL STEEL GRATING, EXCAVATION, LABOR AND INCIDENTALS NECESSARY FOR ITS CONSTRUCTION AS DETAILED ON THIS SHEET.
- 1    TOE OF BOX SHALL BE RAISED OR LOWERED TO FIT EXISTING FIELD CONDITIONS.
- 2    SKEW OF BOX SHALL VARY TO FIT EXISTING FIELD CONDITIONS.
3. ALL QUANTITIES ARE FOR ONE HEADWALL.



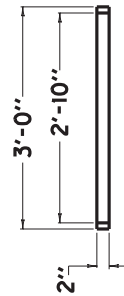
PLAN VIEW



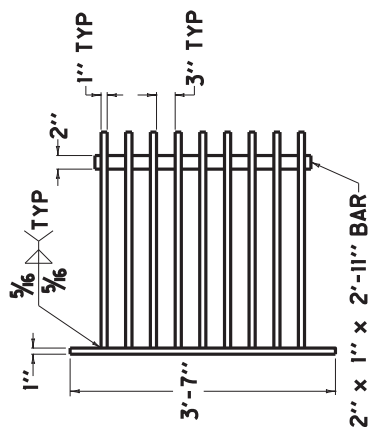
SECTION A-A



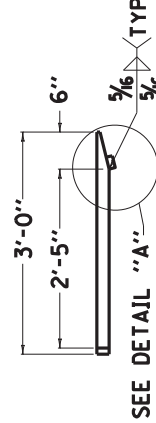
GRATE NO. 1  
PLAN VIEW



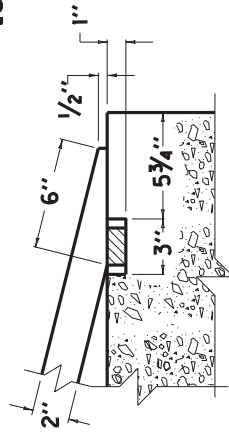
GRATE NO. 1  
SIDE ELEVATION



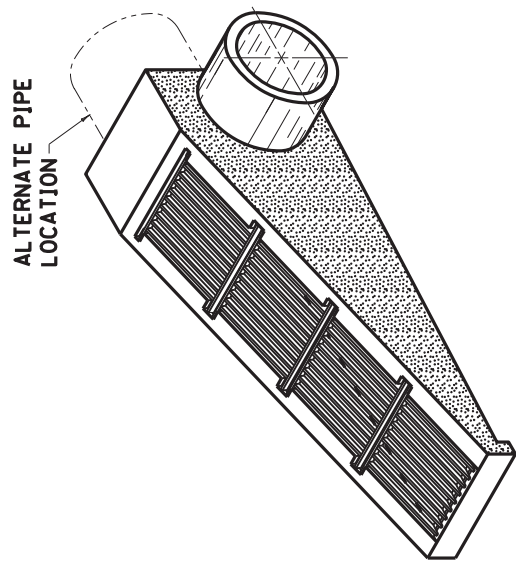
GRATE NO. 2  
PLAN VIEW



GRATE NO. 2  
SIDE ELEVATION



DETAIL "A"



ISOMETRIC VIEW

APPROXIMATE QUANTITIES						
CLASS "A" CONC.	CUBIC YARDS	GRATE		NO. OF GRATES REQ'D.	LBS.	
		NUMBER	EACH GRATE		STRUCTURAL STEEL	REINF. STEEL
4.51		1	3	896	261	
		2	1			222

SHEET 1 OF 2

KENTUCKY  
DEPARTMENT OF HIGHWAYS

SAFETY TYPE  
BOX INLET  
(36")

APPROVED: [Signature]  
PROJECT MANAGER

Contract : 195152  
Page 23 of 502

NOTES

1. NUMBER OF BARS IN ONE HEADWALL.
2. DIMENSIONS ARE O. TO O. OF BARS.
3. ALL BARS ARE STRAIGHT EXCEPT THOSE SHOWN BELOW.

BENT BAR SHAPES



K=3'-6"

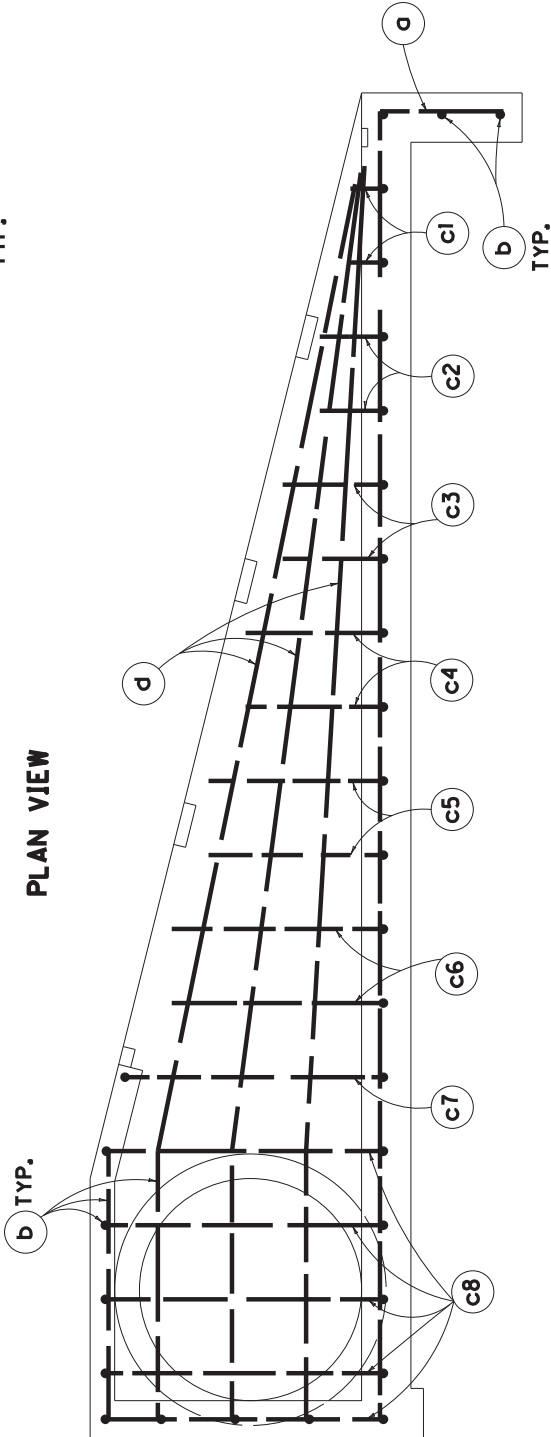
BARS (C)



K=1'-8"

BARS (C)

PLAN VIEW



ELEVATION VIEW

MARK	S	NO	LGTH	K	36"	
					(1) FT IN	FT IN
Q	4	5	19	6	1	8
b	4	16	3	6		
C1	4	2	5	0	3	6
C2	4	2	5	10	3	6
C3	4	2	6	10	3	6
C4	4	2	7	10	3	6
C5	4	2	8	10	3	6
C6	4	2	9	10	3	6
C7	4	1	11	0	3	6
C8	4	5	11	6	3	6
d	4	6	13	4		

SHEET 2 OF 2

KENTUCKY

DEPARTMENT OF HIGHWAYS

BILL OF REINFORCEMENT  
SAFETY TYPE BOX INLET  
(36")

APPROVED

PROJ. ENGINEER

06-04-2008

DB

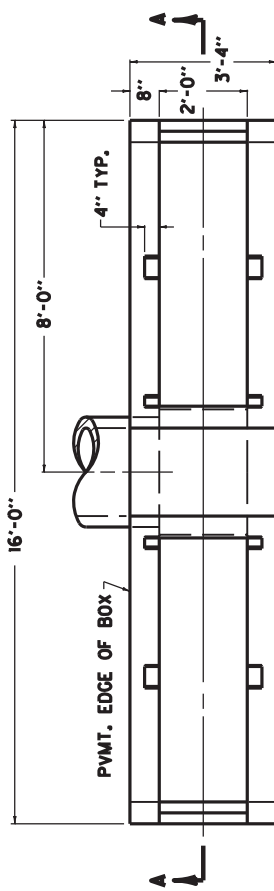
Contract : 195152  
Page 24 of 502

## NOTES

UNIT	BID ITEM	ITEM CODE
EACH	SAFETY BOX INLET-18 IN DBL SDB-5	1728
EACH	SAFETY BOX INLET-24 IN DBL SDB-5	1729

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.

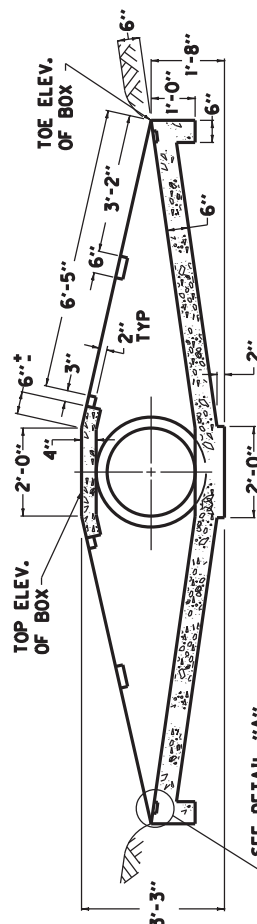
- ① TOE OF BOX SHALL BE RAISED OR LOWERED TO FIT EXISTING FIELD CONDITIONS.
- ② ANGLE BETWEEN BOX WALLS MAY VARY TO FIT EXISTING FIELD CONDITIONS.



### PLAN VIEW



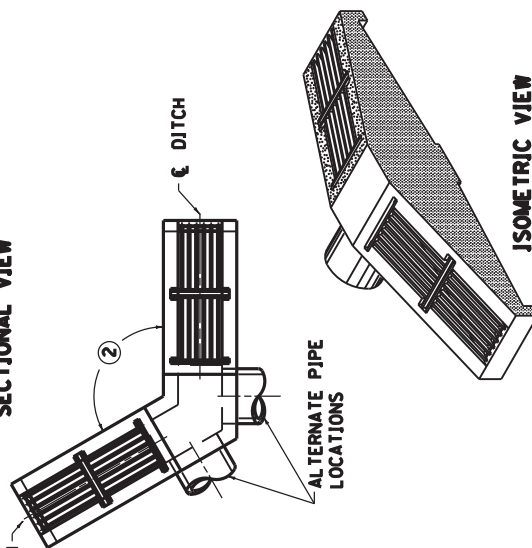
## SECTIONAL VIEW



## SECTION A-A



## DETAIL "A"



## ISOMETRIC VIEW

CLASS "A" CONC.	APPROXIMATE QUANTITIES		
	CRATE	LBS. STRUCTURAL STEEL	
	NUMBER	EACH CRATE	TOTAL POUNDS
2.07	1	145	596
	2	153	

**CRATE NO. 2**  
**PLAN VIEW**



SEE DETAIL "A"

**CRATE NO. 1**  
**PLAN VIEW**



**CRATE NO. 1**  
**SIDE ELEVATION**

✓

**DBL SAFETY BOX INLET DETAIL SHEET**

**PART II**

**SPECIFICATIONS AND STANDARD DRAWINGS**



### **SPECIFICATIONS REFERENCE**

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2016*.

## **SUPPLEMENTAL SPECIFICATIONS**

The contractor shall use the Supplemental Specifications that are effective at the time of letting.  
The Supplemental Specifications can be found at the following link:

<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

## **SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS**

This Special Note will apply when indicated on the plans or in the proposal.

**1.0 DESCRIPTION.** Furnish, install, operate, and maintain variable message signs at the locations shown on the plans or designated by the Engineer. Remove and retain possession of variable message signs when they are no longer needed on the project.

## **2.0 MATERIALS.**

**2.1 General.** Use LED Variable Message Signs Class I, II, or III, as appropriate, from the Department's List of Approved Materials.

Unclassified signs may be submitted for approval by the Engineer. The Engineer may require a daytime and nighttime demonstration. The Engineer will make a final decision within 30 days after all required information is received.

### **2.2 Sign and Controls.** All signs must:

- 1) Provide 3-line messages with each line being 8 characters long and at least 18 inches tall. Each character comprises 35 pixels.
- 2) Provide at least 40 preprogrammed messages available for use at any time. Provide for quick and easy change of the displayed message; editing of the message; and additions of new messages.
- 3) Provide a controller consisting of:
  - a) Keyboard or keypad.
  - b) Readout that mimics the actual sign display. (When LCD or LCD type readout is used, include backlighting and heating or otherwise arrange for viewing in cold temperatures.)
  - c) Non-volatile memory or suitable memory with battery backup for storing pre-programmed messages.
  - d) Logic circuitry to control the sequence of messages and flash rate.
- 4) Provide a serial interface that is capable of supporting complete remote control ability through land line and cellular telephone operation. Include communication software capable of immediately updating the message, providing complete sign status, and allowing message library queries and updates.
- 5) Allow a single person easily to raise the sign to a satisfactory height above the pavement during use, and lower the sign during travel.
- 6) Be Highway Orange on all exterior surfaces of the trailer, supports, and controller cabinet.
- 7) Provide operation in ambient temperatures from -30 to + 120 degrees Fahrenheit during snow, rain and other inclement weather.
- 8) Provide the driver board as part of a module. All modules are interchangeable, and have plug and socket arrangements for disconnection and reconnection. Printed circuit boards associated with driver boards have a conformable coating to protect against moisture.
- 9) Provide a sign case sealed against rain, snow, dust, insects, etc. The lens is UV stabilized clear plastic (polycarbonate, acrylic, or other approved material) angled to prevent glare.
- 10) Provide a flat black UV protected coating on the sign hardware, character PCB, and appropriate lens areas.
- 11) Provide a photocell control to provide automatic dimming.

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- 12) Allow an on-off flashing sequence at an adjustable rate.
- 13) Provide a sight to aim the message.
- 14) Provide a LED display color of approximately 590 nm amber.
- 15) Provide a controller that is password protected.
- 16) Provide a security device that prevents unauthorized individuals from accessing the controller.
- 17) Provide the following 3-line messages preprogrammed and available for use when the sign unit begins operation:

/KEEP/RIGHT/⇒⇒⇒/	/MIN/SPEED/**MPH/
/KEEP/LEFT/⇐⇐⇐/	/ICY/BRIDGE/AHEAD/ /ONE
/LOOSE/GRAVEL/AHEAD/	LANE/BRIDGE/AHEAD/
/RD WORK/NEXT/**MILES/	/ROUGH/ROAD/AHEAD/
/TWO WAY/TRAFFIC/AHEAD/	/MERGING/TRAFFIC/AHEAD/
/PAINT/CREW/AHEAD/	/NEXT/***/MILES/
/REDUCE/SPEED/**MPH/	/HEAVY/TRAFFIC/AHEAD/
/BRIDGE/WORK/***() FT/	/SPEED/LIMIT/**MPH/
/MAX/SPEED/**MPH/	/BUMP/AHEAD/
/SURVEY/PARTY/AHEAD/	/TWO/WAY/TRAFFIC/

\*Insert numerals as directed by the Engineer.

Add other messages during the project when required by the Engineer.

### 2.3 Power.

- 1) Design solar panels to yield 10 percent or greater additional charge than sign consumption. Provide direct wiring for operation of the sign or arrow board from an external power source to provide energy backup for 21 days without sunlight and an on-board system charger with the ability to recharge completely discharged batteries in 24 hours.

**3.0 CONSTRUCTION.** Furnish and operate the variable message signs as designated on the plans or by the Engineer. Ensure the bottom of the message panel is a minimum of 7 feet above the roadway in urban areas and 5 feet above in rural areas when operating. Use Class I, II, or III signs on roads with a speed limit less than 55 mph. Use Class I or II signs on roads with speed limits 55 mph or greater.

Maintain the sign in proper working order, including repair of any damage done by others, until completion of the project. When the sign becomes inoperative, immediately repair or replace the sign. Repetitive problems with the same unit will be cause for rejection and replacement.

Use only project related messages and messages directed by the Engineer, unnecessary messages lessen the impact of the sign. Ensure the message is displayed in either one or 2 phases with each phase having no more than 3 lines of text. When no message is needed, but it is necessary to know if the sign is operable, flash only a pixel.

When the sign is not needed, move it outside the clear zone or where the Engineer directs. Variable Message Signs are the property of the Contractor and shall be removed from the project when no longer needed. The Department will not assume ownership of these signs.

**4.0 MEASUREMENT.** The final quantity of Variable Message Sign will be

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the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

**5.0 PAYMENT.** The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012



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## **SPECIAL NOTE FOR DRILLED SHAFTS**

**1.0 DESCRIPTION.** Furnish all equipment, materials and labor necessary for constructing reinforced concrete drilled shafts in cylindrically excavated holes according to the details shown on the plans or as the Engineer directs. Construct the shaft to the lines and dimensions shown on the plans, or as the Engineer directs. Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, current edition.

## **2.0 MATERIALS.**

**2.1 Concrete.** Use Class A Modified concrete unless otherwise shown on the plans. The slump at the time of placement shall be 6.5 to 9.5 inches, the coarse aggregate shall be size 67, 68, 78, 8 or 9M, and the water/cementitious material ratio shall not exceed 0.45. Include water reducing and retarding admixtures. Type F high range water reducers used in combination with retarding admixtures or Type G high range water reducers fully meeting trial batch requirements are permitted and Class F fly ash is permitted in conformance with Section 601. Design the mix such that the concrete slump exceeds 4 inches at 4 hours after batching. If the estimated concrete transport, plus time to complete placement, exceeds 4 hours, design the concrete to have a slump that exceeds 4 inches or more for the greater time after batching and demonstrate that the slump requirement can be achieved after the extended time period using a trial batch.

Perform trial batches prior to beginning drilled shaft construction in order to demonstrate the adequacy of the proposed concrete mix. Demonstrate that the mix to be used will meet the requirements for temperature, slump, air content, water/cementitious material ratio, and compressive strength. Use the ingredients, proportions and equipment (including batching, mixing, and delivery) to be used on the project. Make at least 2 independent consecutive trial batches of 3 cubic yards each using the same mix proportions and meeting all specification requirements for mix design approval. Submit a report containing these results for slump, air content, water/cement ratio, temperature, and compressive strength and mix proportions for each trial batch to the Engineer for review and approval. Failure to demonstrate the adequacy of the concrete mix, methods, or equipment to the Engineer is cause for the Engineer to require appropriate alterations in concrete mix, equipment, and/or method by the Contractor to eliminate unsatisfactory results. Perform additional trial batches required to demonstrate the adequacy of the concrete mix, method, or equipment.

**2.2 Steel Reinforcement.** Provide Grade 60 deformed bars conforming to Section 811 of the Standard Specifications. Rail steel is permitted for straight bars only. Place according to Section 602 of the Standard Specifications, this Special Note, and the plans. Use non-corrosive centering devices and feet to maintain the specified reinforcement clearances.

**2.3 Casings.** Provide casing meeting the requirements of ASTM A 252 Grade 2 or better unless otherwise specified. Ensure casing is smooth, clean, watertight, true and straight, and of ample strength to withstand handling, installation, and extraction stresses and the pressure of both concrete and the surrounding earth materials. Ensure the outside diameter of casing is not less than the specified diameter of shaft.

Use only continuous casings. Cut off the casing at the prescribed elevation and trim to within tolerances prior to acceptance. Extend casing into bedrock a sufficient distance to stabilize the shaft excavation against collapse, excessive deformation, and/or flow of water if required and/or shown on the plans.

Install from the work platform continuous casing meeting the design thickness requirements, but not less than 3/8 inch, to the elevations shown on the plans. When drilled

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shafts are located in open water areas, extend casings above the water elevation to the plan tip elevation to protect the shaft concrete from water action during concrete placement and curing. All casing is permanent unless temporary casing is specified in the contract drawings or documents. Permanent casing is incidental to the applicable drilled shaft unit bid price unless noted otherwise in the contract. Temporary casing may be required for drilled shafts not socketed into bedrock. If temporary surface casings are used, extend each casing up to the work platform. Remove all temporary surface casing prior to final acceptance unless otherwise permitted by the Central Office Construction Engineer.

Ensure casing splices have full penetration butt welds conforming to the current edition of AWS D1.1 with no exterior or interior splice plates and produce true and straight casing.

**2.4 Slurry.** When slurry is to be used for installation of the Drilled Shaft, submit a detailed plan for its use and disposal. The plan should include, but not be limited to the following:

- 1) Material properties
- 2) Mixing requirements and procedures
- 3) Testing requirements
- 4) Placement procedures
- 5) Disposal techniques

Obtain the Central Office Division of Construction's approval for the slurry use and disposal plan before installing drilled shafts.

**2.5 Tremies.** Provide tremies of sufficient length, weight, and diameter to discharge concrete at the shaft base elevation. Ensure the tremie diameter is least 6 times the maximum size coarse aggregate to be used in the concrete mix and no less than 10 inches. Provide adequate wall thickness to prevent crimping or sharp bends that restrict concrete placement. Support tremies used for depositing concrete in a dry drilled shaft excavation so that the free fall of the concrete does not cause the shaft excavation to cave or slough. Maintain a clean and smooth tremie surface to permit both flow of concrete and unimpeded withdrawal during concrete placement. Do not allow any aluminum parts to contact the concrete. Construct tremies used to deposit concrete for wet excavations so that they are watertight and will readily discharge concrete.

**2.6 Concrete Pumps.** Provide pump lines with a minimum diameter of 5 inches and watertight joints.

**2.7 Drop Chutes.** Do not use aluminum drop chutes.

### **3.0 CONSTRUCTION.**

#### **3.1 Preconstruction.**

**3.1.1 Prequalification.** The Department will require prequalification by the Division of Construction Procurement before accepting a bid for the construction of Drilled Shafts.

**3.1.2 Pre-Bid Inspection.** Inspect both the project site and all subsurface information, including any soil or rock samples, prior to submitting a bid. Contact the Geotechnical Branch (502-564-2374) to schedule a viewing of the subsurface information. Failure to inspect the project site and view the

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subsurface information will result in the forfeiture of the right to file a claim based on site conditions and may result in disqualification from the project.

**3.1.3 Drilled Shaft Installation Plan.** Upon request, the Department will review a Drilled Shaft Installation Plan. Submit the plan no later than 45 calendar days prior to constructing drilled shafts. Items covered in this plan should include, but not be limited to the following:

- 1) Name and experience record of jobsite drilled shaft superintendent and foremen in charge of drilled shaft operations for each shift.
- 2) List and size of proposed equipment including cranes, drills, augers, bailing buckets, final cleaning equipment, de-sanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, casings, etc.
- 3) Details of overall construction operation sequence and the sequence of shaft construction in the bents or groups.
- 4) Details of shaft excavation methods including methods to over-ream or roughen shaft walls, if necessary.
- 5) Details of slurry when the use of slurry is anticipated. Include methods to mix, circulate, and de-sand the proposed slurry. Provide details of proposed testing, test methods, sampling methods, and test equipment.
- 6) Details of proposed methods to clean shaft and inside of casing after initial excavation.
- 7) Details of reinforcement handling, lifting, and placement including support and method to center in shaft. Also include rebar cage support during concrete placement and temporary casing removal.
- 8) Details of concrete placement including procedures for concrete tremie or pump. Include initial placement, raising during placement, and overfilling of the shaft to expel contaminated concrete.
- 9) Required submittals including shop drawings and concrete design mixes.
- 10) Other information shown in the plans or requested by the Engineer.
- 11) Special considerations for wet construction.
- 12) Details of environmental control procedures to protect the environment from discharge of excavation spoil, slurry (natural and mineral), and concrete over-pour.

The Division of Construction will review the submitted procedure and provide comments and recommendations. The Contractor is responsible for satisfactory construction and ultimate performance of the Drilled Shaft.

**3.2 General Construction.** Construct drilled shafts as indicated in the plans or described in this Special Note by either the dry or wet method. When the plans describe a particular method of construction, use this method unless the Engineer permits otherwise. When the plans do not describe a particular method, propose a method on the basis of its suitability to the site conditions. Approval of this proposed method is contingent upon the satisfactory results of the technique shaft.

The construction of the first drilled shaft or technique shaft will be used to determine if the methods and equipment used by the contractor are sufficient to produce a completed shaft meeting the requirements of the plans and specifications. Ability to control dimensions and alignment of excavations within tolerances; to seal the casing into impervious materials; to prevent caving or deterioration of subsurface materials by the use of slurry or other means; to

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properly clean the completed shaft excavation; to construct excavations in open water areas when required by the plans; to establish methods for bellling or over-reaming when required by the plans; to determine the elevation of ground water; to satisfactorily handle, lift, place, and support the reinforcement cage; to satisfactorily place concrete meeting the specifications within the prescribed time frame; and to satisfactorily execute any other necessary construction operations will be evaluated during construction of the first shaft(s). Revise the methods and equipment as necessary at any time during the construction of the first shaft when unable to satisfactorily carry out any of the necessary operations described above or unable to control the dimensions and alignment of the shaft excavation within tolerances. Accurately locate technique so they may be used in the finished structure unless directed otherwise in the contract document or by the Engineer.

If at any time the Contractor fails to satisfactorily demonstrate, to the satisfaction of the Engineer, the adequacy of methods or equipment and alterations are required, additional technique shafts will be required at no additional cost to the Department and with no extension of contract time. Additional technique shafts shall be located as near as possible to the proposed production shafts but in a location as not to interfere with other construction activities. Once approval has been given to construct production shafts, no changes will be permitted in the methods or equipment used to construct the satisfactory shaft without written approval of the Engineer.

Do not make a claim against the Department for costs of construction delays, or any materials, labor, or equipment that may be necessary due to the Contractor's failure to furnish drilled shafts of a length sufficient to obtain the required bearing values, or for variations in length due to subsurface conditions that may be encountered. Soundings, boring logs, soil profiles, or other subsurface data included in the Contract documents are used by the Department for design and making preliminary estimates of quantities and should be used only at the risk of the Contractor for determining equipment, materials, or labor necessary for drilling shafts as required by the contract.

When necessary, set temporary removable surface casing. Use surface casing of sufficient length to prevent caving of the surface soils and to aid in maintaining shaft position and alignment. Pre-drilling with slurry and/or over-reaming to the outside diameter of the casing may be required to install the surface casing at some sites.

Provide equipment capable of constructing shafts to the deepest shaft depth shown in the plans plus 15 feet, 20 percent greater than the longest shaft (measured from the ground or water surface to the tip of the shaft), or 3 times the shaft diameter, whichever is greater. Blasting excavation methods are not permitted.

Use permanent casing unless otherwise noted in the Contract. Place casing as shown on the plans before beginning excavation. If full penetration cannot be attained, the Engineer may direct that excavation through the casing be accomplished and the casing advanced until reaching the plan tip elevation. In some cases, over-reaming to the outside diameter of the casing may be required before placing the casing. Cut off the casing at the prescribed elevation and leave the remainder of the casing in place. Do not use vibratory hammers for casing installation within 50 feet of shafts that have been completed less than 24 hours.

**3.2.1 Dry Construction Method.** Use the dry construction method only at sites where the ground water table and soil conditions (generally stiff to hard clays or rock above the water table) make it feasible to construct the shaft in a relatively dry excavation and where the sides and bottom of the shaft are stable and may be visually inspected by the Engineer prior to placing the concrete. The dry construction method consists of drilling the shaft excavation, removing accumulated seepage water and loose material from the excavation, and placing the shaft concrete in a relatively dry excavation.

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**3.2.2 Wet Construction Method.** Use the wet construction method at all sites where it is impractical to excavate by the dry method. The wet construction method consists of drilling the shaft excavation below the water table, keeping the shaft filled with water (including natural slurry formed during the drilling process) or slurry as defined in part 2.4 of this Special Note, desanding and cleaning the slurry as required, final cleaning of the excavation by means of a bailing bucket, air lift, submersible pump or other approved devices and placing the shaft concrete (with a tremie or concrete pump beginning at the shaft bottom) which displaces the water or slurry as concrete is placed.

Where drilled shafts are located in open water areas, construct the shafts by the wet method using casings extending from above water elevation to the plan casing tip elevation to protect the shaft concrete from water action during placement and curing. Install the casing in a manner that will produce a positive seal at the bottom of the casing.

**3.3 Slurry.** When the Contractor elects to use slurry, adjust construction operations so that the slurry is in contact with the bottom 5 feet of the shaft for less than 4 hours unless the Engineer approves otherwise. If the 4-hour limit is exceeded, over-ream the bottom 5 feet of shaft.

**3.4 Cleaning.** Over-reaming, cleaning, or wire brushing the sidewalls of the shaft excavation and permanent casings may be necessary to remove the depth of softening or to remove excessive slurry cake buildup as indicated by sidewall samples or other test methods employed by the Engineer. Over-ream around the perimeter of the excavation a minimum depth of 1/2 inch and maximum depth of 3 inches.

**3.5 Subsurface Exploration.** Take subsurface exploration borings when shown on the plans or as the Engineer directs to determine the character of the material that the shaft extends through and the material directly below the shaft excavation. Complete subsurface exploration borings prior to beginning excavation for any drilled shaft in a group. Unless directed otherwise, extend subsurface exploration borings a minimum depth of 3 shaft diameters but not less than 10 feet below the bottom of the anticipated tip of drilled shaft excavation as shown on the plans. For subsurface exploration borings where soil sampling is required use thin-wall tube samples and perform standard penetration tests according to the Department's current Geotechnical Manual. When shafts extend into bedrock, soil samples are not required unless otherwise specified. Perform rock core drilling according to the Department's Geotechnical Manual. When the Engineer directs, perform additional subsurface exploration borings prior to drilled shaft construction. Measure soil samples and/or rock cores and visually identify and describe them on the subsurface log according to the Department's current Geotechnical Manual. Subsurface exploration borings must be performed by contractors/consultants prequalified by the Department's Division of Professional Services for Geotechnical Drilling Services at the time that field work begins.

The Engineer or geotechnical branch representative may be on-site during the subsurface exploration process to evaluate the soil and/or rock core samples. The Engineer or geotechnical branch representative will determine the need to extend the borings to depths greater than the depths previously specified. Handle, label, identify, and store soil and/or rock samples according to the Department's current Geotechnical Manual and deliver them with the subsurface logs to the geotechnical branch's rock core lab in Frankfort within 24-hours of completing the borings, unless directed otherwise.

The Engineer will inspect the soil samples and/or cores and determine the final depth of required excavation (final drilled shaft tip elevation) based on evaluation of the material's suitability. The Engineer will establish the final tip elevations for shaft locations, other than



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those for which subsurface exploration borings have been performed, based on the results of the subsurface exploration. Within 15 calendar days after completion of the subsurface exploration borings, the Engineer will notify the contractor of the final tip elevations for shaft locations.

**3.6 Excavations.** The plans indicate the expected depths, the top of shaft elevations, and the estimated bottom of shaft elevations between which the drilled shaft are to be constructed. Drilled shafts may be extended deeper when the Engineer determines that the material encountered while drilling the shaft excavation is unsuitable and/or is not the same as anticipated in the design of the drilled shaft. Drilled shafts may be shortened when the Engineer determines the material encountered is better than that anticipated.

Begin drilled shaft excavation the excavation, excavation inspection, reinforcement placement, and concrete placement can be completed as one continuous operation. Do not construct new shafts within 24 hours adjacent to recently completed shafts if the center-to-center spacing is less than 3 shaft diameters.

Dispose of excavated material removed from the shaft according to the Standard Specifications or the contract documents.

Do not allow workmen to enter the shaft excavation for any reason unless both a suitable casing has been installed and adequate safety equipment and procedures have been provided to the workmen entering the excavation. Recommended Procedures for the Entry of Drilled Shaft Foundation Excavations, prepared by ADSC: The International Association of Foundation Drilling provides guideline recommendations for down-hole entry of drilled excavations.

**3.7 Obstructions.** Remove subsurface obstructions at drilled shaft locations. Such obstructions may include man-made materials such as old concrete foundations or natural materials such as boulders. Blasting is not permitted.

**3.8 Inspections of Excavations.** Provide equipment for checking the dimensions and alignment of each shaft excavation. Determine the dimensions and alignment of the shaft excavation under the observation and direction of the Engineer. Provide equipment necessary to verify shaft cleanliness for the method of inspection selected by the Engineer.

Measure final shaft depths with a weighted tape or other approved methods after final cleaning. Ensure the base of each shaft has less than ½ inch of sediment at the time of concrete placement. For dry excavations, do not allow the depth of water to exceed 3 inches for tremie or pump methods of concrete placement. Verify shaft cleanliness to the Engineer using direct visual inspection or other method the Engineers determines acceptable. Video camera or underwater inspection procedures may be used if specified in the plans. Inspect the side surfaces of rock sockets to ensure they are rough and of such condition to ensure bond between the shaft concrete and the rock. Calipers, bent rods, or other devices may be used to inspect the diameter and roughness of rock sockets. When the Engineer directs, mechanically roughen surfaces found to be smooth.

**3.9 Reinforcing Steel Cage Fabrication and Placement.** Assemble the reinforcing steel cage, consisting of longitudinal bars, ties, spirals, cage stiffener bars, spacers, centering devices, and other necessary appurtenances and place as a prefabricated unit immediately after the shaft excavation is inspected and accepted, and just prior to concrete placement.

Tie the reinforcing steel with 100 percent double-wire ties and provide support so that it will remain within allowable tolerances for position. Locate splices as shown on the plans. Splice no more than 50 percent of the longitudinal reinforcing within 2-lap splice lengths of any location or within 3 feet of the splice location if approved mechanical connectors are used. All splices are to be in accordance with plan details. Use bands, temporary cross ties,

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etc. as required to provide a reinforcement cage of sufficient rigidity to prevent racking, permanent deformations, etc. during installation.

Use concrete centering devices or other approved non-corrosive centering devices at sufficient intervals along the length of the reinforcement cage to ensure concentric spacing for the entire cage length. As a minimum, provide a set of non-corrosive centering devices at intervals not exceeding 5 feet throughout the length of the shaft. When the size of the longitudinal reinforcement exceeds one inch in diameter the minimum spacing may be increased to 10 feet. As a minimum, provide a set of centering devices within 2 feet of the top and 2 feet of the bottom of the shaft. In addition provide one set of centering devices 2 feet above and 2 feet below each change in shaft diameter. Provide feet (bottom supports) at the bottom of the shaft on vertical bars. As a minimum, provide non-corrosive centering devices at 60 degree intervals around the circumference of the shaft to maintain the required reinforcement clearances. Ensure the centering devices maintain the specified annular clearance between the outside of the reinforcing cage and the side of the excavated hole or casing.

Concrete centering devices and feet will be constructed of concrete equal in quality and durability to the concrete specified for the shaft. Use epoxy coated centering devices fabricated from reinforcing steel. Use feet (bottom supports) of adequate size and number to assure the rebar cage is the proper distance above the bottom as determined by part 3.11 3) of this Special Note. The feet are not intended to support the weight of the cage. In the event that the shaft has been excavated below the anticipated tip elevation, extend the reinforcing cage at the tip (low) end by lap splices, mechanical connectors, or welded splices conforming to the Standard Specifications. In this instance, splices need not be staggered and 100 percent of the reinforcing bars may be spliced at a given location. The bottom 12 inches of the shaft may not be reinforced when below plan tip elevation.

During concrete placement, support the reinforcing cage at or near the top of shaft such that the concrete feet are positioned approximately one inch above the bottom of shaft excavation. Not sooner than 24 hours after the completion of concrete placement, remove temporary supports. Provide the needed equipment, including extra cranes if necessary, to provide this cage support.

Prior to placing the reinforcement cage, demonstrate to the satisfaction of the Engineer that the fabrication and handling methods to be used will result in a reinforcing cage placed in the proper position, with the proper clearances, and without permanent bending, squashing, or racking of the reinforcement cage. During this demonstration bring the cage to an upright position, lower into a shaft excavation, and support as if for concrete placement.

Check the elevation of the top of the reinforcing cage before and after the concrete is placed. If the reinforcing cage is not maintained within the specified tolerances, correct to the satisfaction of the Engineer. Do not construct additional shafts until the contractor has modified his reinforcing cage support to obtain the required tolerances.

**3.10 Concrete Placement.** Place concrete according to the applicable portions of the Standard Specifications and with the requirements set forth herein. Do not apply the provisions of the Special Note 6U for Structural Mass Concrete.

Place concrete as soon as practical after reinforcing steel placement but no later than 4 hours after completion of the shaft excavation. Place concrete continuously from the bottom to above the top elevation of the shaft. For shafts that extend above ground or water surface, place concrete continuously after the shaft is full until good quality concrete is evident at the top of the shaft. Form any portion of the shaft above ground with a removable form or other approved method to the dimensions shown on the plans.

For shafts constructed in the wet with the top of the shaft below the water surface and below top of casing, place concrete to approximately one shaft diameter but no less than 2 feet above the top of shaft elevation. Remove contaminated concrete and deleterious material, as

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determined by the Engineer, accumulated above the top of shaft elevation immediately after completing concrete placement. Deleterious material and contaminated concrete may be airlifted under a head of water or slurry provided that the head is maintained at or near the exterior water surface elevation. Carefully remove any concrete remaining above plan top of shaft after curing and excess casing removal.

Place concrete either by free fall, through a tremie, or concrete pump. Use the free fall placement method in dry holes only. The maximum height of free fall placement is 20 feet. Do not allow concrete placed by free fall to contact either the reinforcing cage or hole sidewall. Drop chutes may be used to direct concrete to the base during free fall placement.

Place concrete in the shaft in one continuous operation. Maintain a minimum slump of 4 inches or more throughout the placement for 4 hours after batching. Adjust approved admixtures in the concrete mix for the conditions encountered on the job so that the concrete remains in a workable plastic state throughout the placement. Perform slump loss tests to demonstrate that the concrete will maintain a 4-inch or greater slump for a period of time equal to the estimated transport plus the 2-hour placement time, but not less than 4 hours.

When the Engineer determines the concrete placement methods and/or equipment during construction of any technique and/or production shafts to be inadequate, make appropriate alterations to eliminate unsatisfactory results.

Drilled shafts not meeting the concrete placement requirements of this Special Note or contract plans are unacceptable. Correct all unacceptable completed shafts to the satisfaction of the Engineer.

**3.10.1 Tremie Placement.** Tremies may be used for concrete placement in either wet or dry holes. Extend the tremie to the shaft base elevation before starting underwater placement. Valves, bottom plates, or plugs may be used only if concrete discharge can begin approximately 2 inches above the excavation bottom. Remove plugs from the excavation unless otherwise approved by the Engineer. Maintain tremie discharge at or near the bottom of excavation as long as practical during concrete placement. Immerse tremie discharge end as deep as practical in the concrete but not less than 10 feet.

If at any time during the concrete pour the tremie line orifice is removed from the fluid concrete column and discharges concrete above the rising concrete surface, the entire drilled shaft is considered defective. In such case, remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or over-reaming as directed by the Engineer, and repour the shaft.

**3.10.2 Pumped Concrete.** Concrete pumps and lines may be used for concrete placement in either wet or dry excavations. Do not begin concrete placement until the pump line discharge orifice is at the shaft base elevation.

For wet excavations, use a plug or similar device to separate the concrete from the fluid in the hole until pumping begins. Remove the plug unless otherwise approved by the engineer.

Ensure the discharge orifice remains at least 10 feet below the surface of the fluid concrete. When lifting the pump line during concrete placement, reduce the line pressure until the orifice has been repositioned at a higher level in the excavation.

If at any time during the concrete pour the pump line orifice is removed from the fluid concrete column and discharges concrete above the rising concrete level, the Department will consider the shaft defective. In such case, remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or over-reaming as the Engineer directs, and repour the shaft.

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**3.10.3 Drop Chutes.** Drop chutes may be used to direct placement of free fall concrete in excavations where the maximum depth of water does not exceed one inch. Do not use the free fall method of placement in wet excavations. Concrete may be placed through either a hopper at the top of the tube or side openings as the drop chute is retrieved during concrete placement. Reduce the height of free fall and/or reduce the rate of concrete flow into the excavation if the concrete placement causes the shaft excavation to cave or slough, or if the concrete strikes the reinforcing cage or sidewall. When the Engineer determines free fall placement cannot be accomplished satisfactorily, use either tremie or pumping to accomplish the pour.

**3.11 Construction Tolerances.** The following construction tolerances apply to drilled shafts unless otherwise stated in the contract document:

- 1) Construct drilled shaft within 3 inches of plan position in the horizontal plane at the top of the shaft.
- 2) Do not vary the vertical alignment of a shaft excavation from the plan alignment by more than 1/4 inch per foot of depth or 6 inches total.
- 3) Maintain the top of the reinforcing steel cage no more than 6 inches above and no more than 3 inches below plan position.
- 4) All casing diameters shown on the plans refer to O.D. (outside diameter) dimensions. The casing dimensions are subject to American Pipe Institute tolerances applicable to regular steel pipe. A casing larger in diameter than shown in the plans may be used, at no additional cost, with prior approval by the Department.
- 5) Maintain the top of shaft concrete within  $\pm 3$  inches from the plan top of shaft elevation, measured after excess shaft concrete has been removed.
- 6) Design excavation equipment and methods so that the completed shaft excavation will have a planar bottom. Maintain the cutting edges of excavation equipment normal to the vertical axis of the equipment within a tolerance of  $\pm 3/8$  inch per foot of diameter. The tip elevation of the shaft has a tolerance of  $\pm 6$  inches from final shaft tip elevation unless otherwise specified in the plans.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. Correct all unacceptable shaft excavations and completed shafts to the satisfaction of the Engineer. When a shaft excavation is completed with unacceptable tolerances, present corrective measures designed by a registered Professional Engineer for approval.

#### **4.0 MEASUREMENT.**

**4.1 Drilled Shafts.** The Department will not measure for payment any trial batches required to demonstrate the adequacy of the concrete mix, method, or equipment; concrete required to fill an oversized casing or oversized excavation; obstruction removal; over-reaming or sidewall cleaning; inspection work or inspection equipment; materials or work necessary, including engineering analyses and redesign, to alter unacceptable work methods or to complete corrections for unacceptable work; and will consider them incidental to the Drilled Shaft. Unless noted otherwise in the contract documents, casing is incidental to the drilled shaft.

**4.1.1 Drilled Shaft, Common.** The Department will measure the length, in linear feet, of drilled shaft above the top of rock elevation shown on the plans. The

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Department will consider this quantity Drilled Shaft, Common regardless of the character of material actually encountered.

**4.1.2 Drilled Shafts, Solid Rock.** The Department will measure the length, in linear feet, of drilled shaft below the top of rock elevation shown on plans. The Department will consider this quantity Drilled Shafts, Solid Rock regardless of the character of material actually encountered during excavation.

**4.2 Technique Shaft.** The Department will pay for technique shaft at the contract unit price per each as detailed on the plans or as directed by the Engineer. This will constitute full compensation for all costs incurred during installation as described herein for ‘Drilled Shaft’ or in the contract documents. No additional compensation beyond the number of technique shafts allowed for in the plans will be permitted for additional technique shafts required because of failure to demonstrate adequacy of methods.

**4.3 Rock Coring and Rock Sounding.** The Department will measure Rock Sounding and Rock Coring shown on the plans, as specified in part 3.5 of this Special Note, and as the Engineer directs, in linear feet to the nearest 0.1-foot. If soil samples are specified in the contract documents they will be incidental to the unit price bid for Rock Sounding. The Department will not measure or pay for subsurface exploration performed deeper than the elevations indicated on the plans and/or in this Special Note, unless directed by the Engineer, and will consider it incidental to these items of work. Additionally, the Department will consider all mobilization, equipment, labor, incidental items, and operations necessary to complete the boring operations incidental to these items of work.

**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>
----	Drilled Shaft, Diameter*, Common	Linear Foot
----	Drilled Shaft, Diameter*, Solid Rock	Linear Foot
----	Technique Shaft	Each
20745ED	Rock Sounding	Linear Foot
20746ED	Rock Coring	Linear Foot

*\* See Plan Sheets for sizes of shafts.*

The Department will consider payment as full compensation for all work required in this note.

June 15, 2012



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).

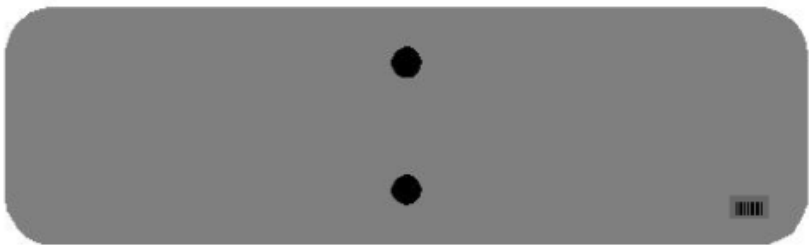
The installation of the permanent sign will be measured in accordance to Section 715.

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

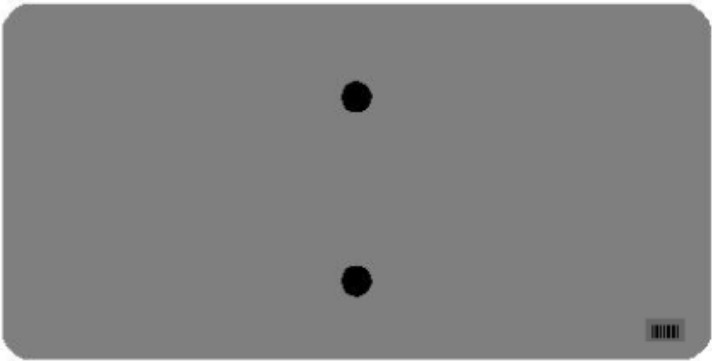
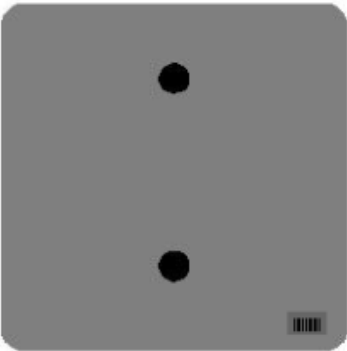
<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24631EC	Barcode Sign Inventory	Each

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.

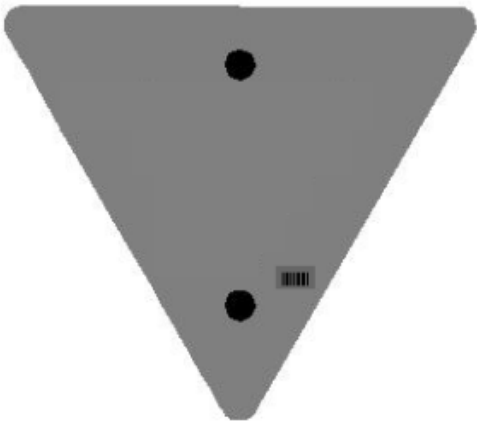
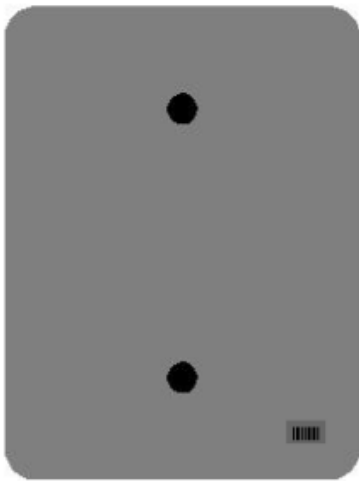
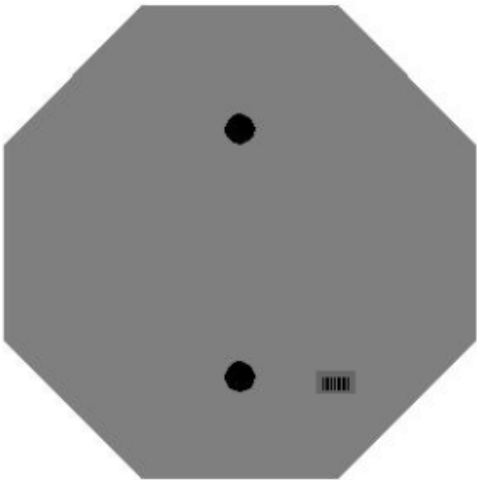
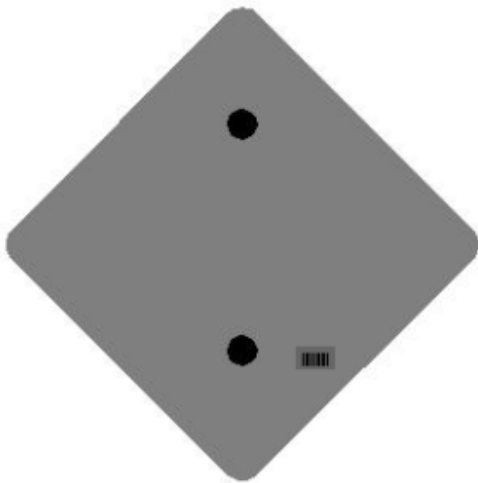
One Sign Post



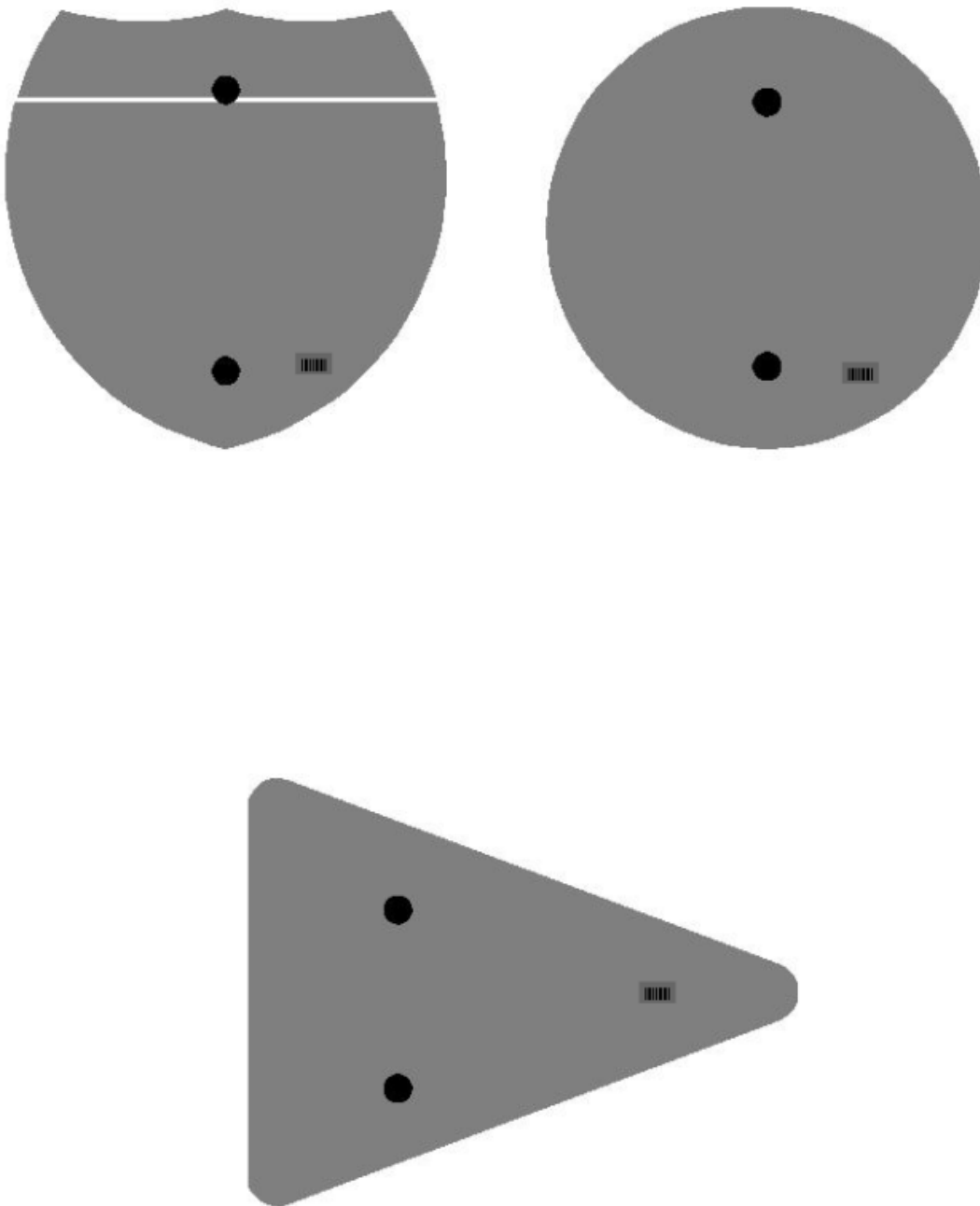
↑  
2" Wide Post



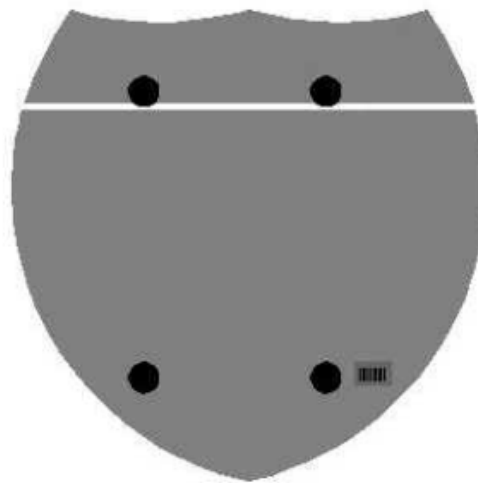
One Sign Post



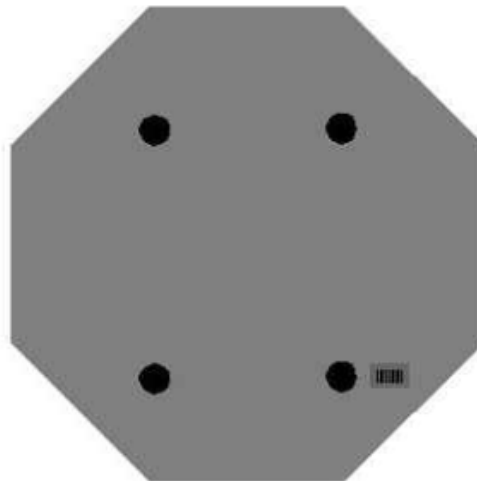
### One Sign Post



### Double Sign Post



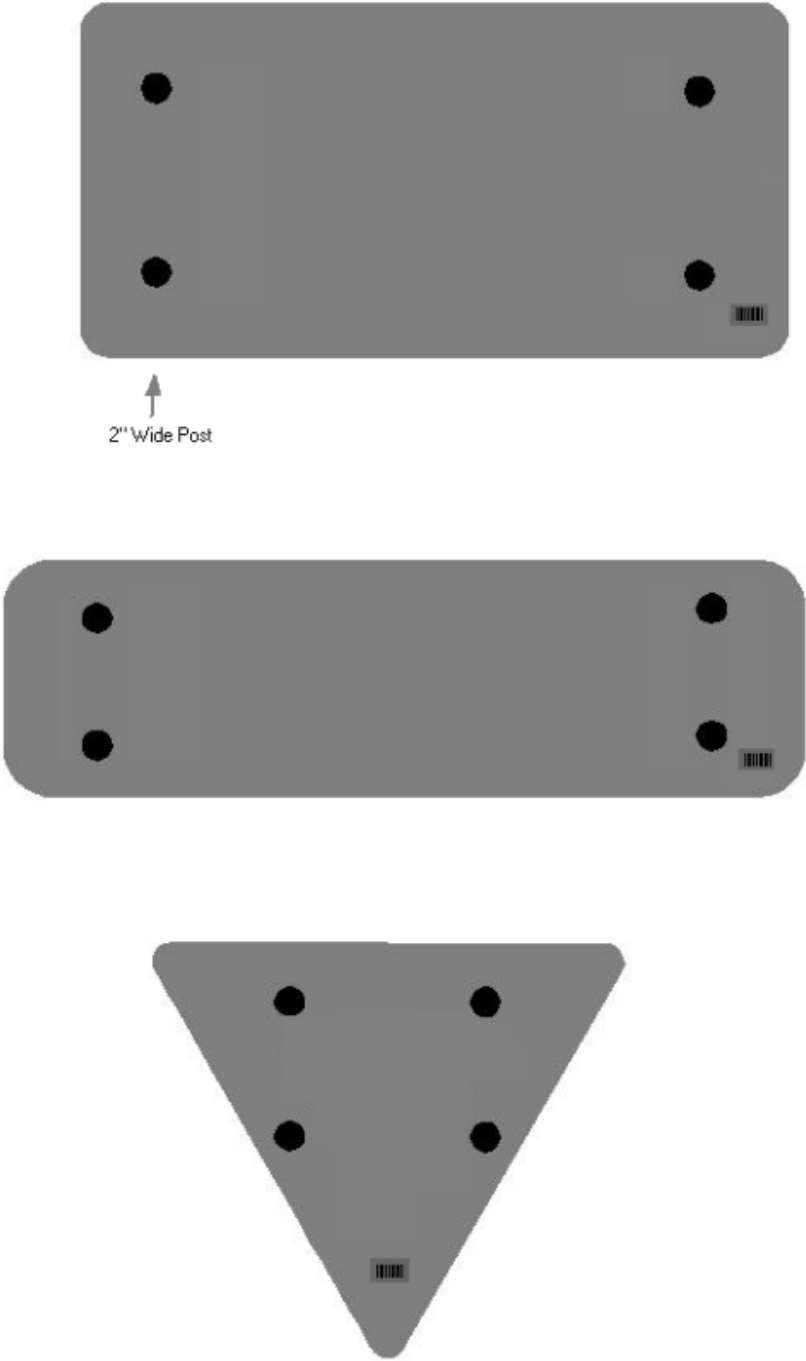
Interstate  
Shield



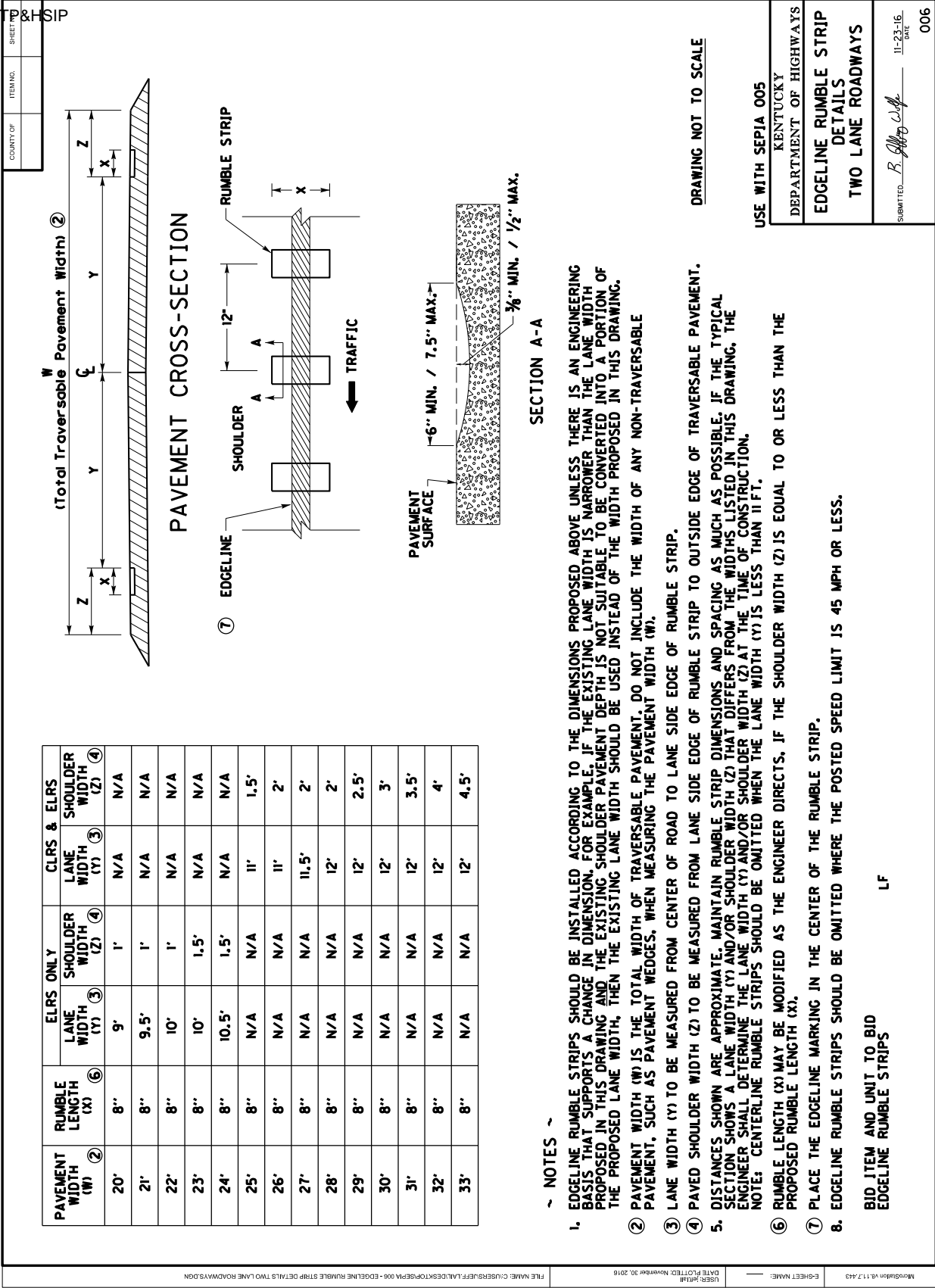
48" Stop

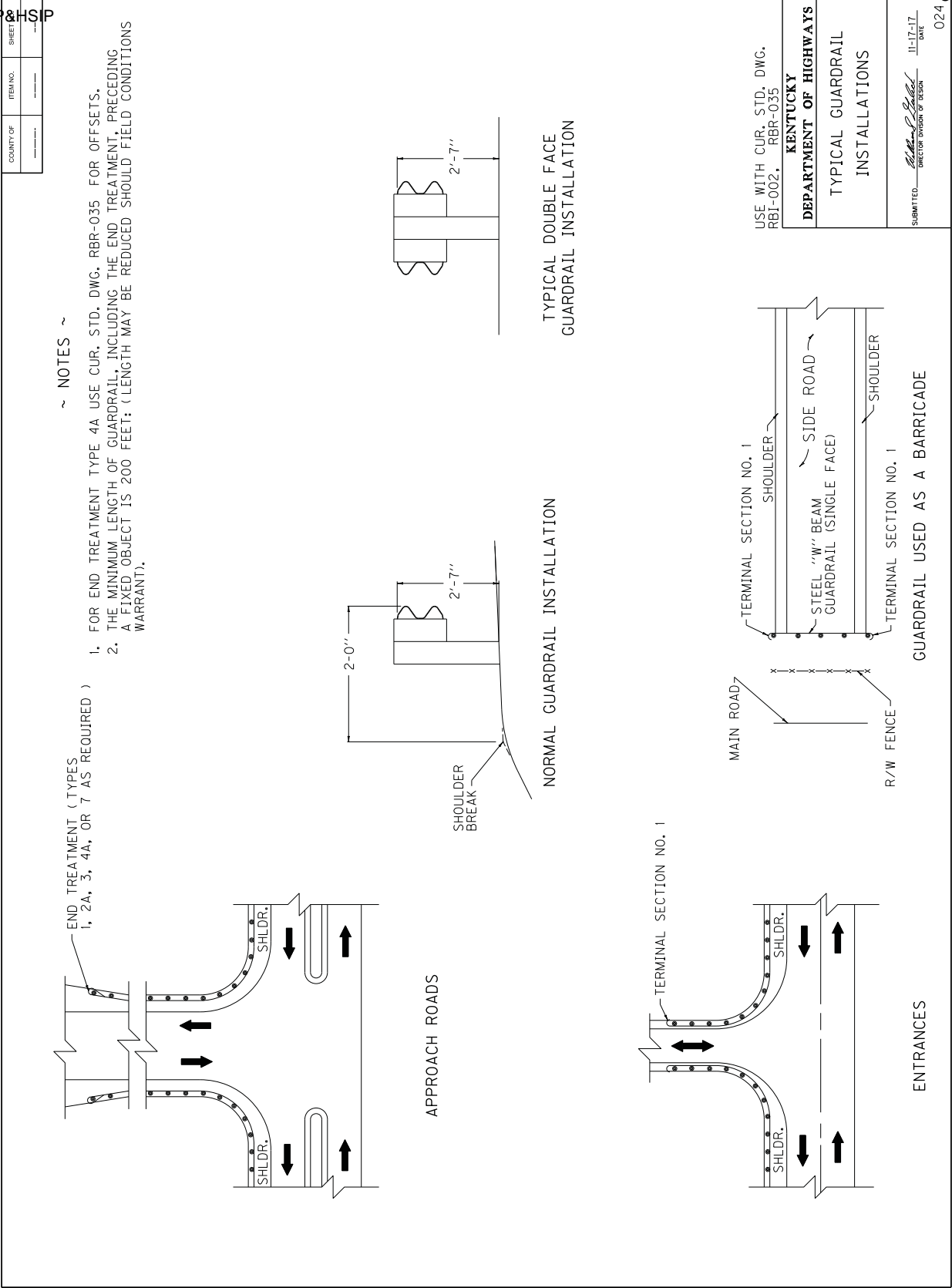


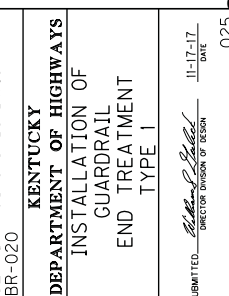
2 Post Signs













**ELEVATION VIEW**  
 EFFECTIVE LENGTH OF BEAM  
 12'-6" OR 25'-0"  
 6'-3" C-C POST SPACING  
 6'-3" C-C POST SPACING  
 RAIL SPLICE  
 RAIL SPLICE  
 GUARDRAIL POST  
 OFFSET BLOCK TYPE 4  
 OFFSET BLOCK TYPE 4  
 TRAFFIC  
 TRAFFIC

**PLAN VIEW**  
 (DOUBLE FACE RAIL OR SINGLE FACE RAIL)  
 12 1/2" LAP  
 8 1/2" 4 1/2"  
 3/4" x 2 1/2" POST BOLT SLOT 6'-3" O. C.  
 3/8" x 1 1/8" SPLICE BOLT SLOT  
 SECTION B-B  
 SECTION C-C (RAIL CORRUGATED SHEET STEEL BEAM)  
 SECTION A-A  
 SECTION A-A  
 SECTION A-A  
 DOUBLE FACE RAIL WITH STEEL POST (W6x9) (TIMBER OR APPROVED COMPOSITE OFFSET BLOCK)  
 DOUBLE FACE RAIL WITH ROUND TIMBER POST  
 DOUBLE FACE RAIL WITH TIMBER POST

**SECTION B-B**  
 RAIL SPLICE (5)  
 3/4" x 2 1/2" POST BOLT SLOT 6'-3" O. C.  
 12 1/2" LAP  
 8 1/2" 4 1/2"  
 3/8" x 1 1/8" SPLICE BOLT SLOT

**SECTION C-C**  
 (RAIL CORRUGATED SHEET STEEL BEAM)  
 10°  
 1 1/16"  
 3/8" R  
 12 1/4"  
 3/16"  
 1 1/2" R  
 3/16"  
 15/16" R  
 2 1/4"  
 3/4"  
 TOLERANCE

**SECTION A-A**  
 DOUBLE FACE RAIL WITH STEEL POST (W6x9) (TIMBER OR APPROVED COMPOSITE OFFSET BLOCK)  
 DOUBLE FACE RAIL WITH ROUND TIMBER POST  
 DOUBLE FACE RAIL WITH TIMBER POST

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 8 1/2" 4 1/2"  
 3/8" x 1 1/8" SPLICE BOLT SLOT

**SECTION C-C**  
 (RAIL CORRUGATED SHEET STEEL BEAM)  
 10°  
 1 1/16"  
 3/8" R  
 12 1/4"  
 3/16"  
 1 1/2" R  
 3/16"  
 15/16" R  
 2 1/4"  
 3/4"  
 TOLERANCE

**SECTION A-A**  
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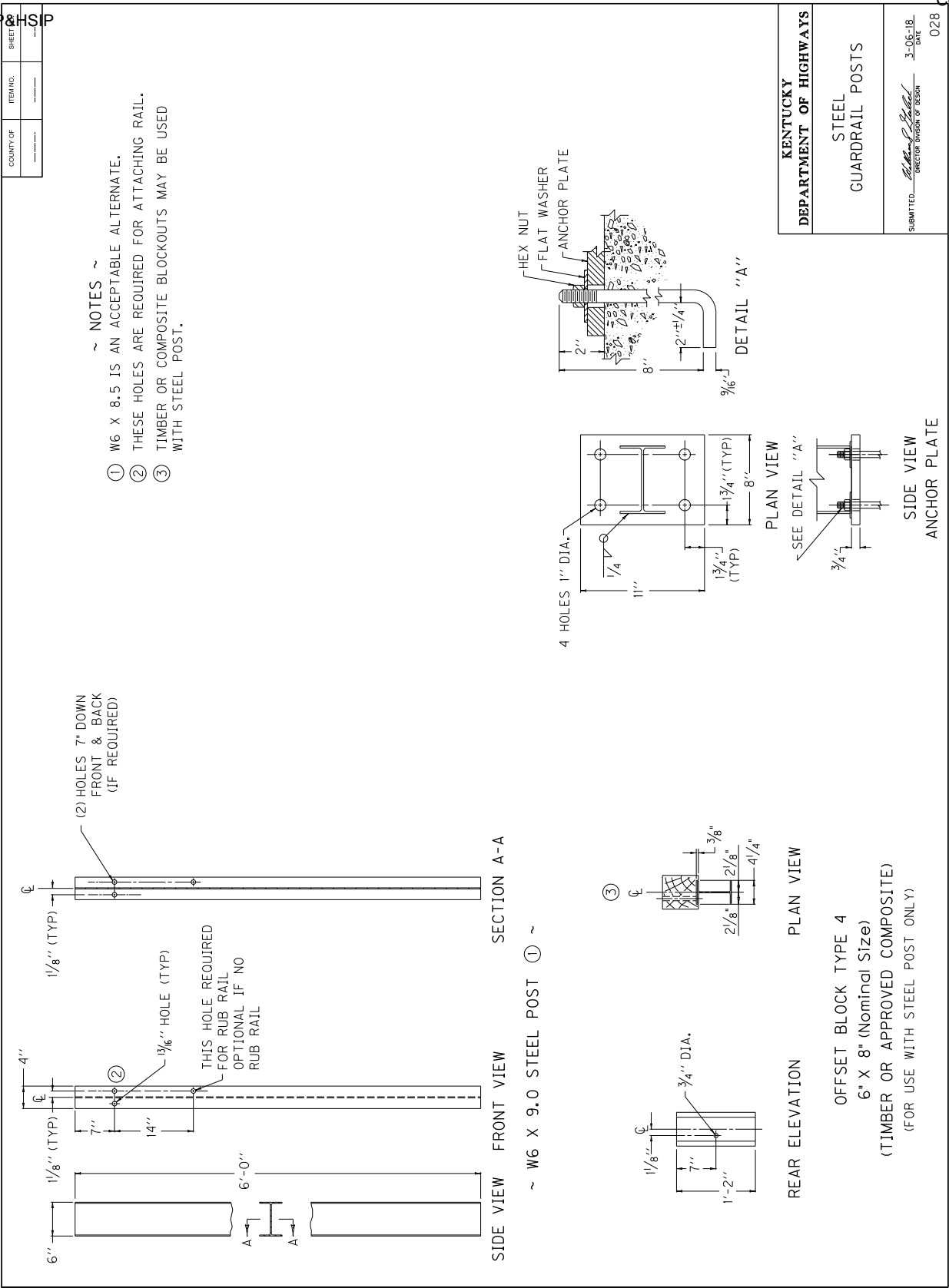
**SECTION C-C**  
 (RAIL CORRUGATED SHEET STEEL BEAM)  
 10°  
 1 1/16"  
 3/8" R  
 12 1/4"  
 3/16"  
 1 1/2" R  
 3/16"  
 15/16" R  
 2 1/4"  
 3/4"  
 TOLERANCE

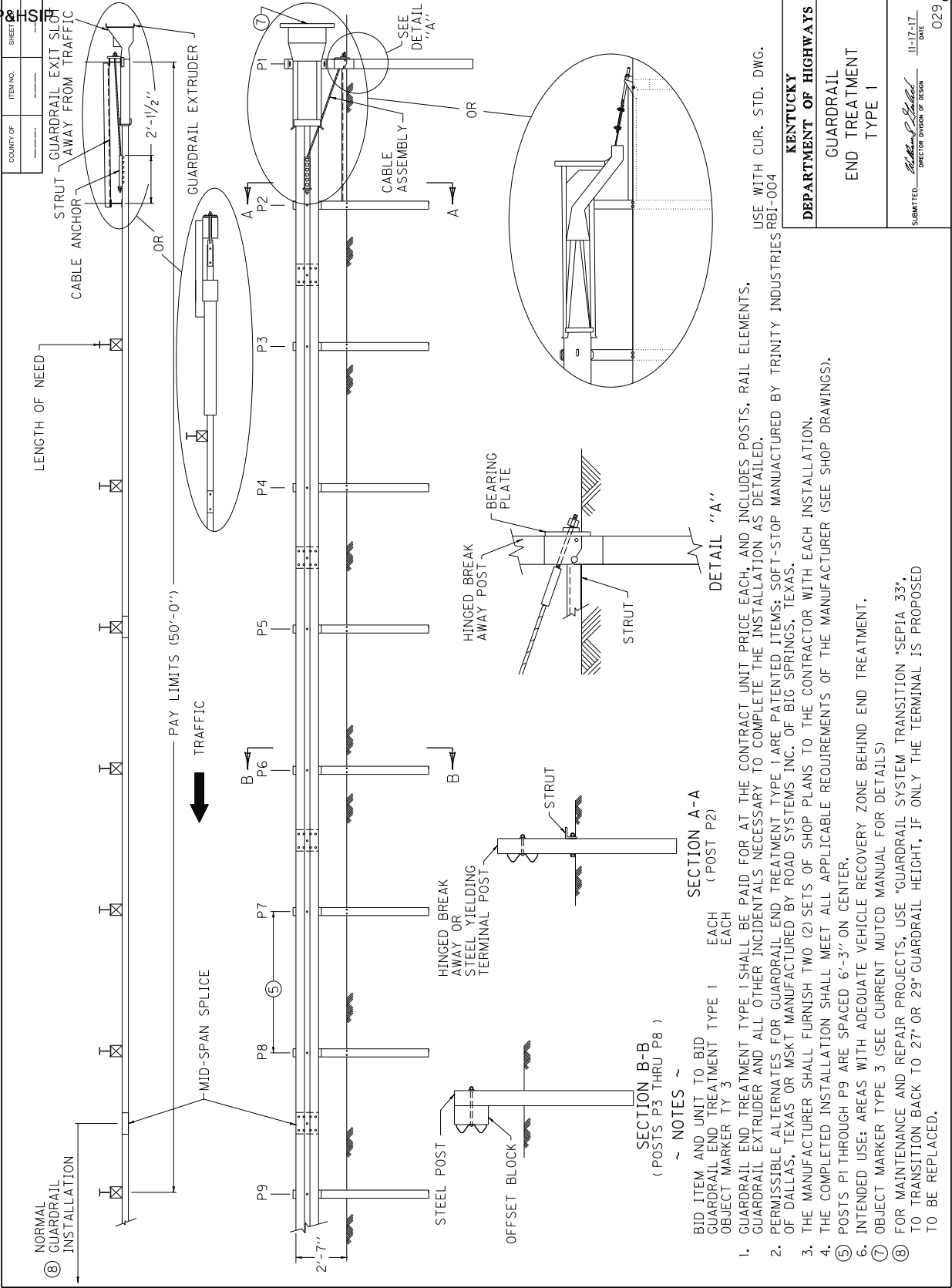
**SECTION A-A**  
 DOUBLE FACE RAIL WITH STEEL POST (W6x9) (TIMBER OR APPROVED COMPOSITE OFFSET BLOCK)  
 DOUBLE FACE RAIL WITH ROUND TIMBER POST  
 DOUBLE FACE RAIL WITH TIMBER POST

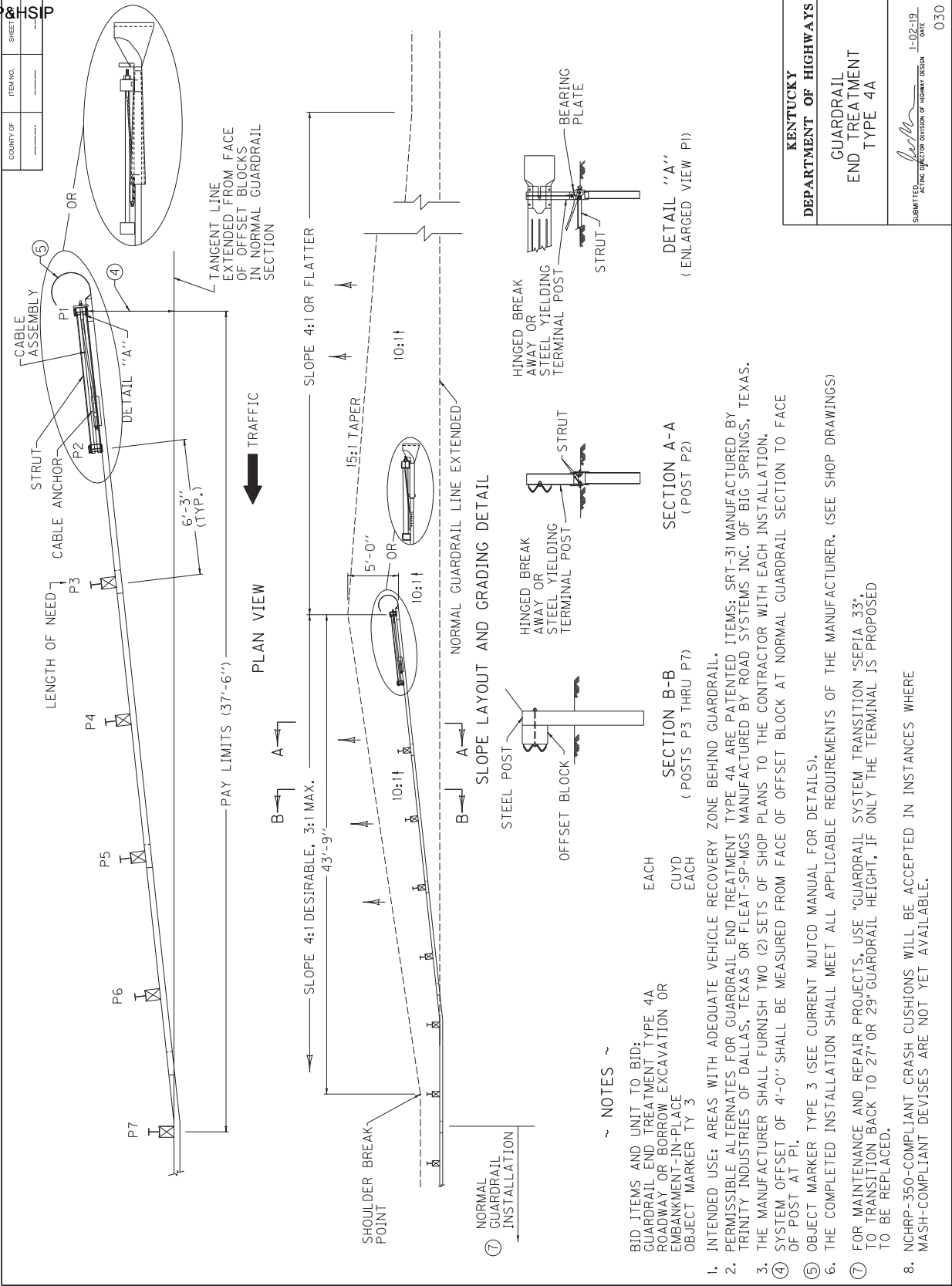
**SECTION B-B**  
 RAIL SPLICE (5)  
 3/4" x 2 1/2" POST BOLT SLOT 6'-3" O. C.  
 12 1/2" LAP  
 8 1/2" 4 1/2"  
 3/8" x 1 1/8" SPLICE BOLT SLOT

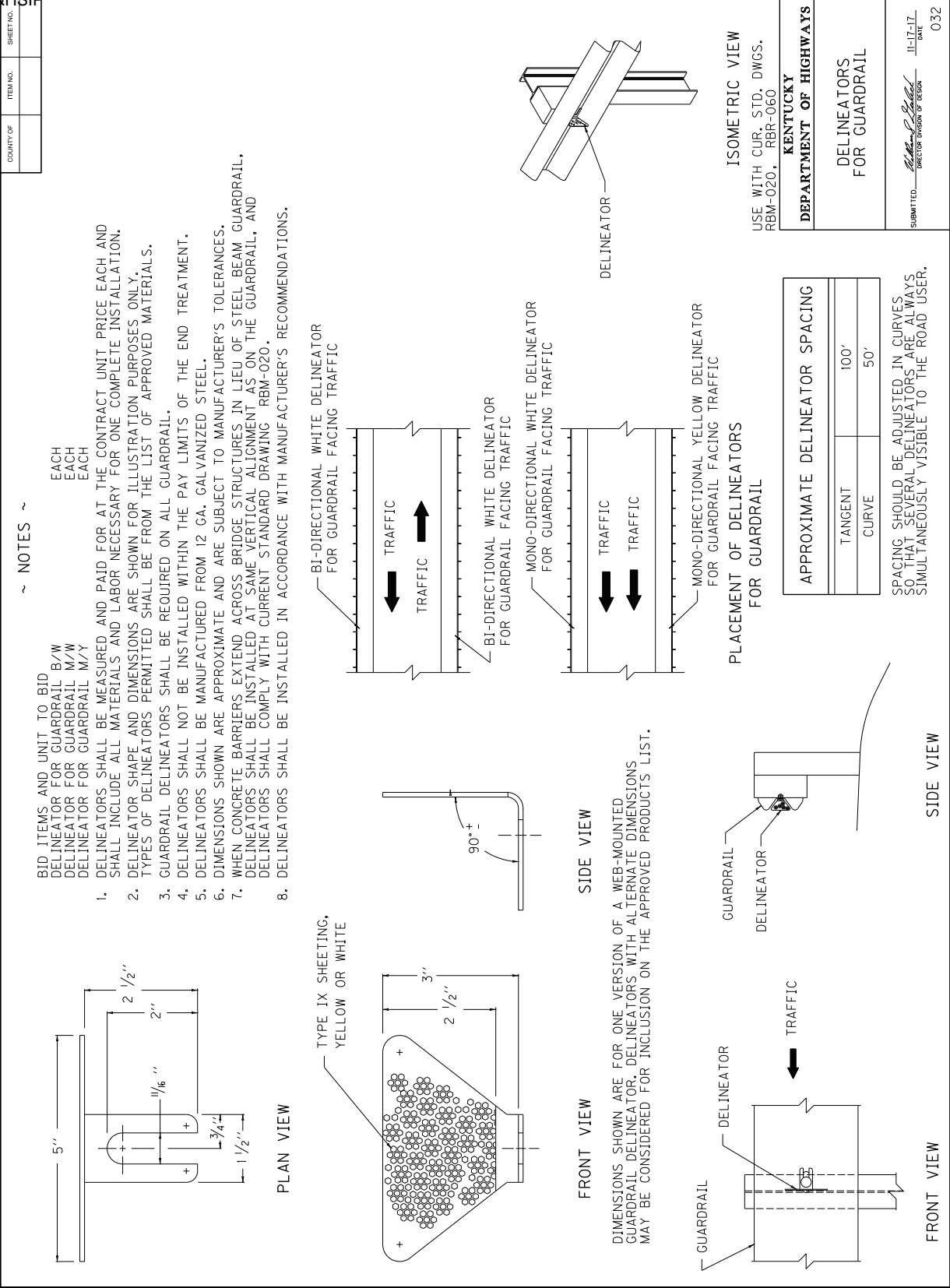
**SECTION C-C**  
 (RAIL CORRUGATED SHEET STEEL BEAM)  
 10°  
 1 1/16"  
 3/8" R  
 12 1/4"  
 3/16"  
 1 1/2" R  
 3/16"  
 15/16" R  
 2 1/4"  
 3/4"  
 TOLERANCE

**SECTION A-A**  
 DOUBLE FACE RAIL WITH STEEL POST (W6x9) (TIMBER OR APPROVED COMPOSITE OFFSET BLOCK)  
 DOUBLE FACE RAIL WITH ROUND TIMBER POST  
 DOUBLE FACE RAIL WITH TIMBER POST









## **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

### **ATTACHMENTS**

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

### **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).

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.

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.

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).

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.

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.

### **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.

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 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.

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.

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.

**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

"General Decision Number: KY20190038 09/27/2019

Superseded General Decision Number: KY20180100

State: Kentucky

Construction Type: Highway

Counties: Anderson, Bath, Bourbon, Boyd, Boyle, Bracken, Breckinridge, Bullitt, Carroll, Carter, Clark, Elliott, Fayette, Fleming, Franklin, Gallatin, Grant, Grayson, Greenup, Hardin, Harrison, Henry, Jefferson, Jessamine, Larue, Lewis, Madison, Marion, Mason, Meade, Mercer, Montgomery, Nelson, Nicholas, Oldham, Owen, Robertson, Rowan, Scott, Shelby, Spencer, Trimble, Washington and Woodford Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.60 for calendar year 2019 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth

GRANT COUNTY

041GR190067-STEP&HSR

(a) (1) (ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number	Publication Date
0	01/04/2019
1	02/15/2019
2	09/27/2019

BRIN0004-003 06/01/2017

BRECKENRIDGE COUNTY

	Rates	Fringes
BRICKLAYER.....	\$ 26.80	12.38
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BRKY0001-005 06/01/2017		

BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE,  
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, & TRIMBLE  
COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 26.80	12.38
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BRKY0002-006 06/01/2017		

BRACKEN, GALLATIN, GRANT, MASON & ROBERTSON COUNTIES:

	Rates	Fringes
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BRICKLAYER.....	\$ 27.81	13.01
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BRKY0007-004 06/01/2017		

BOYD, CARTER, ELLIOT, FLEMING, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 32.98	19.02
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BRKY0017-004 06/01/2017		

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN,  
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,  
OWEN, SCOTT, WASHINGTON & WOODFORD COUNTIES:

	Rates	Fringes
BRICKLAYER.....	\$ 26.47	12.76
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CARP0064-001 05/01/2015		

	Rates	Fringes
CARPENTER.....	\$ 27.50	16.06
Diver.....	\$ 41.63	16.06
PILEDRIVERMAN.....	\$ 27.75	16.06
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ELEC0212-008 06/04/2018		

BRACKEN, GALLATIN and GRANT COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 28.39	18.98
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ELEC0212-014 11/26/2018		

BRACKEN, GALLATIN & GRANT COUNTIES:

	Rates	Fringes
Sound & Communication		
Technician.....	\$ 24.35	10.99
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* ELEC0317-012 06/01/2019		

BOYD, CARTER, ELLIOT & ROWAN COUNTIES:

	Rates	Fringes
ELECTRICIAN (Wiremen)		
Electrician.....	\$ 34.35	25.70
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* ELEC0369-007 05/28/2019		

ANDERSON, BATH, BOURBON, BOYLE, BRECKINRIDGE, BULLITT, CARROLL,  
CLARK, FAYETTE, FRAONKLIN, GRAYSON, HARDIN, HARRISON, HENRY,  
JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER,  
MONTGOMERY, NELSON, NICHOLAS, OLDHAM, OWEN, ROBERTSON, SCOTT,  
SHELBY, SPENCER, TRIMBLE, WASHINGTON, & WOODFORD COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 32.44	17.22
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ELEC0575-002 12/31/2018		

FLEMING, GREENUP, LEWIS & MASON COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 32.75	16.69
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* ENGI0181-018 07/01/2019		

	Rates	Fringes
POWER EQUIPMENT OPERATOR		

GRANT COUNTY  
041GR19D067-STR&HSIP

GROUP 1.....\$ 33.30	16.50
GROUP 2.....\$ 30.44	16.50
GROUP 3.....\$ 30.89	16.50
GROUP 4.....\$ 30.12	16.50

# OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Concrete Pump; Skid

Power Machine with all Attachments; Switchman or Brakeman;  
Throttle Valve Person; Tractair & Road Widening Trencher;  
Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger;  
Welding Machine; Well Points; & Whirley Oiler

GROUP 3 - All Off Road Material Handling Equipment,  
including Articulating Dump Trucks; Greaser on Grease  
Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine;  
Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout  
Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler;  
Paving Joint Machine; Power Form Handling Equipment; Pump;  
Roller (Earth); Steerman; Tamping Machine; Tractor (Under  
50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where  
the length of the boom in combination with the length of  
the piling leads equals or exceeds 150 ft. - \$1.00 over  
Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID  
10%

ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

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\* IRON0044-009 06/01/2019

BRACKEN, GALLATIN, GRANT, HARRISON, ROBERTSON,  
BOURBON (Northern third, including Townships of Jackson,  
Millersburg, Ruddel Mills & Shawhan);  
CARROLL (Eastern third, including the Township of Ghent);  
FLEMING (Western part, excluding Townships of Beechburg, Colfax,  
Elizaville, Flemingsburg, Flemingsburg Junction, Foxport,  
Grange City, Hillsboro, Hilltop, Mount Carmel, Muses Mills,  
Nepton, Pecksridge, Plummerville, Plummerville Mill, Poplar  
Plains, Ringos Mills, Tilton & Wallingford);  
MASON (Western two-thirds, including Townships of Dover,  
Lewisburg, Mays Lick, Maysville, Minerva, Moranburg,  
Murphysville, Ripley, Sardis, Shannon, South Ripley &  
Washington);

GRANT COUNTY  
041GR190067-006 STP&HSP

(Townships of Barefoot, Barterville, Carlisle,

Ellisville, Headquarters, Henryville, Morningglory, Myers &  
Oakland Mills);

OWEN (Townships of Beechwood, Bromley, Fairbanks, Holbrook,  
Jonesville, Long Ridge, Lusby's Mill, New, New Columbus, New  
Liberty, Owenton, Poplar Grove, Rockdale, Sanders, Teresita &  
Wheatley);

SCOTT (Northern two-thirds, including Townships of Biddle,  
Davis, Delaplain, Elmville, Longlick, Muddy Ford, Oxford,  
Rogers Gap, Sadieville, Skinnersburg & Stonewall)

	Rates	Fringes
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IRONWORKER

Fence Erector.....	\$ 28.00	21.20
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Structural.....	\$ 29.47	21.20
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\* IRON0070-006 06/01/2019

ANDERSON, BOYLE, BRECKINRIDGE, BULLITT, FAYETTE, FRANKLIN,  
GRAYSON, HARDIN, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON,  
MARION, MEADE, MERCER, NELSON, OLDHAM, SHELBY, SPENCER,  
TRIMBLE, WASHINGTON & WOODFORD

BOURBON (Southern two-thirds, including Townships of Austerlity,  
Centerville, Clintonville, Elizabeth, Hutchison, Littlerock,  
North Middletown & Paris);

CARROLL (Western two-thirds, including Townships of Carrollton,  
Easterday, English, Locust, Louis, Prestonville & Worthville);

CLARK (Western two-thirds, including Townships of Becknerville,  
Flanagan, Ford, Pine Grove, Winchester & Wyandotte);

OWEN (Eastern eighth, including Townships of Glenmary, Gratz,  
Monterey, Perry Park & Tacketts Mill);

SCOTT (Southern third, including Townships of Georgetown, Great  
Crossing, Newtown, Stampling Ground & Woodlake);

	Rates	Fringes
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IRONWORKER.....	\$ 29.68	22.75
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BATH, BOYD, CARTER, ELLIOTT, GREENUP, LEWIS, MONTGOMERY & ROWAN  
CLARK (Eastern third, including townships of Bloomingdale,  
Hunt, Indian Fields, Kiddville, Loglick, Rightangele & Thomson);  
FLEMING (Townships of Beechburg, Colfax, Elizaville,  
Flemingsburg, Flemingsburg Junction, Foxport, Grange City,  
Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton,  
Pecksridge, Plummerville, Plummerville Mill, Poplar Plains,  
Ringos Mills, Tilton & Wallingford);  
MASON (Eastern third, including Townships of Helena, Marshall,  
Orangeburg, Plumville & Springdale);  
NICHOLAS (Eastern eighth, including the Township of Moorefield  
Sprout)

	Rates	Fringes
IRONWORKER		
ZONE 1.....	\$ 32.00	25.95
ZONE 2.....	\$ 32.40	25.95
ZONE 3.....	\$ 34.00	25.95
ZONE 1 - (no base rate increase) Up to 10 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.		
ZONE 2 - (add \$0.40 per hour to base rate) 10 to 50 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.		
ZONE 3 - (add \$2.00 per hour to base rate) 50 mile radius & over of Union Hall, 1643 Greenup Ave, Ashland, KY.		

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LABO0189-003 07/01/2018

BATH, BOURBON, BOYD, BOYLE, BRACKEN, CARTER, CLARK, ELLIOTT,  
FAYETTE, FLEMING, FRANKLIN, GALLATIN, GRANT, GREENUP, HARRISON,  
JESSAMINE, LEWIS, MADISON, MASON, MERCER, MONTGOMERY, NICHOLAS,  
OWEN, ROBERTSON, ROWAN, SCOTT, & WOOLFORD COUNTIES



Laborers:

GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushhammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GRANT COUNTY  
041GR190067-STP&HSP  
Brickmason Worker (Free Air); Cement Finisher;

Environmental - Nuclear, Radiation, Toxic & Hazardous Waste  
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;  
& Tunnel Mucker (Free Air); Directional & Horizontal  
Boring; Air Track Drillers (All Types); Powdermen &  
Blasters; Troxler & Concrete Tester if Laborer is Utilized

LABO0189-008 07/01/2018

ANDERSON, BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE,  
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE &  
WASHINGTON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement  
Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter  
Tender; Cement Mason Tender; Cleaning of Machines;  
Concrete; Demolition; Dredging; Environmental - Nuclear,  
Radiation, Toxic & Hazardous Waste - Level D; Flagperson;  
Grade Checker; Hand Digging & Hand Back Filling; Highway  
Marker Placer; Landscaping, Mesh Handler & Placer; Puddler;  
Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail  
& Fence Installer; Signal Person; Sound Barrier Installer;  
Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper;  
Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer);  
Brickmason Tender; Mortar Mixer Operator; Scaffold Builder;  
Burner & Welder; Bushhammer; Chain Saw Operator; Concrete  
Saw Operator; Deckhand Scow Man; Dry Cement Handler;

GRANT COUNTY  
041GR190067-STR&HSP - Nuclear, Radiation, Toxic & Hazardous Waste  
- Level C; Forklift Operator for Masonary; Form Setter;  
Green Concrete Cutting; Hand Operated Grouter & Grinder  
Machine Operator; Jackhammer; Pavement Breaker; Paving  
Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven  
Georgia Buggy & Wheel Barrow; Power Post Hole Digger;  
Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind  
Trencher; Sand Blaster; Concrete Chipper; Surface Grinder;  
Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman;  
Gunnite Operator & Mixer; Grout Pump Operator; Side Rail  
Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free  
Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher;  
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste  
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;  
& Tunnel Mucker (Free Air); Directional & Horizontal  
Boring; Air Track Drillers (All Types); Powdermen &  
Blasters; Troxler & Concrete Tester if Laborer is Utilized

LABO0189-009 07/01/2018

BRECKINRIDGE & GRAYSON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement  
Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter  
Tender; Cement Mason Tender; Cleaning of Machines;  
Concrete; Demolition; Dredging; Environmental - Nuclear,

Grader; Toxic & Hazardous Waste - Level D; Flagperson;  
Grade Checker; Hand Digging & Hand Back Filling; Highway  
Marker Placer; Landscaping, Mesh Handler & Placer; Puddler;  
Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail  
& Fence Installer; Signal Person; Sound Barrier Installer;  
Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper;  
Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer);  
Brickmason Tender; Mortar Mixer Operator; Scaffold Builder;  
Burner & Welder; Bushhammer; Chain Saw Operator; Concrete  
Saw Operator; Deckhand Scow Man; Dry Cement Handler;  
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste  
- Level C; Forklift Operator for Masonary; Form Setter;  
Green Concrete Cutting; Hand Operated Grouter & Grinder  
Machine Operator; Jackhammer; Pavement Breaker; Paving  
Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven  
Georgia Buggy & Wheel Barrow; Power Post Hole Digger;  
Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind  
Trencher; Sand Blaster; Concrete Chipper; Surface Grinder;  
Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman;  
Gunnite Operator & Mixer; Grout Pump Operator; Side Rail  
Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free  
Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher;  
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste  
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;  
& Tunnel Mucker (Free Air); Directional & Horizontal  
Boring; Air Track Drillers (All Types); Powdermen &  
Blasters; Troxler & Concrete Tester if Laborer is Utilized

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PAIN0012-005 06/11/2005

BATH, BOURBON, BOYLE, CLARK, FAYETTE, FLEMING, FRANKLIN,  
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,  
ROBERTSON, SCOTT & WOODFORD COUNTIES:

Rates                      Fringes

PAINTER

Bridge/Equipment Tender		
and/or Containment Builder..	\$ 18.90	5.90
Brush & Roller.....	\$ 21.30	5.90
Elevated Tanks;		
Steeplejack Work; Bridge &		
Lead Abatement.....	\$ 22.30	5.90
Sandblasting &		
Waterblasting.....	\$ 22.05	5.90
Spray.....	\$ 21.80	5.90

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PAIN0012-017 05/01/2015

BRACKEN, GALLATIN, GRANT, MASON & OWEN COUNTIES:

Rates                      Fringes

PAINTER (Heavy & Highway  
Bridges - Guardrails -  
Lightpoles - Striping)

Bridge Equipment Tender		
and Containment Builder.....	\$ 20.73	9.06
Brush & Roller.....	\$ 23.39	9.06
Elevated Tanks;		
Steeplejack Work; Bridge &		
Lead Abatement.....	\$ 24.39	9.06
Sandblasting & Water		
Blasting.....	\$ 24.14	9.06
Spray.....	\$ 23.89	9.06

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PAIN0118-004 06/01/2018

ANDERSON, BRECKINRIDGE, BULLITT, CARROLL, GRAYSON, HARDIN,  
HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY,  
SPENCER, TRIMBLE & WASHINGTON COUNTIES:

Rates                      Fringes

PAINTER

Brush & Roller.....	\$ 22.00	12.52
Spray, Sandblast, Power		
Tools, Waterblast & Steam		
Cleaning.....	\$ 23.00	12.52

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PAIN1072-003 12/01/2018

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS and ROWAN COUNTIES

Rates	Fringes
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Painters:

Bridges; Locks; Dams;		
Tension Towers & Energized		
Substations.....	\$ 33.33	18.50
Power Generating Facilities.	\$ 30.09	18.50

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PLUM0248-003 06/01/2018

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS & ROWAN COUNTIES:

Rates	Fringes
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Plumber and Steamfitter.....	\$ 36.00	20.23
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PLUM0392-007 06/01/2018

BRACKEN, CARROLL (Eastern Half), GALLATIN, GRANT, MASON, OWEN &  
ROBERTSON COUNTIES:

Rates	Fringes
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Plumbers and Pipefitters.....	\$ 32.01	19.67
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\* PLUM0502-003 08/01/2019

BRECKINRIDGE, BULLITT, CARROLL (Western Half), FRANKLIN  
(Western three-fourths), GRAYSON, HARDIN, HENRY, JEFFERSON,



GRANT COUNTY  
041GR190067-STR&HSP MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE &  
WASHINGTON COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 35.77	20.78
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SUKY2010-160 10/08/2001		

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 16.57	7.34
GROUP 2.....	\$ 16.68	7.34
GROUP 3.....	\$ 16.86	7.34
GROUP 4.....	\$ 16.96	7.34

TRUCK DRIVER CLASSIFICATIONS

GROUP 1 - Mobile Batch Truck Tender

GROUP 2 - Greaser; Tire Changer; & Mechanic Tender

GROUP 3 - Single Axle Dump; Flatbed; Semi-trailer or Pole  
Trailer when used to pull building materials and equipment;  
Tandem Axle Dump; Distributor; Mixer; & Truck Mechanic

GROUP 4 - Euclid & Other Heavy Earthmoving Equipment &  
Lowboy; Articulator Cat; 5-Axle Vehicle; Winch & A-Frame  
when used in transporting materials; Ross Carrier; Forklift  
when used to transport building materials; & Pavement  
Breaker

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WELDERS - Receive rate prescribed for craft performing  
operation to which welding is incidental.

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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](http://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)).

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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

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

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.

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#### 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

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:

<b>GOALS FOR MINORITY PARTICIPATION IN EACH TRADE</b>	<b>GOALS FOR FEMALE PARTICIPATION IN EACH TRADE</b>
9.2%	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 Grant County.

## **PART IV**

## **INSURANCE**

Refer to  
*Kentucky Standard Specifications for Road and Bridge Construction,*  
current edition

**PART V**

**BID ITEMS**

Report Date 10/30/19

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	320.00	TON		\$	
0020	00080		CRUSHED AGGREGATE SIZE NO 23	1,515.00	TON		\$	
0030	00100		ASPHALT SEAL AGGREGATE	30.00	TON		\$	
0040	00103		ASPHALT SEAL COAT	3.90	TON		\$	
0050	00190		LEVELING & WEDGING PG64-22	784.00	TON		\$	
0060	00212		CL2 ASPH BASE 1.00D PG64-22	1,923.00	TON		\$	
0070	00356		ASPHALT MATERIAL FOR TACK	22.00	TON		\$	
0080	02677		ASPHALT PAVE MILLING & TEXTURING	2,657.00	TON		\$	
0090	02697		EDGE LINE RUMBLE STRIPS	38,084.00	LF		\$	
0100	20748ED		SHOULDER MILLING/TRENCHING	54.00	SQYD		\$	
0110	24685EC		CL2 ASPH SURF 0.38A PG64-22	2,725.00	TON		\$	
0120	24785EC		FIBER REINFORCEMENT FOR HMA	1,842.00	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0130	00078		CRUSHED AGGREGATE SIZE NO 2	1,030.00	TON		\$	
0140	01000		PERFORATED PIPE-4 IN	626.00	LF		\$	
0150	01010		NON-PERFORATED PIPE-4 IN	125.00	LF		\$	
0160	01028		PERF PIPE HEADWALL TY 3-4 IN	5.00	EACH		\$	
0170	01381		METAL END SECTION TY 2-18 IN	2.00	EACH		\$	
0180	01691		FLUME INLET TYPE 2	1.00	EACH		\$	
0190	01811		STANDARD CURB AND GUTTER MOD	250.00	LF		\$	
0200	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	55.00	EACH		\$	
0210	02159		TEMP DITCH	12,862.00	LF		\$	
0220	02160		CLEAN TEMP DITCH	6,431.00	LF		\$	
0230	02230		EMBANKMENT IN PLACE	235.00	CUYD		\$	
0240	02237		DITCHING	20.00	LF		\$	
0250	02360		GUARDRAIL TERMINAL SECTION NO 1	3.00	EACH		\$	
0260	02367		GUARDRAIL END TREATMENT TYPE 1	9.00	EACH		\$	
0270	02373		GUARDRAIL END TREATMENT TYPE 3	2.00	EACH		\$	
0280	02381		REMOVE GUARDRAIL	2,475.00	LF		\$	
0290	02391		GUARDRAIL END TREATMENT TYPE 4A	2.00	EACH		\$	
0300	02483		CHANNEL LINING CLASS II	170.00	TON		\$	
0310	02562		TEMPORARY SIGNS	190.00	SQFT		\$	
0320	02575		DITCHING AND SHOULDERING	4,695.00	LF		\$	
0330	02599		FABRIC-GEOTEXTILE TYPE IV	1,485.00	SQYD		\$	
0340	02650		MAINTAIN & CONTROL TRAFFIC GRANT KY 22 HSIP	1.00	LS		\$	
0350	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0360	02676		MOBILIZATION FOR MILL & TEXT GRANT KY 22 HSIP	1.00	LS		\$	
0370	02701		TEMP SILT FENCE	12,862.00	LF		\$	
0380	02703		SILT TRAP TYPE A	8.00	EACH		\$	
0390	02704		SILT TRAP TYPE B	8.00	EACH		\$	
0400	02705		SILT TRAP TYPE C	8.00	EACH		\$	

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0410	02706		CLEAN SILT TRAP TYPE A	8.00	EACH		\$	
0420	02707		CLEAN SILT TRAP TYPE B	8.00	EACH		\$	
0430	02708		CLEAN SILT TRAP TYPE C	8.00	EACH		\$	
0440	02726		STAKING GRANT KY 22 HSIP	1.00	LS		\$	
0450	04933		TEMP SIGNAL 2 PHASE	1.00	EACH		\$	
0460	05950		EROSION CONTROL BLANKET	1,000.00	SQYD		\$	
0470	05952		TEMP MULCH	25,321.00	SQYD		\$	
0480	05953		TEMP SEEDING AND PROTECTION	18,991.00	SQYD		\$	
0490	05963		INITIAL FERTILIZER	.25	TON		\$	
0500	05964		MAINTENANCE FERTILIZER	.42	TON		\$	
0510	05985		SEEDING AND PROTECTION	7,982.00	SQYD		\$	
0520	05989		SPECIAL SEEDING CROWN VETCH	500.00	SQYD		\$	
0530	05992		AGRICULTURAL LIMESTONE	5.00	TON		\$	
0540	06511		PAVE STRIPING-TEMP PAINT-6 IN	63,144.00	LF		\$	
0550	08100		CONCRETE-CLASS A	8.70	CUYD		\$	
0560	10020NS		FUEL ADJUSTMENT	8,455.00	DOLL	\$1.00	\$	\$8,455.00
0570	10030NS		ASPHALT ADJUSTMENT	21,237.00	DOLL	\$1.00	\$	\$21,237.00
0580	20191ED		OBJECT MARKER TY 3	11.00	EACH		\$	
0590	20603ED		SOIL NAIL WALL	4,630.00	SQFT		\$	
0600	21134ND		REMOVE-STORE AND REINSTALL SIGN	28.00	EACH		\$	
0610	21802EN		G/R STEEL W BEAM-S FACE (7 FT POST)	2,848.00	LF		\$	
0620	22978EN		ROADWAY EXCAVATION-SPECIAL	495.00	CUYD		\$	
0630	24894EC		REMOVE (RAILROAD RAIL ABOVE ANY GROUNDLINE BY TORCH CUTTING)	26.00	EACH		\$	
0640	24995EC		PAVE STRIPING-SPRAY THERMO-6 IN W	51,248.00	LF		\$	
0650	24996EC		PAVE STRIPING-SPRAY THERMO-6 IN Y	41,061.00	LF		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0660	00440		ENTRANCE PIPE-15 IN	334.00	LF		\$	
0670	00461		CULVERT PIPE-15 IN	16.00	LF		\$	
0680	00462		CULVERT PIPE-18 IN	210.00	LF		\$	
0690	00464		CULVERT PIPE-24 IN	90.00	LF		\$	
0700	01204		PIPE CULVERT HEADWALL-18 IN	1.00	EACH		\$	
0710	01208		PIPE CULVERT HEADWALL-24 IN	2.00	EACH		\$	
0720	01310		REMOVE PIPE	201.00	LF		\$	
0730	01490		DROP BOX INLET TYPE 1	2.00	EACH		\$	
0740	01728		SAFETY BOX INLET-18 IN DBL SDB-5	5.00	EACH		\$	
0750	02625		REMOVE HEADWALL	11.00	EACH		\$	
0760	03262		CLEAN PIPE STRUCTURE	2.00	EACH		\$	
0770	21819NN		FITTINGS (15" RCP TO PROPOSED 15" CULVERT PIPE)	2.00	EACH		\$	
0780	21819NN		FITTINGS (18" RCP TO PROPOSED 18" CULVERT PIPE)	8.00	EACH		\$	
0790	21819NN		FITTINGS (24" RCP TO PROPOSED 24" CULVERT PIPE)	3.00	EACH		\$	
0800	22938ND		SAFETY BOX INLET-15 IN	1.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0810	24575ES610		HEADWALL (SLOPED & MITERED CONCRETE - 15")	1.00	EACH		\$	
0820	24575ES610		HEADWALL (SLOPED & MITERED CONCRETE - 24")	3.00	EACH		\$	

Section: 0004 - BRIDGE - 041B00013N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0830	01891		ISLAND HEADER CURB TYPE 2	50.00	LF		\$	
0840	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	10.00	EACH		\$	
0850	01990		DELINEATOR FOR BARRIER WALL-B/W	8.00	EACH		\$	
0860	02223		GRANULAR EMBANKMENT	50.00	CUYD		\$	
0870	02351		GUARDRAIL-STEEL W BEAM-S FACE	472.00	LF		\$	
0880	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH		\$	
0890	02367		GUARDRAIL END TREATMENT TYPE 1	4.00	EACH		\$	
0900	02545		CLEARING AND GRUBBING Less than 1 acre	1.00	LS		\$	
0910	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0920	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
0930	02726		STAKING	1.00	LS		\$	
0940	02731		REMOVE STRUCTURE	1.00	LS		\$	
0950	03299		ARMORED EDGE FOR CONCRETE	56.00	LF		\$	
0960	03304		BRIDGE OVERLAY APPROACH PAVEMENT	222.00	SQYD		\$	
0970	08002		STRUCTURE EXCAV-SOLID ROCK	67.50	CUYD		\$	
0980	08003		FOUNDATION PREPARATION	1.00	LS		\$	
0990	08019		CYCLOPEAN STONE RIP RAP	816.00	TON		\$	
1000	08033		TEST PILES	50.00	LF		\$	
1010	08039		PRE-DRILLING FOR PILES	100.00	LF		\$	
1020	08046		PILES-STEEL HP12X53	245.00	LF		\$	
1030	08094		PILE POINTS-12 IN	10.00	EACH		\$	
1040	08100		CONCRETE-CLASS A	198.00	CUYD		\$	
1050	08104		CONCRETE-CLASS AA	79.00	CUYD		\$	
1060	08150		STEEL REINFORCEMENT	14,992.80	LB		\$	
1070	08151		STEEL REINFORCEMENT-EPOXY COATED	22,354.80	LB		\$	
1080	08663		PRECAST PC BOX BEAM CB21-48	1,176.00	LF		\$	
1090	21415ND		EROSION CONTROL	1.00	LS		\$	
1100	21532ED		RAIL SYSTEM TYPE III	336.00	LF		\$	
1110	23378EC		CONCRETE SEALING	9,770.00	SQFT		\$	

Section: 0005 - BRIDGE - 041B00014N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1120	01891		ISLAND HEADER CURB TYPE 2	88.00	LF		\$	
1130	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	14.00	EACH		\$	
1140	01990		DELINEATOR FOR BARRIER WALL-B/W	18.00	EACH		\$	
1150	02223		GRANULAR EMBANKMENT	184.00	CUYD		\$	



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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1160	02351		GUARDRAIL-STEEL W BEAM-S FACE	631.00	LF		\$	
1170	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH		\$	
1180	02367		GUARDRAIL END TREATMENT TYPE 1	4.00	EACH		\$	
1190	02545		CLEARING AND GRUBBING Less than 1 acre	1.00	LS		\$	
1200	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
1210	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
1220	02726		STAKING	1.00	LS		\$	
1230	02731		REMOVE STRUCTURE	1.00	LS		\$	
1240	03299		ARMORED EDGE FOR CONCRETE	63.00	LF		\$	
1250	03304		BRIDGE OVERLAY APPROACH PAVEMENT	1,274.00	SQYD		\$	
1260	08002		STRUCTURE EXCAV-SOLID ROCK	76.00	CUYD		\$	
1270	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1280	08019		CYCLOPEAN STONE RIP RAP	395.00	TON		\$	
1290	08033		TEST PILES	45.00	LF		\$	
1300	08039		PRE-DRILLING FOR PILES	120.00	LF		\$	
1310	08046		PILES-STEEL HP12X53	223.00	LF		\$	
1320	08094		PILE POINTS-12 IN	12.00	EACH		\$	
1330	08100		CONCRETE-CLASS A	255.90	CUYD		\$	
1340	08104		CONCRETE-CLASS AA	287.00	CUYD		\$	
1350	08150		STEEL REINFORCEMENT	17,799.70	LB		\$	
1360	08151		STEEL REINFORCEMENT-EPOXY COATED	84,136.40	LB		\$	
1370	08160		STRUCTURAL STEEL approx. 10,000 lbs	1.00	LS		\$	
1380	08634		PRECAST PC I BEAM TYPE 4	1,334.00	LF		\$	
1390	21415ND		EROSION CONTROL	1.00	LS		\$	
1400	21532ED		RAIL SYSTEM TYPE III	667.00	LF		\$	
1410	23378EC		CONCRETE SEALING	15,614.00	SQFT		\$	

Section: 0006 - BRIDGE - 041B00011N

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1420	00001		DGA BASE	57.00	TON		\$	
1430	00190		LEVELING & WEDGING PG64-22	42.00	TON		\$	
1440	00212		CL2 ASPH BASE 1.00D PG64-22	34.00	TON		\$	
1450	00301		CL2 ASPH SURF 0.38D PG64-22	98.00	TON		\$	
1460	00439		ENTRANCE PIPE-12 IN	38.00	LF		\$	
1470	00441		ENTRANCE PIPE-18 IN	51.00	LF		\$	
1480	01550		DROP BOX INLET TYPE 12A	27.00	LF		\$	
1490	01691		FLUME INLET TYPE 2	1.00	EACH		\$	
1500	01891		ISLAND HEADER CURB TYPE 2	100.00	LF		\$	
1510	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	30.00	EACH		\$	
1520	02223		GRANULAR EMBANKMENT	326.00	CUYD		\$	
1530	02351		GUARDRAIL-STEEL W BEAM-S FACE	475.00	LF		\$	
1540	02360		GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH		\$	
1550	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH		\$	
1560	02367		GUARDRAIL END TREATMENT TYPE 1	2.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1570	02371		GUARDRAIL END TREATMENT TYPE 7	2.00	EACH		\$	
1580	02381		REMOVE GUARDRAIL	403.00	LF		\$	
1590	02399		EXTRA LENGTH GUARDRAIL POST	40.00	EACH		\$	
1600	02483		CHANNEL LINING CLASS II	110.00	TON		\$	
1610	02545		CLEARING AND GRUBBING Less than 1 acre	1.00	LS		\$	
1620	02602		FABRIC-GEOTEXTILE CLASS 1	169.00	SQYD		\$	
1630	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
1640	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		\$	
1650	02726		STAKING	1.00	LS		\$	
1660	02731		REMOVE STRUCTURE	1.00	LS		\$	
1670	03299		ARMORED EDGE FOR CONCRETE	66.00	LF		\$	
1680	03304		BRIDGE OVERLAY APPROACH PAVEMENT	186.00	SQYD		\$	
1690	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1700	08019		CYCLOPEAN STONE RIP RAP	744.00	TON		\$	
1710	08033		TEST PILES	85.00	LF		\$	
1720	08039		PRE-DRILLING FOR PILES	60.00	LF		\$	
1730	08046		PILES-STEEL HP12X53	360.00	LF		\$	
1740	08094		PILE POINTS-12 IN	12.00	EACH		\$	
1750	08100		CONCRETE-CLASS A	232.50	CUYD		\$	
1760	08104		CONCRETE-CLASS AA	283.80	CUYD		\$	
1770	08151		STEEL REINFORCEMENT-EPOXY COATED	146,770.00	LB		\$	
1780	08633		PRECAST PC I BEAM TYPE 3	1,020.00	LF		\$	
1790	20743ED		DRILLED SHAFT 54 IN-SOLID ROCK	90.00	LF		\$	
1800	20744ED		DRILLED SHAFT 60 IN-COMMON	65.00	LF		\$	
1810	20745ED		ROCK SOUNDINGS	80.00	LF		\$	
1820	20746ED		ROCK CORINGS	171.00	LF		\$	
1830	21415ND		EROSION CONTROL	1.00	LS		\$	
1840	21532ED		RAIL SYSTEM TYPE III	518.00	LF		\$	
1850	23378EC		CONCRETE SEALING	15,600.00	SQFT		\$	
1860	23813EC		DECK DRAIN	3.00	EACH		\$	
1870	24731EC		REMOVE AND RESET 1-Mailbox to be relocated	1.00	EACH		\$	

Section: 0007 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1880	06406		SBM ALUM SHEET SIGNS .080 IN	128.00	SQFT		\$	
1890	06407		SBM ALUM SHEET SIGNS .125 IN	7.00	SQFT		\$	
1900	06410		STEEL POST TYPE 1	369.00	LF		\$	
1910	21373ND		REMOVE SIGN	33.00	EACH		\$	
1920	24631EC		BARCODE SIGN INVENTORY	24.00	EACH		\$	

Section: 0008 - MOBILIZATION/DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1930	02568		MOBILIZATION	1.00	LS		\$	
1940	02569		DEMOBILIZATION	1.00	LS		\$	

195152

PROPOSAL BID ITEMS

Report Date 10/30/19