CALL NO. 117

CONTRACT ID. 212264

HARLAN COUNTY

FED/STATE PROJECT NUMBER ER 9020(333)

DESCRIPTION HARLAN - HYDEN ROAD (US 421)

WORK TYPE RETAINING WALL

PRIMARY COMPLETION DATE 7/31/2022

LETTING DATE: July 23,2021

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME July 23,2021. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

DBE CERTIFICATION REQUIRED - 0%

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

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PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 11

CONTRACT ID - 212264

ER 9020(333)

COUNTY - HARLAN

PCN - MP04804212101
ER 9020(333)

HARLAN - HYDEN ROAD (US 421) (MP 22.700) BEGINNING 1.639 MILES NORTH OF KY 1679 EXTENDING NORTH TO 0.104 MILES SOUTH OF GREEN HILLS CHURCH ROAD. (MP 23.000), A DISTANCE OF 0.30 MILES.RETAINING WALL

GEOGRAPHIC COORDINATES LATITUDE 36:53:59.50 LONGITUDE 83:20:26.60

COMPLETION DATE(S):

COMPLETED BY 07/31/2022 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

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

BID SUBMITTAL

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

JOINT VENTURE BIDDING

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

UNDERGROUND FACILITY DAMAGE PROTECTION

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

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

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

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

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

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

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

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

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

HARDWOOD REMOVAL RESTRICTIONS

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

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

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

ACCESS TO RECORDS

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

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

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

April 30, 2018

FEDERAL CONTRACT NOTES

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

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

CIVIL RIGHTS ACT OF 1964

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

NOTICE TO ALL BIDDERS

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

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

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

SECOND TIER SUBCONTRACTS

Second tier subcontracts are acceptable per Section 108.01 of the Standard Specifications for Road and Bridge Construction. There are special rules to DBE subcontractors satisfying DBE goals on federal-aid projects. 1st-Tier DBE Subcontractors may only enter into a 2nd-Tier subcontract with another DBE contractor.

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

FAILURE TO MEET GOOD FAITH REQUIREMENT

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

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

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

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

SANCTIONS FOR FAILURE TO MEET DBE REQUIREMENTS OF THE PROJECT

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

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

PROMPT PAYMENT

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

CONTRACTOR REPORTING

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

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

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

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

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

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

DEFAULT OR DECERTIFICATION OF THE DBE

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

PROHIBITION ON TELECOMMUNICATIONS EQUIPMENT OR SERVICES

In accordance with the FY 2019 National Defense Authorization Act (NDAA), 2 CFR 200.216, and 2 CFR 200.471, Federal agencies are prohibited, after August 13, 2020, from obligating or expending financial assistance to obtain certain telecommunications and video surveillance services and equipment from specific producers. As a result of these regulations, contractors and subcontractors are prohibited, on projects with federal funding participation, from providing telecommunication or video surveillance equipment, services, or systems produced by:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities)

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

SURFACING AREAS

The Department estimates the mainline surfacing width to be 24 feet.
The Department estimates the total mainline area to be surfaced to be 4,224 square yards.
The Department estimates the shoulder width to be varied 2-8 feet on each side.
The Department estimates the total shoulder area to be surfaced to be 704 square yards.

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.

OPTION B

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

Special Note for Tieback Walls

Harlan Co. US 421; MP 22.8

The main body of this Special Note is general for permanent ground anchor tieback walls. As such, some parts of this document may not apply to the current project. Refer to the Appendices for project specific requirements. In case of conflicts between the main body and project-specific appendices, the appendices will control.

DESCRIPTION AND SAMPLES INSPECTION

1.1 This work is for the design and construction of "Permanent Ground Anchored Tieback Walls". Use an approved Specialty 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") as Specialty Contractors for the design and construction of "Permanent Anchored Tiedback Walls" (Work Item I35) and that meet any specific requirements for this project may perform tieback wall design and construction for this project. If the tieback wall specialty contractor subcontracts soldier pile construction, use a contractor pre-qualified by the Department for "Drilled Shafts" (Work Item I96).

1.2 The prospective bidders are strongly encouraged to visit the project site and inspect available rock cores prior to the letting date. Representatives of the prime contractor and tieback wall specialty subcontractor(s) (if applicable) will be required to inspect the rock cores prior to beginning tieback wall construction. To schedule a viewing of the rock cores, contact the Division of Structural Design, Geotechnical Branch (502-564-2374) or Darrin Beckett (darrin.beckett@ky.gov) a minimum of one week in advance. The bidders are also responsible to familiarize themselves with the available geotechnical data, which provides further information regarding the anticipated soil and bedrock conditions that will affect the installation of the soldier piles and tieback anchors. Failure to inspect the project site and view the available rock cores will result in the forfeiture of the right to file a claim based on site conditions and may result in disqualification from the project.

2.0 SCOPE OF WORK

2.1 The contract item "Retaining Wall" includes furnishing the design calculations and construction drawings, materials, labor, tools, equipment, and other incidental items required for the design, construction, and testing of permanent ground anchored tieback walls as described herein. See the Contract Documents for an overview of the tieback wall(s).

2.2 A permanent ground anchor is a high strength steel tendon, fitted with a stressing anchorage at one end and a means of permitting force transfer to the grout and ground at the other end (bond zone). The permanent ground anchor tieback tendon is inserted into a prepared hole of suitable length and diameter. The ground anchor tendon is then fixed and stressed to a specified force. Refer to Figure 1 in FHWA "Ground Anchors and Anchored Systems" for the components of a ground anchor.

2.3 The term "ground anchor" is a generic term. Soil anchors and rock anchors are special cases of ground anchors. When the Contract Documents and/or other sections of this Special Note refer to rock anchor construction on this project, then assume that "ground anchor" refers to "rock anchor". In this Special Note, consider terms such as "ground anchor", "permanent ground anchor", "ground anchor tieback", and "permanent ground anchor tieback" to be synonymous.

2.4 Subject to the requirements in the Contract Documents, including this Special Note, select the permanent ground anchor type and method of installation and determine the bond length, free stressing length, and anchor diameter that will develop the factored design loads indicated in the Contract Documents.

2.5 In design and construction of the wall, consider the potential risks involved due to slope failure. Excavation 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 permanent ground anchor tieback wall system in order to ensure that the wall system will function as intended.

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 Documents

3.2 The "Kentucky Standard Specifications for Road and Bridge Construction", Current Edition with supplements. This document may be referred to as "Standard Construction 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-IF-99-015, "Ground Anchors and Ground Anchored Systems", June 1999.

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

3.8 Post Tensioning Institute (PTI) publications:
- a. PTI, “Post Tensioning Manual”, Current Edition;
- b. PTI, “Specification for Unbonded Single Strand Tendons”, Current Edition; and
- c. PTI, “Recommendations for Prestressed Rock and Soil Anchors", Current Edition.

3.9 PCI Handbook for Precast and Prestressed Concrete.

3.10 AWPA C 14 “Piles for Foundation, Land, or Fresh Water Use” apply for the pressure treating of timber lagging.

3.11 ADSC "Down-Hole Entry Manual: Recommended Procedures for the Entry of Drilled Shaft Foundation Excavations".

4.0 EXPERIENCE REQUIREMENTS AND SUBMITTALS

Requirements for personnel experience and pre-construction submittals, **including submittal deadlines**, are in this section. At the discretion of the Engineer, the Department may consider limited substitutions of similar experience (e.g. soil nails, micropiles, etc.) on a case-by-case basis. Do not begin construction on any tieback 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. **Electronic submittals in pdf format are required.**

4.1 Personnel Experience Requirements The Department considers a satisfactory record of experience in tieback wall design and construction important to successfully complete this work. Use personnel meeting the requirements below on this project and submit all information necessary to verify that they meet the requirements. **Submit this information no later than *fourteen (14)* 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 type (soil/rock) and number of anchors and soldier piles or drilled shafts.
5. The maximum wall design height.

The Department will review the experience requirements and respond to the Contractor within *fourteen (14) 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.

4.1.1 Wall Design Engineer Experience Requirements

Use a Wall Design Engineer meeting the requirements below to assume full responsibility for tieback 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 Specialty 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 tieback ground anchor retaining walls, with experience on a minimum of five (5) projects and at least 500 tieback ground anchors, constructed in the past five (5) years.
c. Design and/or construction experience on a minimum of two (2) tieback rock anchor retaining wall projects and at least 200 tieback rock anchors with at least 100 permanent rock anchors constructed in the past five (5) years.

4.1.2 Project Engineer Experience Requirements

Use an engineer meeting the requirements below to have overall technical responsibility for tieback 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 tieback ground anchor retaining walls, with experience on a minimum of five (5) projects and at least 500 tieback ground anchors, constructed in the past five (5) years.
c. Construction experience on a minimum of two (2) tieback rock anchor retaining wall projects and at least 200 tieback rock anchors with at least 100 permanent rock anchors constructed in the past five (5) years.
d. An employee of the Tieback Wall Specialty Contractor.

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

4.1.3 On-Site Supervisor Experience Requirements

Use an on-site supervisor (project manager, superintendent, etc.) meeting the requirements below to be responsible for the daily tieback 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 three (3) years construction experience on temporary and/or permanent tieback ground anchor retaining walls, with experience on a minimum of three (3) projects and at least 300 tieback ground anchors, constructed in the past three (3) years.

b. Construction experience on a minimum of two (2) tieback rock anchor retaining wall projects and at least 200 tieback rock anchors with at least 100 permanent rock anchors constructed in the past three (3) years.

c. A minimum of three (3) years construction experience drilling soldier piles and/or drilled shafts, with experience on a minimum of three (3) projects with drilled-in soldier piles and/or drilled shafts into rock and at least 300 holes drilled into rock in the past three (3) years.

d. An employee of the Tieback Wall Specialty Contractor or approved subcontractor.

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.

4.1.4 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.

4.2 Design Calculations and Construction Drawings For each wall, submit *Construction Drawings and Design Calculations* prepared by or under the supervision of the Wall Design Engineer and signed and stamped by the Wall Design Engineer. In the design calculations and construction drawings, show explicit details sufficient to allow an expeditious review of the proposed design and construction procedures. **Submit this information no later than *thirty (30)* calendar days after receiving Notice to Begin Work.** As a minimum, include the following:

1. A ground anchor schedule including
    a. Ground anchor numbers;
    b. Ground anchor factored design loads;
    c. Type, size, and number of tendons;
    d. Total anchor lengths, bond lengths, and unbonded lengths;
    e. Anchor hole diameters;
    f. Angle of ground anchor inclination;
    g. Ground anchor locations and spacing; and
    h. Lock-off load for each ground anchor.

2. A drawing of the ground anchor tendon and the corrosion protection system including details for the following:
    a. Spacers and their location;
    b. Centralizers and their location;
    c. Unbonded length corrosion protection system;
    d. Bond length corrosion protection system;
    e. Anchorage and trumpet; and
    f. Anchorage corrosion protection system.
3. Corrosion protection details for structural steel and miscellaneous metals.
4. Soldier pile sizes, lengths, spacing, locations, and tip elevations; wale sizes and spacing; and anchorage hardware details.
5. Design, details, dimensions, and schedules of pressure treatment of timber lagging.
6. Design, reinforcement and details of concrete facing, if required.
7. Calculations for each component of the wall system and the wall as a complete system.
8. Any other documentation necessary to demonstrate that the design complies with all requirements in the contract documents.

The Department will complete the review within *fourteen (14) 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 drawings. Review and acceptance of the drawings 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 and acceptance are completed submit the final Design Calculations and Construction Drawings in pdf format. Submit design

calculations and construction drawings, stamped and signed by the Specialty Contractor's Wall Design Engineer.

4.3 Construction and Materials Submittals Submit **no later than *thirty (30)* calendar days after acceptance of all items referenced in Sections 4.1 and 4.2 above.**

1. Construction sequence and schedule.
2. Description of the solider beam installation.
3. Description of the permanent ground anchor tieback installation (including drilling, grouting, and stressing sequence and other information).
4. Detailed plans for proof, performance, extended creep, and lift-off testing of permanent ground anchor tiebacks showing loading and measuring devices to be used, anchors to be tested, testing procedures to be followed, and any other information required in the Permanent Ground Anchor Testing and Acceptance Section of this Special Note.
5. 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. Anchor tendons;
    b. Portland cement;
    c. Prestressing hardware;
    d. Structural steel and hardware;
    e. Corrosion protection for anchors and structural steel; and
    f. Documentation to support any other requirements in the Materials Section of this Special Note.
6. 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;
7. Concrete and flowable fill mix designs and trial batch test results.
8. Instrumentation submittals, if required.
9. 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 fourteen (14) calendar days after accepting the Design Calculations and Construction drawings or within fourteen

(14) 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 drawings. 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.

5.0 DESIGN

Design all permanent component parts of this wall for the permanent loading conditions and check for the loading conditions to be encountered during construction and ground anchor testing including the cantilever condition before anchors are installed. Design the wall according to the pressure diagrams and all other requirements in the Contract Documents and according the requirements in this Special Note and applicable referenced documents. Primary design references include but are not limited to: FHWA Publication FHWA-IF-99-015, "Ground Anchors and Ground Anchored Systems", June 1999; and “AASHTO LRFD Bridge Design Specifications”, Current Edition, with all interims. Where design references differ, the AASHTO LRFD Bridge Design Specifications, current edition, with all interims will govern, except as modified within this special note.

5.1 Permanent Ground Anchors Provide a design with anchors located concentrically in the soldier beams, or concentrically between the soldier beams using walers. Under no circumstances will “sidewinder” anchors be permitted.

5.2 Permanent Ground Anchor Capacity Evaluate the bond capacity and bond length necessary to develop the required factored design loads using theoretical and empirical methods, and based on evaluation of the subsurface data in the Contract Documents and/or inspection of the available rock cores. Verify the desired permanent ground anchor capacities in accordance with the Permanent Ground Anchor Testing and Acceptance Section of this Special Note. Use the same design unit bond stress to size all anchors; do not oversize the performance and/or extended creep test anchors.

5.3 Permanent Ground Anchor Geometry

- Unless specified in the Contract Documents or elsewhere in this Special Note, provide a minimum unbonded (free stressing) length of 15 ft. for strand tendons and 10 ft. for bar tendons.
- Provide a minimum bond length of 15 ft. for strand tendons and 10 ft. for bar tendons.

- Provide a minimum anchor hole diameter of 4 inches.
- When Rock Anchors are required in the Contract Documents or elsewhere in this Special Note, develop the entire bond length below the top of rock.
- Incline anchors at least 10º but no more than 45º.
- Space the anchor bond zones measured perpendicular to the centerline of tendons a minimum of 5 feet apart.
- Do not extend the anchors beyond the right-of-way or easement limits shown in the Contract Documents.

5.4 Tendons Unless otherwise directed, select the type of tendon to be provided. Size the tendon so the factored design load does not exceed 60 percent of the specified minimum tensile strength (SMTS) of the prestressing steel. Verify that the lock-off load for the tendon does not exceed 70 percent of the SMTS of the prestressing steel or that the maximum test load does not exceed 80 percent of the SMTS of the prestressing steel.

5.5 Corrosion Protection Provide design for encapsulated (double corrosion-protected) tendons and corrosion protection for other items as described in the Corrosion Protection Section of this Special Note.

5.6 Soldier Beams Consider the terms "Soldier Beam" and "Soldier Pile" to be synonymous. Provide structural steel members. Design the piles for bearing, shear, bending, and axial stress in accordance with the current edition of the “AASHTO LRFD Bridge Design Specifications”, Current Edition, with all interims. The piles may be considered as fully braced for the final condition with permanent precast or cast-in-place concrete facing. For all temporary conditions consider the member to be partially supported. The unsupported length is the distance between anchors, the distance from the anchor to the bottom of excavation, etc. Design the piles to carry all the vertical loads on the wall system in end bearing; include the vertical anchor forces, lagging, concrete facing and all hardware required by the wall or anchors in the vertical load. Design the piles to withstand the temporary loads during tieback testing.

5.7 Soldier Beam Backfill Detail the soldier beams to be backfilled with Class B Concrete and verify that the compressive strength satisfies structural design considerations. Flowable Fill is allowed from 2 ft. below the bottom of lagging to the ground surface.

5.8 Structural Hardware Design wales, anchor plates, anchor heads, bearing plates and any other structural hardware in accordance with the current edition of the and the current edition of the “AASHTO LRFD Bridge Design Specifications”, Current Edition, with all interims.

5.9 Wall Alignment Ensure that the wall is compatible with the horizontal and vertical alignment indicated in the Contract Documents. Survey control is the front face of the wall.

5.10 Timber Lagging Either temporary or permanent timber lagging is required unless specified otherwise. Design permanent timber lagging in accordance with Section 8 of the “AASHTO LRFD Bridge Design Specifications”, Current Edition,

with all interims. It is acceptable to use Table 12 in FHWA Publication FHWA-IF-99-015, "Ground Anchors and Ground Anchored Systems", another more current FHWA or AASHTO reference, or other industry standard empirical methods (if accepted by the Department) to size temporary lagging. The Contractor is responsible for temporary wall stability. The span distance for the design should be “edge to edge of the steel section”. Size lagging to accommodate temporary construction loading and the anchor loading in all cases and design it for the permanent loading if concrete facing is not used. Provide a design with a maximum gap in the timber lagging of 2 inches if permanent concrete facing is used and 1 inch if permanent concrete facing is not used. Detail timber lagging to be placed between the soldier beam flanges. Bolts, studs, nuts, plates, etc. may be welded, to attach the lagging to the soldier pile, without any additional holes in the soldier piles. Develop design details for timber lagging in any areas to receive backfill.

5.12 Concrete Facing When concrete facing is required, provide cast-in-place concrete facing or precast concrete panels. Design concrete facing for full loads at final condition (in-place facing and complete construction). Do not consider the load carrying capacity of timber lagging in the design of the concrete facing. 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
Precast Concrete Panels	8 inches

The minimum concrete cover over reinforcement is 3 inches against lagging and 2 inches on the front face. Provide joints and joint materials as shown in the Contract Documents. Provide a minimum 2 inch annulus between temporary lagging and precast concrete facing and require the annulus to be backfilled with material meeting the requirements for Coarse Aggregate Size No. 8, No. 9-M or No. 11 in Section 805 of the Standard Construction Specifications. When precast concrete panels are used, include details in the drawings that require an installation sequence from bottom to top.

5.13 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 Documents, this Special Note, the Accepted Construction Drawings, or elsewhere in the Contract Documents.

6.1 Anchorages Provide stressing anchorages that are a combination of either a steel bearing plate with wedge plate and wedges, or a steel bearing plate with a threaded anchor nut. The steel bearing and wedge plate may also be combined into a single element. Provide anchorage devices capable of developing 95 percent of the specified minimum ultimate tensile strength (SMTS) of the prestressing steel tendon. Design plates for bending stresses and concrete bearing stresses in accordance with the AASHTO LRFD Bridge Design Specifications.

6.2 Anchorage Covers Provide anchorage covers fabricated from steel with a minimum thickness of 0.1 inch. Provide a watertight joint between the cover and the bearing plate.

6.3 Backfill between Temporary Lagging and Precast Concrete Facing Provide backfill meeting the requirements for Coarse Aggregate Size No. 8, No. 9-M or No. 11 in Section 805 of the Standard Construction Specifications.

6.4 Bearing Plates Provide bearing plates fabricated from steel conforming to AASHTO M 270 Grade 36 or 50, or equivalent or provide ductile iron casting conforming to ASTM A 536. Provide bearing plates capable of developing at least 95 percent of the minimum specified tensile strength of the tieback tendon.

6.5 Bondbreakers Provide bondbreakers fabricated from a smooth plastic tube or pipe having the following properties:

a. resistant to chemical attack from aggressive environments, grout, or corrosion inhibiting compound;
b. resistant to aging by ultra-violet light;
c. fabricated from material non-detrimental to the tendon;
d. capable of withstanding abrasion, impact, and bending during handling and installation;
e. enables the tendon to elongate during testing and stressing; and
f. allows the tendon to remain unbonded after lock-off.

6.6 Cast-in-Place Concrete Facing Provide Class A Concrete conforming to Section 601 of the Standard Construction Specifications.

6.7 Centralizers Provide centralizers fabricated from plastic, steel or material which is non-detrimental to the tendon. Do not use wood. Prior to their use the centralizers to be used must be accepted in the field.

6.8 Corrosion Inhibiting Compound Place the corrosion-inhibiting compound in either the free length or the trumpet area. Provide an organic compound (i.e., grease or wax) with appropriate polar moisture displacing, corrosion inhibiting additives and self-healing properties. Provide compound that permanently stays

viscous and is chemically stable and nonreactive with the prestressing steel, the sheathing material, and the anchor grout. Provide grease conforming to the requirements of Section 3.2.5 of Post Tensioning Institute, "Specifications for Unbonded Single Strand Tendons".

6.9 Couplers Provide couplers capable of developing 100 percent of the minimum specified ultimate tensile strength of the tendon. Couplers are not permitted with strand tendons.

6.10 Drainage Strips Provide fabric wrapped backfill drains from the current KYTC list of approved materials.

6.11 Geotextile Fabric Conform to Section 843 of the Standard Construction Specifications.

6.12 Grout Provide Type I or III Portland Cement conforming to ASTM C l50 and Section 801 of the Standard Construction 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 Construction 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 the time of stressing, 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.

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

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 produces a grout free of lumps and undispersed cement. Auger mixing of the grout is not permitted. Retempering to the grout is not permitted. Continuously agitate the grout until it is placed. Place the grout within 30 minutes of the introduction of cement to water.

6.13 Grout Admixtures Use grout admixtures only if approved by the Engineer. Do not use accelerators. Expansive admixtures may only be used for secondary grouting, and filling encapsulations, trumpets and anchorage covers. Admixtures which control bleed, improve flowability, reduce water content, and retard set may be used in the grout subject to the approval of the Engineer. Use only admixtures that are compatible with the prestressing steels. Mix in accordance with the manufacturer's recommendations.

6.14 Grout Tubes Provide grout tubes with an adequate inside diameter to enable the grout to be pumped to the bottom of the drill hole. Provide grout tubes strong enough to withstand a minimum grouting pressure of 150 psi. Provide postgrout tubes strong enough to withstand postgrouting pressures, if post-grouting is necessary.

6.15 Heat Shrinkable Tubes Provide heat shrinkable tubes fabricated from a radiation crosslinked polyolefin tube internally coated with an adhesive sealant. Provide tubes with a nominal wall thickness of 24 mils (0.6 mm), prior to shrinking. Use adhesive sealant inside the heat shrinkable tube with a nominal thickness of 20 mils (0.5 mm).

6.16 Paint (i.e. Structural Steel Coating) Conform to Section 821 of the Standard Construction Specifications.

6.17 Piles, Wales, and Other Hardware Provide steel piles, wales, and other steel hardware conforming to AASHTO M 270, Grade 36 or 50 for Structural Steel. Provide steel piles, structural steel, and miscellaneous metals conforming to Section 812 of the Standard Construction Specifications. Provide shop fabricated anchor connections to piles; pile lengths may be trimmed to meet field conditions.

6.18 Precast Concrete Panel Facing Provide facing or lagging panels conforming to Section 605 of the Standard Construction Specifications.

6.19 Pressure Treated Timber Lagging Provide softwood timber lagging pressure treated in accordance with AWPA C 14 for “Piles for Foundation, Land or Fresh Water Use”. Provide lagging with a uniform thickness and width of 3 inches or greater. The actual measured dimensions of the delivered lagging, corrected for estimated shrinkage, must equal or exceed the design dimensions of the lagging.

6.20 Reinforcing Steel Provide reinforcing steel conforming to Section 811 of the Standard Construction Specifications; however epoxy coating is not required.

6.21 Sheathes Provide sheathes as part of the corrosion protection system for the unbonded length portion of the tendon. Provide sheathes fabricated from one of the following:

1. A polyethylene tube pulled or pushed over the prestressing steel. Provide Type II, III or IV polyethylene as defined by ASTM D 1248 (or approved equal). Provide tubing with a minimum wall thickness of 60 mils (1.5 mm).
2. A hot-melt extruded polypropylene tube, cell classification B55542-11 as defined by ASTM D 4101 (or approved equal). Provide tubing with a minimum wall thickness of 60 mils (1.5 mm).
3. A hot-melt extruded polyethylene tube. Provide high density Type III polyethylene as defined by ASTM D1248 (or approved equal). Provide tubing with a minimum wall thickness of 60 mils (1.5 mm).
4. Steel tubing conforming to ASTM A 500 with a minimum wall thickness of 0.2 inch (5 mm).
5. Steel pipe conforming to ASTM A 53 with a minimum wall thickness of 0.2 inch (5 mm).
6. Plastic pipe or tube of PVC conforming to ASTM D 1784 Class 13464-B, Schedule 40 at a minimum.
7. A corrugated tube conforming to the requirement of the tendon bond length encapsulation.

6.22 Soldier Beam Backfill

Provide the following with trial batches.

1. Class B Concrete conforming to Section 601 of the Standard Construction Specifications; however, provide a mix with a 4 to 8 inch slump at the time of placement; high range water reducing and retarding admixtures and Class F fly ash may be used to obtain this slump.
2. Flowable Fill conforming to the requirements for Flowable Fill for Pipe Backfill in Section 601 of the Standard Construction Specifications and Supplemental Specifications.

6.23 Spacers Provide to separate elements of multi-element tendons. Provide spacers that permit grout to freely flow around the tendon and up the drill hole. Provide spacers fabricated from plastic, steel, or material which is nondetrimental to the prestressing steel. Do not use wood. A combination centralizer-spacer may be used at the Contractor's option.

6.24 Tendons Provide ground anchor tendons fabricated from single or multiple elements of the following:

1. Steel bars conforming to AASHTO M 275 (ASTM A 722).
2. Seven-wire, low-relaxation strands conforming to AASHTO M 203 (ASTM A 416).
3. "Compact" seven-wire strands conforming to ASTM A 779.
4. Epoxy coated strands conforming to AASHTO M 203 (ASTM A 416) and ASTM A 882.

5. Epoxy coated reinforcing steel bars conforming to AASHTO M 275 (ASTM A 722) and ASTM A 775.

6.25 Tendon Bond Length Encapsulations Provide encapsulation fabricated from one of the following:

1. High density corrugated polyethylene tubing conforming to the requirements of AASHTO M 252 and having a minimum wall thickness of 60 mils (1.5 mm) except pregrouted tendons which may have a minimum wall thickness of 40 mils (1.0 mm).
2. Deformed steel tubing or pipes conforming to ASTM A 52 or A 500 with a minimum wall thickness of 0.2 inch (5 mm).
3. Corrugated, polyvinyl chloride tubes manufactured from rigid PVC compounds conforming to ASTM D 1784, Class 13464-B.
4. Fusion-bonded epoxy conforming to the requirements of AASHTO M 284.

6.26 Trumpets Provide trumpets fabricated from steel pipes or tubes, or from PVC pipes. Provide steel pipes or tubes conforming to the requirements of ASTM A 53 for pipes or ASTM A 500 for tubing. Provide steel trumpets with a minimum wall thickness of 0.1 inch for diameters up to 4 inches and 0.2 inches larger diameters. Provide PVC pipes conforming to ASTM A 1785, Schedule 40 minimum.

6.27 Wedges Provide wedges designed to preclude premature failure of the prestressing steel due to notch or pinching effects under static and dynamic strength requirements of Section 3.1.6 (1) and Section 3.1.8 (1) and 3.1.8 (2) of the PTI "Post Tensioning Manual." Do not reuse wedges. Design wedges for epoxy coated strand to be capable of biting through the epoxy coating and into the strand. Do not remove the epoxy coating from the strand to allow the use of standard wedges. Design anchor nuts and other threadable hardware for epoxy coated bars to thread over the epoxy coated bar and still comply with the requirements for carrying capacity.

6.28 All Other Materials Provide materials conforming to the applicable Section(s) of the Standard Construction Specifications unless specified otherwise in this Special Note. For materials not covered in the specifications, conform to appropriate industry specifications.

7.0 MATERIALS TESTING AND ACCEPTANCE

7.1 Materials Sampling and Testing will be in accordance with Section 106 of the Standard Construction 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 CORROSION PROTECTION

Provide encapsulated (double corrosion-protected or Class I) tendons and corrosion protection for other items as described below. Refer to Figures 60, 61, and 62 in FHWA "Ground Anchors and Anchored Systems" for examples of corrosion protection for anchorages and tendons. In all cases, provide materials conforming to the Materials Section of this Special Note. Submit details of the corrosion protection to the Engineer for review and acceptance.

8.1 Anchorage Protection

8.1.1 Provide grout-filled anchorage covers for all stressing anchorages permanently exposed to the atmosphere, except provide a corrosion inhibiting compound for restressable anchorages. Stressing anchorages encased in concrete at least 2 inches thick do not require a cover.

8.1.2 Provide trumpets with inside diameters equal to or larger than the holes in the bearing plates. Seal the trumpets to the bearing plates such that no voids exist between the bearing plates and trumpets. Weld steel trumpets to the bearing plates in accordance with Section 607.03.07 of the Standard Construction Specifications. Positively seal PVC trumpets against the bearing plate and align with the tendon to prevent cracking during stressing. Overlap the trumpets over the unbonded length corrosion protection by at least 4 inches. Provide trumpets long enough to accommodate movements of the structure and the tendon during testing and stressing. On strand tendons, provide trumpets long enough to enable the tendons to transition from the diameter of the tendons along the unbonded length to the diameter of the tendons at the wedge plate without damaging the encapsulation.

8.1.3 Completely fill the trumpets with grout, except provide corrosion inhibiting compounds for restressable anchorages. Place compounds any time during construction. Provide permanent seals between the trumpet and the unbonded length corrosion protection in compound-filled trumpets. Place grout after the anchor has been tested and stressed to the lock-off load. For trumpets filled with grout, either provide a temporary seal between the trumpet and the unbonded length corrosion protection or tightly fit the trumpet over the unbonded length corrosion protection for a minimum of 4 inches. For trumpets filled with corrosion-inhibiting grease, provide a tight fitting permanent Buna-N rubber or approved equal seal between the trumpet and the unbonded length corrosion protection. Provide a watertight seal capable of functioning for the expected life of the structure.

8.2 Unbonded Length Protection

8.2.1 Provide corrosion protection of the unbonded length by a combination of sheaths, sheaths filled with a corrosion inhibiting compound or grout, or heat shrinkable tubes internally coated with a mastic compound, depending on the tendon class. The corrosion-inhibiting compound must completely coat the tendon elements, fill the void between them and the sheath, and fill the interstices between the wires of 7-wire strands. Make provisions to retain the compound within the sheath.

8.2.2 Provide a corrosion protective sheath surrounding the unbonded length of the tendon long enough to extend into the trumpet, but not long enough to come into contact with the stressing anchorage during testing. Trim any excessive protection length.

8.2.3 For pregrouted encapsulations, provide a separate bond breaker or common sheath for supplemental corrosion protection or to prevent the tendon from bonding to the grout surrounding the unbonded length.

8.2.4 Sheaths fabricated from a corrugated tube or a heat shrinkable tube require a separate bond breaker. Provide a bond breaker that prevents the tendon free stressing length from bonding to the grout surrounding the unbonded length.

8.2.5 If a grease-filled sheath is provided and the drill hole above the bond length is grouted after the anchor has been locked off, then grout the tendon inside a second sheath. If corrosion inhibiting grease is used, make provisions to prevent the grease from escaping at the ends of the sheath. Completely coat the tendon with the grease and fill the void between the tendon and the sheath. Use grease formulated to provide lubrication and inhibit corrosion. Submit details for the grease-filled sheath. Unsatisfactory encapsulation or voids in the sheath will be cause for rejection of all tendons in the shipment. The Department will make no additional payment for any rejected tendons.

8.2.6 Do not drill or penetrate the encapsulation in any way to accommodate grouting of tendons. Demonstrate to the Engineer's satisfaction that the tendons are precisely centered within the encapsulation and that the tendons have double corrosion protection throughout.

8.3 Unbonded Length/Bond Length Transition

Design and fabricate the transition between the corrosion protection for the bonded and unbonded lengths to ensure continuous protection from corrosive attack. Show the transition between the bond length and the unbonded length corrosion protection in the Construction Drawings.

8.4 Tendon Bond Length Protection for Encapsulated Tendons

8.4.1 Provide Tendon Bond Length Protection that is:

a. capable of transferring stresses from the grout surrounding the tendon to the bond length grout;

b. able to accommodate movements during testing and after lock off;

c. resistant to chemical attack from aggressive environments, grout or grease;
d. resistant to aging by ultra-violet light;
e. fabricated from materials non-detrimental to the tendon;
f. capable of withstanding abrasion, impact and bending during handling and installation; and
g. capable of resisting internal grouting pressures developed during grouting.

8.4.2 Provide a grout-filled, corrugated plastic encapsulation or a grout-filled, deformed steel tube. Grout the prestressing steel inside the encapsulation prior to inserting the tendon into the drill hole or after the tendon has been placed.

8.4.3 Provide centralizers or grouting techniques to ensure a minimum of 0.5 inch of grout cover over the encapsulation.

8.5 Epoxy

Fusion-bonded epoxy may be used to provide a layer of protection for the steel tendon in addition to the cement grout.

8.6 Coupler Protection

8.6.1 On encapsulated bar tendons, cover the coupler and any adjacent exposed bar sections with a corrosion-proof compound or wax-impregnated cloth tape. Cover the coupler area with a smooth plastic tube; overlap the adjacent sheathed tendon by at least 1 inch. Seal the two joints each by a coated heat shrink sleeve of at least 6 inches in length, or approved equal. Completely fill the space inside the cover tube with the corrosion-proof compound.

8.6.2 Submit corrosion protection details for strand couplers for approval of the Engineer, if specifically permitted by the contract documents.

8.7 Structural Steel and Miscellaneous Metals

8.7.1 Use one of the three systems below, or a combination of the systems. Clean and paint according to Section 607.03.23 of the Standard Construction Specifications.

a. Sacrificial Thickness - Increase the design thicknesses a minimum of 1/16" throughout. Clean and paint all faces to be exposed in the finished structure with a three-coat system as required by the specifications.
b. Paint - Clean and apply a three-coat paint system to all surfaces in accordance with Section 607.03.23 of the Standard Specifications.
c. Galvanization – Hot Dip Galvanize steel in accordance with ASTM A123.

9.0 CONSTRUCTION

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

9.1 Soldier Beams

9.1.1 The Contractor is responsible for slope stability during any bench excavation required to install soldier beams.

9.1.2 When drilled-in soldier beams are required, excavation methods and drilling tools are at the Contractor's discretion based on site conditions; however, blasting is not permitted. If casing is not used, do not excavate for soldier beams within 24 hours of the completion of an adjacent soldier beam if the center-to-center spacing is less than three diameters. Dispose of excavated materials in accordance with the Standard Construction Specifications and the contract documents.

9.1.3 Remove any obstructions at soldier beam locations. Such obstructions may include man-made materials such as old concrete foundations or natural materials such as boulders. Use special procedures and/or tools when the hole cannot be advanced using conventional augers fitted with soil teeth, drilling buckets, and/or underreaming tools. Such special procedures or tools may include but are not limited to rock augers, core barrels, air tools, hand excavation, temporary casing, and increasing the hole diameter. Promptly remove drilling tools lost in an excavation without additional compensation.

9.1.4 Use casing or slurry if necessary to maintain excavation stability and/or prevent surface sloughing. Extract temporary casing at a slow, uniform rate with the pull in line with the axis of the soldier beam. Remove temporary casings while the backfill material remains workable. When conditions warrant, pull the casing in partial stages. Do not use vibratory hammers for casing installation or removal within 50 ft. of soldier beams completed less than 24 hours. Complete casing extraction in 15 minutes or less.

9.1.5 Do not permit workers to enter an excavation for any reason unless both a suitable casing has been installed and adequate safety equipment and procedures have been provided to workers entering the excavation. "Down-Hole Entry Manual: Recommended Procedures for the Entry of Drilled Shaft Foundation Excavations", prepared by ADSC, provides guideline recommendations for down-hole entry of drilled excavations.

9.1.6 Measure final soldier beam depths and check for excavation cleanliness with a suitable weighted tape or other accepted methods after final cleaning. The maximum sediment at base of each soldier beam is 0.5 inch at the time of backfill placement.

9.1.7 Install the structural steel piles so they do not vary from vertical more than 1/4 inch in 10 feet and no more than 1 inch from plan position at the top of the pile.

Provide equipment for checking the dimensions and alignment of each soldier beam under the observation of the Engineer.

9.2 Timber Lagging

9.2.1 Provide a maximum gap in the lagging of 2 inches if concrete facing is used and 1 inch if concrete facing is not used. Install lagging between the soldier beam flanges as shown on the accepted construction drawings. Bolts, studs, nuts, plates, etc. may be welded in accordance with Section 607.03.07 of the Standard Construction Specifications, to attach the lagging to the soldier pile, without any additional holes in the soldier pile.

9.3 Tendon Storage and Handling

9.3.1 Handle and store tendons in such a manner as to avoid damage or corrosion. Damage to the prestressing steel, the corrosion protection, and/or the epoxy coating as a result of abrasions, cuts, nicks, welds and weld splatter will be cause for rejection by the Engineer. Protect the prestressing steel if welding is to be performed in the vicinity. Do not ground welding leads or elective equipment to the prestressing steel. When welding electrodes are connected to any part of the structure, electrically isolate the tiebacks from the structure. Protect prestressing steel from dirt, rust, or deleterious substances. A light coating of rust on the steel is acceptable. The Engineer will reject tendons with non-repairable damage due to corrosion, cuts, nicks, abrasions, welds and/or weld splatter, with no additional payment for rejected tendons.

9.3.2 Exercise care in handling and storing the tendons at the site. Prior to inserting a tendon in the drill hole, the Contractor and the Engineer will examine the tendon for damage to the encapsulation and the sheathing. If, in the opinion of the Engineer, the encapsulation is damaged, repair the encapsulation in accordance with the tendon supplier's recommendations. If, in the opinion of the Engineer, the smooth sheathing has been damaged, repair it with ultra-high molecular weight polyethylene tape. Spiral wind the tape around the tendon to completely seal the damaged area. Use a spiral pitch to ensure a double thickness at all points.

9.3.3 Pad banding for fabricated tendons to avoid damage to the tendon corrosion protection. Upon delivery, store and handle the fabricated anchors or the prestressing steel for fabrication of the tendons on site and all hardware in such a manner to avoid mechanical damage, corrosion, and contamination with dirt or deleterious substances.

9.3.4 Lift the pre-grouted tendons in a manner that does not cause excessive bending, which can debond the prestressing steel from the surrounding grout.

9.4 Anchor Fabrication

9.4.1 Provide anchors either shop or field fabricated and as shown in the accepted Construction Drawings and schedules.

9.4.2 Cut prestressing steel with an abrasive saw.

9.4.3 Ensure that the tendon bond length, especially for strand, is free of dirt, manufacturers' lubricants, corrosion-inhibitive coatings, or other deleterious substances that may significantly affect the grout-to-tendon bond or the service life of the tendon.

9.4.4 Perform pregrouting of encapsulated tendons on an inclined, rigid frame or bed by injecting the grout from the low end of the tendon.

9.5 Anchor Drilling

9.5.1 Anchor drilling methods are at the discretion of the Contractor. Use drilling methods to establish a stable hole of adequate dimensions, within the tolerances specified. Drilling methods may involve: rotary, percussion, rotary/percussive or auger drilling, percussive or vibratory driven casing, core drilling, or other methods. If the hole will not stand open, install temporary casing to maintain a clean and open hole. Use a drill bit or casing crown not more than 0.1 inch smaller than the designed hole diameter.

9.5.2 If water is used in the drilling operation, dispose of the water in such a manner that erosion near 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.

9.5.3 When Rock Anchors are required in the Contract Documents or in this Special Note, drill the hole to ensure that the bond length is developed in bedded rock. Extend the hole a minimum of 1 ft. beyond the bond length of tendon to be installed.

9.5.4 Drill holes for anchors at the locations, lengths, inclinations, and diameters shown on accepted Construction Drawings and according to the following:

- At the point of entry, locate the drill hole within the soldier pile or waler and within 4 inches of the location shown on the accepted Construction Drawings.
- Locate the drill so the longitudinal axis of the drill hole and the longitudinal axis of the tendon are parallel. In particular, do not drill the anchor hole in a location that requires the tendon to be bent in order to enable the bearing plate to be connected to the supported structure.
- At the point of entry, install the anchor within +/- 3^{o} of the inclination from horizontal shown on the accepted Construction Drawings.
- At the point of entry, install the anchor so that the horizontal angle made by the anchor and the structure is within +/- 3^{o} of a line drawn perpendicular to the plane of the structure, unless otherwise shown on the accepted Construction Drawings.
- Do not extend the anchors beyond the right-of-way or easement limits shown in the Contract Documents.

9.6 Tendon Insertion

9.6.1 Provide centralizers at maximum intervals of 10 feet, center to center, to insure tendons do not contact the wall of the drill hole. Position the tendon in the drill hole so that a minimum of 0.5 inch of grout covers the encapsulation throughout the bond length; provide centralizers that permit the free flow of the grout. Provide a minimum of two centralizers in the bond length, an upper centralizer located within 5 feet of the top of the bond length and a lower centralizer located within 2 feet of the bottom of the bond length. Provide a minimum of two centralizers in the unbonded length, an upper centralizer located within 5 feet of the lower end of the steel trumpet and a lower centralizer located within 2 feet of the bottom of the unbonded length. If multi-element tendons are used without a fixed anchorage at the lower end, make provisions for adequate spacing of the tendon elements to achieve proper grout coverage. Centralizers are not required on pressure-injected anchors installed in coarse-grained soils when the grouting pressure exceeds 150 psi, nor on hollow stem-augered anchors when they are grouted through the auger with grout having a slump of 9 inches or less.

9.6.2 Thoroughly clean holes of all dust, grease or other deleterious material prior to inserting the tendon. Insert the tendon into the drill hole to the prescribed length without difficulty. When the tendon cannot be completely inserted, remove the tendon from the drill hole and clean or redrill the hole to permit insertion. Do not drive or force partially inserted tendons into the hole.

9.6.3 Take care to insure that the tendon's corrosion protection is not damaged during handling or installation. Degrease the bond length of strands or wires prior to installation by using a degreaser or a method accepted by the Engineer. Do not leave residue from the degreasing on the tendon. Substances other than a degreaser may be used subject to acceptance by the Engineer. All costs of cleaning tendons are incidental to the Contract price for the wall.

9.6.4 Field personnel will inspect each anchor tendon during installation into the drill hole or casing. Repair damage to the corrosion protection system, or replace the tendon if not repairable. Reconnect loose spacers or centralizers to prevent shifting during insertion. Repair damaged fusion-bonded epoxy coatings in accordance with the manufacturer's recommendations. If the patch is not allowed to cure prior to inserting the tendon in the drill hole, protect the patched area by tape or other suitable means.

9.6.5 Control the rate of placement of the tendon into the hole such that the sheathing, coating, and grout tubes are not damaged during installation of the tendon. Do not subject anchor tendons to sharp bends. The bottom end of the tendon may be fitted with a cap or bullnose to aid its insertion into the hole, casing, or sheathing.

9.6.6 Splicing of tendons is not permitted.

9.7 Grouting

9.7.1 Use grouting equipment that produces a grout free of lumps and undispersed cement. Use a positive displacement grout pump equipped with a pressure gauge to monitor grout pressures. Use a pressure gauge capable of measuring pressures of at least 150 psi or twice the actual grout pressures used, whichever is greater. Use grouting equipment sized to enable the grout to be pumped in one continuous operation. Use a mixer capable of continuously agitating the grout. Auger mixing of the grout is not allowed. Ensure that mixing and storage times do not cause excessive temperature buildup in the grout.

9.7.2 Inject the grout from the lowest point of the drill hole. Pump the grout through grout tubes, casing, hollow-stem-augers, or drill rods. Record the quantity of the grout and the grout pressures for each anchor. Control the grout pressures and grout takes to prevent excessive heave or fracturing. Do not drill or puncture the sheath and/or tubing in any way to accommodate grouting of tendons.

9.7.3 Prevent the grout at the top of the drill hole from contacting the back of the structure or the bottom of the trumpet.

9.7.4 If the ground anchor is installed in a fine-grained soil using drill holes larger than 6 inches in diameter, then place the grout above the top of the bond length after the anchor has been tested and stressed. The Engineer will allow the Contractor to grout the entire drill hole at the same time if the Contractor can demonstrate that its particular ground anchor system does not derive a significant portion of its load-carrying capacity from the soil above the bond length portion of the anchor.

9.7.5 The grout tube may remain in the hole on completion of grouting if the tube is filled with grout.

9.7.6 After grouting, allow the ground anchor tieback to remain undisturbed until the grout has cured sufficiently to allow the anchor to be tested.

9.8 Anchorage Installation

9.8.1 Install the anchor bearing plate and the anchor head or nut perpendicular to the tendon, within +/- 3^{o} and centered on the bearing plate, without bending or kinking the prestressing steel elements. Ensure that wedge holes and wedges are free of rust, grout, and dirt.

9.8.2 Clean the stressing tail and protect it from damage until final testing and lock-off. After the Engineer has accepted the anchor, cut the stress tail to its final length according to the tendon manufacturer's recommendations.

9.8.3 Extend the corrosion protection surrounding the unbonded length of the tendon up beyond the bottom seal of the trumpet or 4 inches into the trumpet if no trumpet seal is provided. If the protection does not extend beyond the seal or sufficiently far enough into the trumpet, extend the corrosion protection or lengthen the trumpet.

9.8.4 Do not allow the corrosion protection surrounding the unbonded length of the tendon to contact the bearing plate or the anchor head during testing and

stressing. If the protection is too long, trim the corrosion protection to prevent contact.

9.8.5 Cover the insulation over the anchorage and bearing plates not encased in concrete with insulation fabricated from a heat-shrinkable cap with an elastic adhesive, a moldable sealant, or other suitable material. Submit manufacturer's literature describing the insulation to the Engineer for review.

9.8.6 Provide anchorage insulation meeting the following requirements:

a. an electrical insulator;
b. resistant to attack from cement, grease, or aggressive environments;
c. non detrimental to the prestressing steel; and
d. capable of withstanding atmospheric exposure and ultraviolet light.

9.9 Cutting Tendon Protrusions

Do not cut the portion of the tendon protruding over the anchorage until all testing, retesting, restressing, and final lock-off is completed on that wall section. For purposes of cutting tendons, a wall section is that portion of a completed wall that encompasses five vertical piles, all anchors, and all lagging from the bottom of lagging to the top of lagging. Cut tendons according to manufacturer's recommendations and as approved by the Engineer. Take care not to damage the tendon. Torches are not permitted for cutting strand tendons. Protect the cut ends of tendons from corrosion until encapsulation.

9.10 Excavation Limit excavation in front of walls to 2 ft. below any ground anchor until that anchor has been completed, tested, and locked off. It is acceptable to excavate up to 4 ft. below an anchor in the immediate vicinity of an anchor as required to accommodate testing. Perform any local excavation lower than 2 ft. below the anchor within four (4) hours prior to testing.

9.11 Drainage and Backfill Install drainage in accordance with Section 603.03.05 of the Standard Construction Specifications. Backfill and compact any areas behind the lagging requiring backfilling prior to applying any loads to the anchors.

9.12 Wall Alignment and Facing Ensure that the wall is compatible with the horizontal and vertical alignment indicated in the Contract Documents. 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 cast-in-place concrete facing and lagging with grout. Provide architectural treatment for concrete facing as shown in the Contract Documents. Apply Masonry Coating to Concrete Facing in accordance with the Contract Documents and Section 601 of the Standard Construction Specifications. Install precast concrete panel facing from bottom to top and only after locking off all tieback anchors within 20 ft.

10.0 PERMANENT GROUND ANCHOR TESTING AND ACCEPTANCE

10.1 General

Test each ground anchor within 21 calendar days of installation and provide a written summary of the test results to the Engineer within seven calendar days after each test; include the following:

- bonded length
- unbonded length
- jacking length
- number of strands or bar size
- area of strands or bar
- heat number
- coil number, and
- modulus of elasticity.

Failure to meet the submittal deadlines for anchor test results may result in the Engineer suspending anchor installation.

Apply no more than ten (10) percent of the factored design load prior to testing. Apply test loads of no less than 1.25 times the factored design load for proof, performance and extended creep tests. (This intentionally exceeds the minimum required test load of 1.0 times the factored design load specified in AASHTO 11.9.4.2.) Use the same nominal design unit bond stress to size all anchors; do not oversize the performance and/or extended creep test anchors. Apply no more than 80 percent of the specified minimum ultimate tensile strength of the prestressing steel in the tendon. Apply the test load simultaneously to the entire tendon and do not stress single elements of multi-element tendons.

Before testing, perform backpacking sufficient to insure that the soil is flush with the back face of the wall throughout the area affected, but no less than two pile spaces each side of the ground anchor tested. Excessive deflection during testing requires additional backpacking. All work and materials required for backpacking are at no additional cost to the Department.

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).

10.2 Testing Equipment

10.2.1 Use the following testing equipment:

1. Use a dial gauge or vernier scale capable of measuring to 0.001 inch to measure the ground anchor tieback movement. Use a gage or scale with a minimum travel equal to at least 125 percent of the theoretical elastic elongation of the unbonded length plus the tendon bond length at the

maximum test load. Measure the total and creep movements of the anchor to the nearest 0.001 inch with the dial gauge. Support the gauge on a fixed base independent of the structure.

2. Use a hydraulic jack, primary pressure gauge, and pump to apply the test load. Use a jack and pressure gauge that has been calibrated as a unit against a certified gauge by an independent firm within six (6) months of use; if necessary, re-calibrate during the project to keep the calibration current. Submit the calibration curves for the primary pressure gauge to the Engineer for acceptance prior to performing any tests. Use a pressure gauge graduated in 100 psi increments or less to measure the applied load for Proof and Performance Tests and use equipment capable of measuring and maintaining the hydraulic pressure within 50 psi for Extended Creep Tests. Use a jack with a ram travel at least 125 percent of the theoretical elastic elongation of the tendon at the maximum test load.
3. Keep a second calibrated pressure gauge at the site as a backup gauge. Use a gauge calibrated within six (6) months of use with the test jack and primary pressure gauge or by an independent firm using the same certified gauge as described above; if necessary, re-calibrate during the project to keep the calibration current. Submit the calibration curves for the backup pressure gauge to the Engineer for acceptance prior to performing any tests. Use the primary pressure gauge to measure hydraulic jack pressure for the determination of load. Use the backup pressure gauge to check the performance of the primary pressure gauge on each Performance Test. Store the backup pressure gauge inside and do not subject it to rough treatment. If the load determined by the backup pressure gauge and the load determined by the primary pressure gauge are within ten (10) percent of each other, assume that the primary pressure gauge is functioning properly. If the load determined by the backup pressure gauge and the load determined by the primary pressure gauge differ by more than ten (10) percent, recalibrate the jack, the primary pressure gauge and backup pressure gauge at no expense to the Department.
4. Use an electrical load cell and readout or a vibrating wire load cell and readout to monitor changes in load during constant load-hold periods for performance and extended creep tests. Use a load cell calibrated within 1 year of use; if necessary, re-calibrate during the project to keep the calibration current.
5. Place the stressing equipment over the anchor tendon in such a manner that the jack, bearing plates, load cells and stressing anchorage are axially aligned with the tendon and the tendon is centered within the equipment.

10.2.2 Determine the stressing equipment, the sequence of stressing, and the procedure to be used for each stressing operation at the beginning of the project. Use the equipment strictly in accordance with the manufacturer's operating instructions.

10.2.3 Use stressing equipment capable of stressing the entire tendon in one stroke to the specified Test Load and equipment capable of stressing the tendon to the maximum specified Test Load within 75 percent of the rated capacity. Use a pump capable of applying each load increment in less than 60 seconds.

10.2.4 Use equipment that permits the tendon to be stressed in increments so that the load in the tendon can be raised or lowered in accordance with the testing specifications, and allow the anchor to be lift-off tested to confirm the lock-off load.

10.2.5 Use stressing equipment calibrated within the specified time increments within an accuracy of plus or minus two (2) percent prior to use and traceable to the National Institute of Standards and Technology (NIST). Keep the calibration certificate(s) and graph(s) available on site at all times.

10.3 Load Testing Setup

10.3.1 Set up the dial gauges to bear on the pulling head of the jack so their stems are coaxial with tendon direction. Support the gauges on an independent, fixed frame, such as a tripod, which will not move as a result of stressing or other construction activities during the operation.

10.3.2 Prior to setting the dial gauges, place the Alignment Load (AL) accurately on the tendon. The magnitude of AL depends on the type and length of the tendon.

10.3.3 Avoid regripping of strands, which would cause overlapping wedge bites, or wedge bites on the tendon below the anchor head.

10.3.4 Stressing and testing of multiple element tendons with single element jacks is not permitted.

10.3.5 Begin stressing only after the grout has reached adequate strength.

10.4 Proof Tests

10.4.1 Perform Proof Tests on all ground anchors not subjected to Performance or Extended Creep Tests. Perform the Proof Tests by incrementally loading in accordance with the Proof Test Schedule. Increase the load from one increment to another immediately after recording the anchor movement. Measure and record the anchor movement to the nearest 0.001 inch with respect to an independent fixed reference point at the alignment load and at each increment of load. Monitor the load with the primary pressure gauge. Hold the load just long enough to record the movement, except hold the maximum load for 10 minutes.

10.4.2 Adjust the jack as necessary in order to maintain a constant load. Start the load-hold period as soon as the maximum test load is applied. Measure and record the anchor movement with respect to a fixed reference at 1 minute, 2, 3, 4, 5, 6 and 10 minutes. If the anchor movement between one (1) minute and ten (10) minutes exceeds 0.04 inches, hold the maximum test load for an additional 50

minutes. If the load hold is extended, record the anchor movements at 15 minutes, 20, 30, 40, 50 and 60 minutes.

10.4.3 Plot Proof Test Data as shown in Figure 71 of FHWA "Ground Anchors and Anchored Systems".

Proof Test Schedule	
Step	**Load**
1	AL
2	0.25FDL
3	0.50FDL
4	0.75FDL
5	1.00FDL
6	1.25FDL
7	Reduce to Lock-Off Load
8	AL (optional)
9	Adjust to Lock-Off Load
AL - Alignment Load, FDL - Factored Design Load	

10.5 Performance Tests

10.5.1 Conduct Performance Tests according to Project Specific requirements provided in an Appendix to this Special Note.

10.5.2 Conduct the Performance Tests by incrementally loading and unloading ground anchor tiebacks in accordance with the Performance Test Schedule. Raise the load from one increment to another immediately after recording the anchor movement. Measure and record the anchor movement to the nearest 0.001 inch with respect to an independent fixed reference point at the alignment load and at each increment of load. Monitor the load with the primary pressure gauge. Place the reference pressure gauge in series with the primary pressure gauge during each performance test. If the loads determined by the primary and reference pressure gauges differ by more than ten (10) percent, recalibrate the jack, primary pressure gauge, and reference pressure gauge at no expense to the Department. Hold the load just long enough to record the movement, except hold the maximum load for 10 minutes.

10.5.3 Use a load cell to monitor small changes in load during constant load-hold periods.

10.5.4 Adjust the jack as necessary in order to maintain a constant load. Start the load-hold period as soon as the maximum test load is applied and measure the anchor movement, with respect to a fixed reference. Measure and record at 1 minute, 2, 3, 4, 5, 6 and 10 minutes. If the movement between one (1) minute and ten (10) minutes exceeds 0.04 inches, hold the maximum test load for an additional 50 minutes. If the load hold is extended, record the movement at 15 minutes, 20, 25, 30, 45 and 60 minutes.

10.5.5 Plot Performance Test Data as shown in Figures 69 and 70 of FHWA "Ground Anchors and Anchored Systems".

Performance Test Schedule		
Step	**Loading**	**Applied Load**
1		AL
2	Cycle 1	0.25FDL
		AL
3	Cycle 2	0.25FDL
		0.50FDL
		AL
4	Cycle 3	0.25FDL
		0.50FDL
		0.75FDL
		AL
5	Cycle 4	0.25FDL
		0.50FDL
		0.75FDL
		1.00FDL
		AL
6	Cycle 5	0.25FDL
		0.50FDL
		0.75FDL
		1.00FDL
		1.25FDL
		AL
7	Hold the load for 10 minutes. Refer to Section 10.5.3.	
8	Cycle 5 (con't)	AL
AL - Alignment Load, FDL – Factored Design Load		

10.6 Extended Creep Tests

10.6.1 Conduct Extended Creep Tests according to Project Specific requirements provided in an Appendix to this Special Note.

10.6.2 Perform the extended creep tests by incrementally loading, holding, and unloading the ground anchor tieback in accordance with the Extended Creep Test Schedule. The times for reading and recording the movement during each observation period are: 1 minute, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45, 60, 75, 90, 100, 120, 150, 180, 210, 240, 270 and 300 minutes as appropriate for the load increment. Start each load-hold period as soon as the test load is applied. In an extended creep test, use the primary pressure gauge and reference pressure gauge to measure the applied load and use the load cell to monitor small

changes in load during constant load-hold periods. Adjust the jack as necessary in order to maintain a constant load plus or minus 2 percent.

10.6.3 Plot Extended Creep Test Data as shown in Figure 72 of FHWA "Ground Anchors and Anchored Systems".

Extended Creep Test Schedule	
Load	**Observation Period (minutes)**
AL	
0.25FDL	15
0.50FDL	30
0.75FDL	45
1.00FDL	60
1.25FDL	300
AL - Alignment Load, FDL - Factored Design Load	

10.7 Ground Anchor Lock -Off After completing testing for a particular anchor, lock off that anchor such that, after seating losses (i.e. wedge seating), a load of 90 +/- 10 percent of the factored design load for that anchor has been applied to the tendon.

10.8 Lift-Off Tests After transferring the load to the anchorage, and prior to removing the jack, perform a Lift-Off Test on each ground anchor tieback to confirm the magnitude of the load in the anchor tendon. Determine this load by reapplying load to the tendon to lift off the wedge plate (or anchor nut) without unseating the wedges (or turning the anchor nut). This moment represents zero time for any long time monitoring.

10.9 Ground Anchor Acceptance Criteria

10.9.1 A performance-tested or proof-tested ground anchor with a 10-minute load hold is acceptable if the: (1) anchor resists the maximum test load with less than 0.04 inches of movement between 1 minute and 10 minutes; and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

10.9.2 A performance-tested or proof-tested ground anchor with a 60 minute load hold is acceptable if the: (1) anchor resists the maximum test load with a creep rate that does not exceed 0.08 inches in the last log cycle of time; and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

10.9.3 A ground anchor subjected to extended creep testing is acceptable if the: (1) anchor resists the maximum test load with a creep rate that does not exceed 0.08 inches in the last log cycle of time; and (2) total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

10.9.4 If the initial lift-off reading is not within plus or minus five (5) percent of the lock-off load, then adjust the tendon load accordingly and repeat the initial lift-off reading.

10.10 Procedures for Ground Anchors Failing Acceptance Criteria

10.10.1 Replace ground anchors that do not satisfy the minimum apparent free length criteria at no additional cost to the Department or lock off at not more than 50 percent of the maximum acceptable load attained. In this event, no further acceptance criteria are applied.

10.10.2 Regroutable ground anchors which satisfy the minimum apparent free length criteria but which fail the extended creep test at the test load may be post-grouted and subjected to an enhanced creep criterion. This enhanced criterion requires a creep movement of not more than 0.04 inches between 1 and 60 minutes at test load. Lock off anchors that satisfy the enhanced creep criterion at the design lock-off load. Anchors that cannot be post-grouted or regroutable anchors that do not satisfy the enhanced creep criterion will be either rejected or locked off at 50% of the maximum acceptable test load attained. In this event, no further acceptance criteria are applied. The maximum acceptable test load with respect to creep is the load where acceptable creep movements are measured over the final log cycle of time.

10.10.3 In the event that a ground anchor fails, modify the design and/or construction procedures. These modifications may include, but are not limited to: installing additional anchors, modifying the installation methods, reducing the anchor design load by increasing the number of anchors, increasing the anchor length, or changing the anchor type. Any modification of design or construction procedures are at no charge to the Department and with no extension of contract time. Incorporate any redesigns or modifications to the wall, tiebacks, tieback geometry, etc. only with prior acceptance by the Engineer.

11.0 RECORDS

Provide the Engineer with the following final records:

1. As-built drawings showing the location and orientation of the permanent ground anchor tiebacks, capacity, tendon type, total length, bonded length, and unbonded length as installed.
2. Steel and grout certifications and/or mill reports.
3. Grouting records including:
   a. cement type,
   b. volume of grout placed in bonded and unbonded length, recorded separately,
   c. actual grout pressure.
4. The following on the as-built drawings: the type of testing performed for each permanent ground anchor tieback, the locations of any instruments installed.
5. Permanent ground anchor tieback test results.
6. Pile Schedule.
7. Timber lagging, size, and grade, if used.
8. Other records as required by Section 106 of the Standard Construction Specifications.
9. Finished ground line elevations behind the wall and finished grade elevations in front of the wall.
10. Structural Steel records required by Section 607 of the Standard Construction Specifications.
11. Record plans conforming to Section 105.03 of the Standard Construction Specifications.
12. Any required instrumentation records.

12.0 MEASUREMENT AND PAYMENT

12.1 The Department will pay for the accepted quantities of "Retaining Wall" at the contract unit bid price per "Square Foot" and will measure quantities as shown in the Contract Documents. This will constitute full compensation for all costs including materials, labor, tools, equipment, and other incidental items required for designing, constructing, and performing anchor testing for the permanent ground anchored tieback wall(s) as described herein. This may include but is not limited to the following items: installing and tensioning permanent ground anchor tiebacks, providing corrosion protection, pre-drilling for soldier piles, installing soldier piles, backfill material for soldier piles, sheeting, wales, timber lagging, concrete facing (if required), wall drainage, surface drainage, anchorage hardware, proof tests, performance tests, extended creep tests, all required submittals and records, and other incidental items necessary to provide a complete permanent ground anchored tieback 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.

12.2 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.

12.3 All measurement will be based on plan dimensions or dimensions as ordered in writing.

12.4 Refer to an Appendix to this Special Note for Project Specific Measurement and Payment information.

Special Note for Tieback Walls
Appendix A - Project Specific Requirements

Harlan Co. US 421 MP 22.8

A1.0 TIEBACK WALL CONTRACTOR EXPERIENCE REQUIREMENTS

The requirements for the tieback wall specialty contractor are below. Submit applicable documentation, including references, that the tieback wall specialty contractor pre-qualified by the Department for "Permanent Anchored Tiedback Walls" (Work Item I35) and has the experience listed below.

- A minimum of five (5) years experience constructing temporary and/or permanent tieback retaining walls with a minimum of five (5) projects and at least 500 ground anchors completed in the past five (5) years.
- A minimum of three (3) projects that include permanent ground anchors (including at least 300 permanent ground anchors) completed in the past five (5) years.
- At minimum of two (2) projects that include rock anchors (including at least 200 rock anchors) completed in the past five (5) years.

A2.0 SITE AND SUBSURFACE INFORMATION

Bidders are encouraged to consult available geological literature including but not necessarily limited to the Bledsoe Geologic Quadrangle Map and the U.S. Geological Survey Professional Paper 1151-H, “The Geology of Kentucky -- A Text to Accompany the Geologic Map of Kentucky”, Edited by Robert C. McDowell. Additional geotechnical information may be available via the KYTC Division of Construction Procurement Website under “Project Related Information”. The referenced geological literature and geotechnical information are for information only and are not contract documents. However, available subsurface data are included elsewhere in the contract documents.

A3.0 SUBMITTAL REVIEW PROTOCOLS DUE TO SPECIFIED MILESTONE DATES

In recognition of the specified milestone completion dates elsewhere in the contract documents the Department will accelerate the response time for critical items. The following protocol supersedes the body of this special note where applicable:

- Within one week of the letting date (even if prior to award and/or notice to begin work), the Contractor may submit the items listed below. The main purpose of submittals prior to award and/or Notice to Begin Work is to facilitate the Contractor's ordering of soldier piles in a timely manner.

    - A draft Project Schedule referenced in Section 108.02 of the Standard Construction Specifications
    - Wall Design Engineer Experience referenced in Section 4.1.1 of the Special Note for Tieback Walls
    - Partial submittal including design calculations and sketches for anchors and soldier piles as referenced in Sections 4.2(1) and 4.2(4), and for facing to the extent necessary for the Department to concur with the proposed soldier pile spacing
    - Any other submittal(s) deemed critically urgent (as agreed upon between the Department and Contractor) with regard to meeting the specified milestone dates.

    The Department will acknowledge receipt and perform a cursory review within 72 hours, and respond with any questions and/or tentative response. In order to expedite resolution, the Department may require direct communications via telephone, Microsoft Teams, Zoom, etc. The Department will not issue a formal response prior to issuing the Notice to Begin Work. If the Contractor orders any materials prior to receiving both a Notice to Proceed and a subsequent formal submittal response it does so at its own risk.

- For other submittals after the Department has issued the Notice to Begin Work, identify submittals that are urgent with regard to meeting the specified milestone dates with clear documentation of the urgency. (The Department expects a good faith effort on the part of the Contractor to identify only those items that are truly urgent and not to identify all items as urgent and reserves the right to ask for additional documentation of the urgency of a submittal.) The Department will acknowledge receipt and perform a cursory review within 72 hours, and respond with any questions and/or tentative response. In order to expedite resolution, the Department may require direct communications via telephone, Microsoft Teams, Zoom, etc. The Department will issue a formal response within one week of the original submittal.

- If at any time the Contractor believes that the Department's failure to respond within the time frames above puts meeting the specified milestone dates in jeopardy, notify the Section Engineer via email within 24 hours of the specified response deadline. Include a clear explanation of why meeting the milestone dates is in jeopardy.

A4.0 DRILLED-IN SOLDIER BEAMS

Provide drilled-in soldier beams for the permanent ground anchor tieback wall in accordance with applicable sections of this Special Note and other applicable contract documents.

A5.0 PERMANENT ROCK ANCHORS

Provide Permanent Rock Anchors for all Ground Anchors installed on this project according to applicable sections of this Special Note.

A6.0 NON-PRODUCTION TRIAL ANCHOR

A non-production trial anchor is not required. However, the Contractor may choose to install and test one or more trial anchors at no additional cost to the Department. In any case, the Contractor is responsible for providing production anchors that meet all applicable requirements in the contract.

A7.0 PERMANENT GROUND ANCHOR TESTING

Perform permanent ground anchor testing according to Section 10 of this Special Note and according to the requirements below.

A7.1 Conduct an Extended Creep Test on the first production anchor installed.
A7.2 Conduct Performance Tests on 10% of the production anchors (every 10^{th} anchor installed) or anchors designated for testing by the Engineer. The Extended Creep Test will count as a Performance Test toward the 10% requirement.
A7.3 Conduct Proof Tests on all anchors not subjected to Performance or Extended Creep Tests.

A8.0 WALL DESIGN LOADS AND ELEVATIONS

Refer to Appendix C of this special note for wall design loads and elevations. At intermediate stations, provide a design that is either equal to or more conservative than the design resulting from a direct linear interpolation between the values provided in the table.

The failure surface along the wall is assumed to be within about 10 ft. of the top of bedrock, based on slope inclinometer data. Loading diagrams were developed to model

driving forces above the failure surface. In order to reduce the depth of wall facing below final grade it is assumed that soil arching will occur between the soldier piles below the wall facing approximately down to the failure surface, which is considered in the loading diagrams and the reason that maximum soldier pile spacings were specified.

A9.0 OPTIONAL CANTILEVER WALL FROM STATION 16+75 TO 17+00

Tieback anchors are not required from Station 16+75 to 17+00. If they are not used in this interval, design a cantilever wall according to all referenced design criteria. Apply the specified Factored Earth Load (lb./ft.) as a triangular rather than rectangular distribution.

A10.0 WALL LAYOUT SURVEYING

Perform all surveying necessary for tieback wall layout and construction in accordance with Section 201 of the Standard Construction Specifications. Include the cost in the lump sum bid price for “Staking”.

Due to the tight spacing between the roadway and the wall, check the final layout in the field prior to beginning construction. Prior to final acceptance of tieback wall construction drawings, layout the front face of wall, center of soldier piles, back face of cap, guardrail, etc. in the field and walk the length of the wall with the Department’s Section Engineer to ensure that there is sufficient space or if adjustments to the wall location should be considered. Include the cost for layout in the lump sum bid price for “Staking”.

A11.0 TOP OF ROCK ELEVATIONS

The subsurface exploration for this project consisted of rock core borings (some of which included soil sampling) and rock line soundings. Due to the presence of boulders, cobbles or rock fragments that the drillers noted in most of their logs, the “refusal” elevations associated with the rock line soundings do not necessarily correspond to top of rock. Geologists reported top of rock and base of weathered rock elevations based on their evaluation of rock core specimens obtained from the rock core borings.

As the result of drill rig accessibility limitations the Department was not able to perform exploratory borings directly along the row of proposed soldier pile locations. In Appendix C, the plot of “Estimated Top of Rock at 20 ft. Rt.” is based on interpolation

and/or extrapolation from available data (including some refusal elevations from rock line soundings). The plotted "Design Top of Bedrock" elevations in Appendix C are slightly lower than the estimated elevations to account for uncertainties.

Despite these efforts to provide reasonable design top of rock elevations it will be necessary to establish procedures to evaluate the encountered top of rock elevations during construction.

In the construction drawings include proposed criteria to confirm that bedrock has been encountered rather than a boulder when evaluating the encountered top of rock elevations for the solider piles and rock anchors. In developing these criteria consider at least:

- known subsurface conditions
- equipment being used, and
- prior experience installing drilled foundations and/or anchors in similar subsurface conditions with boulders present.

A12.0 SOLDIER PILE TIP ELEVATIONS

This section establishes protocols for handling top of rock elevations that vary from the Design Top of Rock Elevations provided in Appendix C.

In the submitted construction drawings include the Design Top of Bedrock elevation, Design Pile Tip elevation and Design Bedrock Embedment for each soldier pile.

A12.1 Bedrock Encountered within +/- 3.0 ft. of Design Top of Rock Elevation

- The decision to raise or lower any soldier pile tip up to 3.0 ft. from the design tip elevation may be made in the field if the Contractor's and Department's representatives agree that the design bedrock embedment is achieved. Design each pile to meet applicable structural design criteria if bedrock is encountered within 3.0 ft. of the Design Top of Bedrock Elevation (without a change in loading conditions).
- The Department will not make a price adjustment for changes in solider pile tip elevations within +/- 3.0 ft. and changes in this range will not constitute Differing Site Conditions as referenced in Section 104.02.03 of the Standard Construction Specifications.

A12.2 Bedrock Encountered more than 3.0 ft. above Design Top of Rock Elevation

- If bedrock is encountered more than 3.0 ft. higher than the Design Top of Bedrock elevation and the Contractor's and Department's representatives agree the soldier may be installed to 3.0 ft. above the design pile tip elevation (resulting in a bedrock embedment greater than that in the design) the Contractor may raise the pile tip up

to 3.0 ft. above the design tip elevation. Such a change will not constitute a price adjustment or Differing Site Conditions in as referenced in Section 104.02.03 of the Standard Construction Specifications.

- If the Contractor's and Department's representatives do not agree on how to proceed or agree that a pile tip should be raised more than 3.0 ft., then backfill the hole with cuttings and move to a different soldier pile location.
    - Notify the tieback wall design engineer immediately and notify the Department's Section Engineer and/or designee via email within four (4) hours.
    - The Department's Section Engineer will notify the Department's project geotechnical engineer who will work with the Contractor's design engineer and the Department's structural engineer to evaluate whether the soldier pile tip elevation may be raised more than 3.0 ft. and whether any design revisions are needed. This situation may warrant a price adjustment that could be in the Department's favor.

A12.3 Bedrock Encountered more than 3.0 ft. below Design Top of Rock Elevation

- If bedrock is encountered more than 3.0 ft. lower than the Design Top of Bedrock elevation or the Contractor's and Department's representatives do not agree where bedrock was encountered then backfill the hole with cuttings and move to a different soldier pile location.
- Notify the tieback wall design engineer immediately and notify the Department's Section Engineer and/or designee via email within four (4) hours.
- The Section Engineer will notify the Department's project geotechnical engineer who will work with the Contractor's tieback wall design engineer and the Department's structural engineer to find a solution, which may include design revisions. Such a change may warrant a price adjustment.

Upon request of the Contractor, the Department will consider extending the specified milestone dates and/or modifying the milestone criteria as the result of delays encountered by raising or lowering soldier pile tip elevations more than 3.0 ft. from the design tip elevations. The Department will not consider milestone modifications resulting from soldier pile tip elevations changes less than or equal to 3.0 ft.

A13.0 BACKFILL BEHIND THE TIEBACK WALL

Backfill the excavation behind the wall using granular backfill meeting the requirements of granular embankment in Section 805 of the Standard Specifications, current edition. Use material that is classified as non-erodible, as defined in Section 805 of the Standard Specifications, current edition. Place geotextile fabric (for subsurface drainage and separation) in accordance with Sections 214 and 843 of the Standard Specifications, current edition, at any interface between granular embankment

and soil. (Refer to the Supplemental Specifications for Section 214.) Include all costs in this section in unit bid price for “Retaining Wall”.

A14.0 EXCAVATION AND REFILL IN FRONT OF TIEBACK WALL

All excavation and associated refill required to construct the tieback wall is included in the lump sum bid price for Foundation Preparation. This also includes the construction of any working platform that may be necessary to install soldier piles and/or tieback anchors. The extent of the required excavation and size of working platform depends on the contractor’s means and methods. The contractor is responsible for temporary excavation stability and for meeting all OSHA and other applicable regulatory requirements. Replace material in front of the tieback wall to the approximate final grade provided in Appendix C unless otherwise allowed by the Engineer on a slope of 10H:1V, unless directed otherwise by the Engineer, to allow water to drain away from the wall. Place refill material in accordance with Section 206 of the Standard Construction Specifications. (Sections 206.04 and 206.05 do not apply.) Do not permanently change the grade outside of the right-of-way limits.

A15.0 WALL FACING

Either temporary timber lagging in accordance with the body of this special note or temporary shotcrete facing in accordance with the Special Note for Temporary Shotcrete Facing is required.

Use cast-in-place concrete or place precast concrete panels meeting the applicable requirements in the main body of this special note. No architectural treatment or masonry coating is required.

If proposed by the contractor, the Department will consider allowing the use of permanent shotcrete facing in lieu of cast in place concrete or precast concrete panels. The Department will also consider proposals to eliminate a temporary facing in conjunction with permanent shotcrete facing. Such proposals are subject to review, discussions, negotiations, etc. and may warrant a price adjustment if implemented, and the Department does not guarantee that one of these proposals will be accepted. Therefore, bid the project to use either cast-in-place concrete or precast concrete panels along with either temporary timber lagging or temporary shotcrete facing in case the Department and the Contractor cannot reach an agreement regarding the use of permanent shotcrete facing.

A16.0 WALL CAP

In the tieback wall design calculations and construction drawings include a design and details for the wall cap as shown in the Tieback Wall Schematic in Appendix C of this special note. Design the cap to consist of Class A concrete conforming to Section 601 of the Standard Construction Specifications.

In the construction drawings include details and/or notes to ensure that the cap is placed on a clean, solid surface, to minimize voids below the portion of the cap that extends beyond the back of the soldier pile or back face of wall and reduce the potential for surface water to infiltrate behind the tieback wall. Additionally, include details of the connection between the cap and the adjacent pavement (considering the construction sequence) to reduce the potential for surface water infiltration.

A17.0 FENCE

Install a 6’-0” high vertical chain link fence into the wall cap in accordance with KYTC Standard Drawing RGX-025 (linked below) except do not include a handrail or overhang. Reference the fencing in the construction drawings. Include modifications as applicable to meet the requirements of Section B3.4 in Appendix B of this special note at no additional cost to the Department.

https://transportation.ky.gov/Highway-Design/Standard%20Drawings%20DGNS%202020/BGX025.pdf

A18.0 WEEP HOLE DRAINS

Install 4-inch PVC weep hole drains in the concrete facing with a spacing no more than 8.0 ft. in the horizontal direction and no more than 12.0 ft. in the vertical direction. Place the highest drain no lower than 5.0 ft. below the top of soldier beam and facing elevation and the lowest drain no higher than 5.0 ft. above the approximate final grade elevation. Place fabric wrapped backfill drains at each weep hole according to Subsection 603.03.05 of the Standard Construction Specifications. Include details for these drains in the tieback wall construction drawings. Include the cost of these weep hole drains in the unit bid price for “Retaining Wall”.

A19.0 SURFACE DRAINAGE PIPES WITHIN WALL EXTENTS

Refer to pipe drainage sheets elsewhere in the contract documents for approximate locations of surface drainage pipes that will need to go through the wall facing. Coordinate the tieback wall design with these pipes and show the pipes in the tieback wall construction drawings.

A20.0 CONSENT AND RELEASE

Refer to the Consent and Release Form elsewhere in the contract documents for the limits that anchors may be extended off of right-of-way on the south side of US 421 and the limits where work may be performed off of right-of-way on the north side of US 421.

A21.0 PAINTING OF EXPOSED STEEL AND METALS

Contrary to Section 8.7.1(a) of the Special Note for Tieback Walls, if a sacrificial thickness is used, exposed faces of structural steel and miscellaneous metals are not required to be painted with a three-coat system.

A22.0 EXISTING RAILROAD RAILS

Remove all existing railroad rails within the limits of the proposed tieback wall and deliver them to the Department's Harlan Co. maintenance facility located at the following address:

635 Dayhoit Drive
Loyall, KY 40854

Coordinate delivery including specific drop-off location with the Department's Section Engineer. Include the cost of rail removal and delivery in the contract price for Foundation Preparation.

A23.0 MEASUREMENT AND PAYMENT

A23.1 The Department will measure and pay for the accepted quantity of “Retaining Wall" as described in the Appendix C and Section 12 of this Special Note, and below, at the Contract Unit Bid Price. The following are incidental to the unit bid prices for the walls: any excavation behind the front face of the walls, any required granular backfill and geotextile fabric, trial anchor installation and testing, any grading required behind the wall, and any other items required to complete the wall and not included in other bid items.

A23.2 The Department will measure and pay for the accepted quantity of "Foundation Preparation" according to Section 603 of the Standard Construction Specifications at the Contract Lump Sum Bid Price for “Foundation Preparation”. This bid price includes: any excavation required in front of the wall, temporary shoring if necessary to support the excavation in front of the wall, refilling the excavation, and construction & removal of a working platform if necessary to construct the wall, removing and delivering railroad rails described in Section A22.0, and any other work referenced to be included in Foundation Preparation elsewhere in this special note.

A23.3 The Department will measure and pay for the accepted quantity of “Bridge Chain Link Fence-6 ft.” at the contract unit bid price per linear foot. This includes all material and labor required to install the chain link fence.

Code	Pay Item	Pay Unit
08018	RETAINING WALL	Square Foot
08003	FOUNDATION PREPARATION	Lump Sum
08711	BRIDGE CHAIN LINK FENCE-6 FT	Linear Foot

Special Note for Tieback Walls
Appendix B - Instrumentation

Harlan Co. US 421; MP 22.8

B1.0 DESCRIPTION

B1.1 This work consists of furnishing all instruments, tools, materials, and labor necessary to install and monitor survey monuments and providing assistance to the Department to install slope monitoring instrumentation.

B1.2 During the course of construction, the Contractor will be responsible for visually observing and taking survey monument readings. The Department will be responsible for Slope Inclinometer readings. Cooperate as necessary with the Department in facilitating these readings. Any monitoring data that indicates excessive structure deflections, the potential for unstable conditions, or damage to adjacent facilities, as determined by the Engineer, is cause for preventative measures to be taken in the affected area until the causes are identified and resolved to the satisfaction of the Engineer. At completion of the tieback wall, the Department will take post construction readings.

B1.3 Exercise caution when working around any of the instrumentation. Replace any broken or damaged survey monuments or inclinometers (installed by the Department or Contractor) at no expense to the Department.

B2.0 MATERIALS

B2.1 Slope Inclinometer (SI) Casing Provide 2.75 inch (70 mm) diameter grooved plastic "QC Casing" obtained from Durham Geo Slope Indicator (DGSI) or another company if compatible with the Department's current DGSI equipment. Include bottom and top caps.

B2.2 Survey Points Provide temporary survey points necessary to monitor wall movements.

B3.0 INSTALLATION

Approximate Instrumentation Locations Indicated by "X"				
Station	Soldier Pile Survey Point	Soldier Pile Slope Inclinometer	Department Installed Slope Inclinometer Approximately 100 to 150 ft. Lt.	Department Installed Slope Inclinometer Approximately 40 ft. Rt.
10+50	X			
11+00	X			
11+50	X	X	X	X
12+00	X			
12+50	X			
13+00	X			
13+50	X	X	X	
14+00	X			
14+50	X			
15+00	X			
15+50	X	X	X	X
16+00	X			
16+50	X			
17+00	X			

B3.1 Survey Points Install temporary survey points at the top of the wall at the locations designated in the table below. Install the survey points to measure wall movement during excavation and prior to installation of the permanent facing.

B3.2 Slope Inclinometer (SI) Casing Install SI casings vertically against the soldier beams and along the entire length of each soldier beam to the pile tip elevations. Include the specific soldier pile locations where inclinometers will be installed in the tieback wall construction plans. Ensure that the top of the casing will be accessible when the wall is complete. Securely fasten the casing to the soldier beams every 10 ft. Install one groove of the SI casing perpendicular to the wall. Perform all slope inclinometer field installations under the direction of a representative of the Division of Structural Design, Geotechnical Branch. Notify the Geotechnical Branch a minimum of seven (7) calendar days prior to installation of any SI casing.

B3.3 Department Installed Slope Inclinometers The Department's Geotechnical Branch will be responsible for installing and monitoring these inclinometers.

B3.4 Inclinometer Access Provide access meeting applicable OSHA requirements for Department personnel to safely obtain slope inclinometer data from the soldier pile inclinometers both during construction and for long term post-construction monitoring. Submit details for the post-construction access no later than four weeks prior to beginning chain link fence installation; the Department will respond within 14 calendar days.

B4.0 MONITORING

The Contractor will be responsible for monitoring survey points during construction; the Department may obtain independent data. The Department will be responsible for monitoring slope inclinometers during construction and will be responsible for post-construction monitoring, which may last for years after construction is complete.

B4.1 Monitor the survey points at weekly during excavation and up to 90 days after all anchors have been installed and locked off or final acceptance of the tieback wall whichever occurs first.

B4.2 Perform all necessary surveying using qualified technicians with a minimum of one (1) year of field surveying experience and working under the general supervision of a Professional Engineer or Professional Land Surveyor licensed in Kentucky. Read the survey point movements to the nearest 0.01 ft.

B4.3 Provide survey data electronically to the Department within 12 hours after collection.

B4.4 Allow access to the Department to perform readings on all inclinometers at all times. Anticipate the frequency of inclinometer readings to be approximately every one to three weeks during active construction. However, the frequency may be outside of the one to three week window at the discretion of the Department depending on factors including but not limited to construction activities, evaluation of monitoring data, and visually observed slope deformation.

B5.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The Department will pay for the completed and accepted Instrumentation at the contract Lump Sum amount. The Department considers payment as full compensation for all costs and delays associated with monitoring the wall including but not limited to all materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in this Appendix.

Code	Pay Item	Pay Unit
20610NC	Instrumentation	Lump Sum

Special Note for Tieback Walls

Appendix C –
Tieback Wall Design Summary
& Geotechnical Drawings

Harlan Co. US 421; MP 22.8

Tieback Wall Design Summary Table

Harlan County US 421, MP 22.8

Rev. 05/12/2021

Station	Incre. Wall Length (ft.)	Wall Offset (ft.)	CL Survey Elev. (ft.)	Top of Cap Elev. (ft.)	Top of Soldier Beam & Facing Elev. (ft.)	Bottom of Facing Elev. (ft.)	Facing Height (ft.)	Approx. Final Grade at Facing (ft.)	Design Base of Loading Elev. (ft.)	Design Height (ft.)	A (pcf)	Factored Earth Load (lb./ft.)	Factored Earth Pressure (psf)	Factored Surcharge Pressure (psf)	Wall Area for Payment ($ft.^2$)	Design Top of Bedrock Elev. (ft.)	Highest Allowable Design Pile Tip Elev. (ft.)
10+50		20.0	2065.1	2064.75	2064.0	2044.0	20.0	2056	2034.0	29.0	40	33,640	1,160	240		2028.0	2023.0
11+00	50	20.0	2061.5	2061.25	2060.5	2034.0	26.5	2046	2024.0	35.5	40	50,410	1,420	240	1200.00	2016.0	2011.0
11+50	50	20.0	2057.5	2057.25	2056.5	2023.0	33.5	2032	2013.0	42.5	40	72,250	1,700	240	1537.50	2006.0	2001.0
12+00	***50***	***20.0***	***2053.9***	***2053.75***	***2053.0***	***2017.0***	***36.0***	***2026***	***2007.0***	***45.0***	***40***	***81,000***	***1,800***	***240***	***1775.00***	***2001.0***	***1996.0***
12+50	50	20.0	2050.2	2049.75	2049.0	2015.0	34.0	2024	2005.0	43.0	40	73,960	1,720	240	1787.50	1996.0	1991.0
13+00	50	20.0	2046.8	2046.75	2046.0	2015.0	31.0	2024	2007.0	38.0	40	57,760	1,520	240	1662.50	1999.0	1994.0
13+50	50	20.0	2043.0	2042.75	2042.0	2015.0	27.0	2022	2011.0	30.0	40	36,000	1,200	240	1487.50	2003.0	1998.0
14+00	***50***	***20.0***	***2039.9***	***2039.75***	***2039.0***	***2012.0***	***27.0***	***2015***	***2012.0***	***26.0***	***40***	***27,040***	***1,040***	***240***	***1387.50***	***2005.0***	***2000.0***
14+25	25	20.0	2038.1	2037.75	2037.0	2011.0	26.0	2015	2011.0	25.0	40	25,000	1,000	240	681.25	2003.0	1998.0
14+50	25	20.0	2036.2	2035.75	2035.0	2011.0	24.0	2015	2005.0	29.0	40	33,640	1,160	240	643.75	1996.0	1991.0
14+75	25	20.0	2034.8	2034.75	2034.0	2001.0	33.0	2016	1989.0	44.0	40	77,440	1,760	240	731.25	1980.0	1975.0
15+00	***25***	***20.0***	***2033.3***	***2032.75***	***2032.0***	***1999.0***	***33.0***	***2017***	***1985.0***	***46.0***	***40***	***84,640***	***1,840***	***240***	***843.75***	***1976.0***	***1971.0***
15+25	25	20.0	2031.9	2031.75	2031.0	1995.0	36.0	2017	1981.0	49.0	40	96,040	1,960	240	881.25	1972.0	1967.0
15+50	25	20.0	2030.5	2030.25	2029.5	1994.0	35.5	2017	1980.0	48.5	40	94,090	1,940	240	912.50	1971.0	1966.0
15+75	25	20.0	2029.4	2029.25	2028.5	1995.0	33.5	2017	1981.0	46.5	40	86,490	1,860	240	881.25	1972.0	1967.0
16+00	25	20.0	2028.2	2027.75	2027.0	2005.0	22.0	2017	1997.0	29.0	40	33,640	1,160	240	712.50	1992.0	1987.0
16+25	25	20.0	2026.8	2026.75	2026.0	2009.0	17.0	2014	2001.0	24.0	40	23,040	960	240	506.25	1992.0	1987.0
16+50	25	20.0	2025.3	2024.75	2024.0	2011.0	13.0	2014	2009.0	14.0	40	7,840	560	240	393.75	2000.0	1995.0
16+75	25	20.0	2023.2	2022.75	2022.0	2011.0	11.0	2014	2011.0	10.0	40	4,000	400	240	318.75	2008.0	2003.0
17+00	25	20.0	2021.0	2020.75	2020.0	2011.0	9.0	2014	2011.0	8.0	40	2,560	320	240	268.75	2010.0	2005.0

Total Area = 18,612.50 sf

Bold Italics indicates locations where limit equilbrium analyses performed.

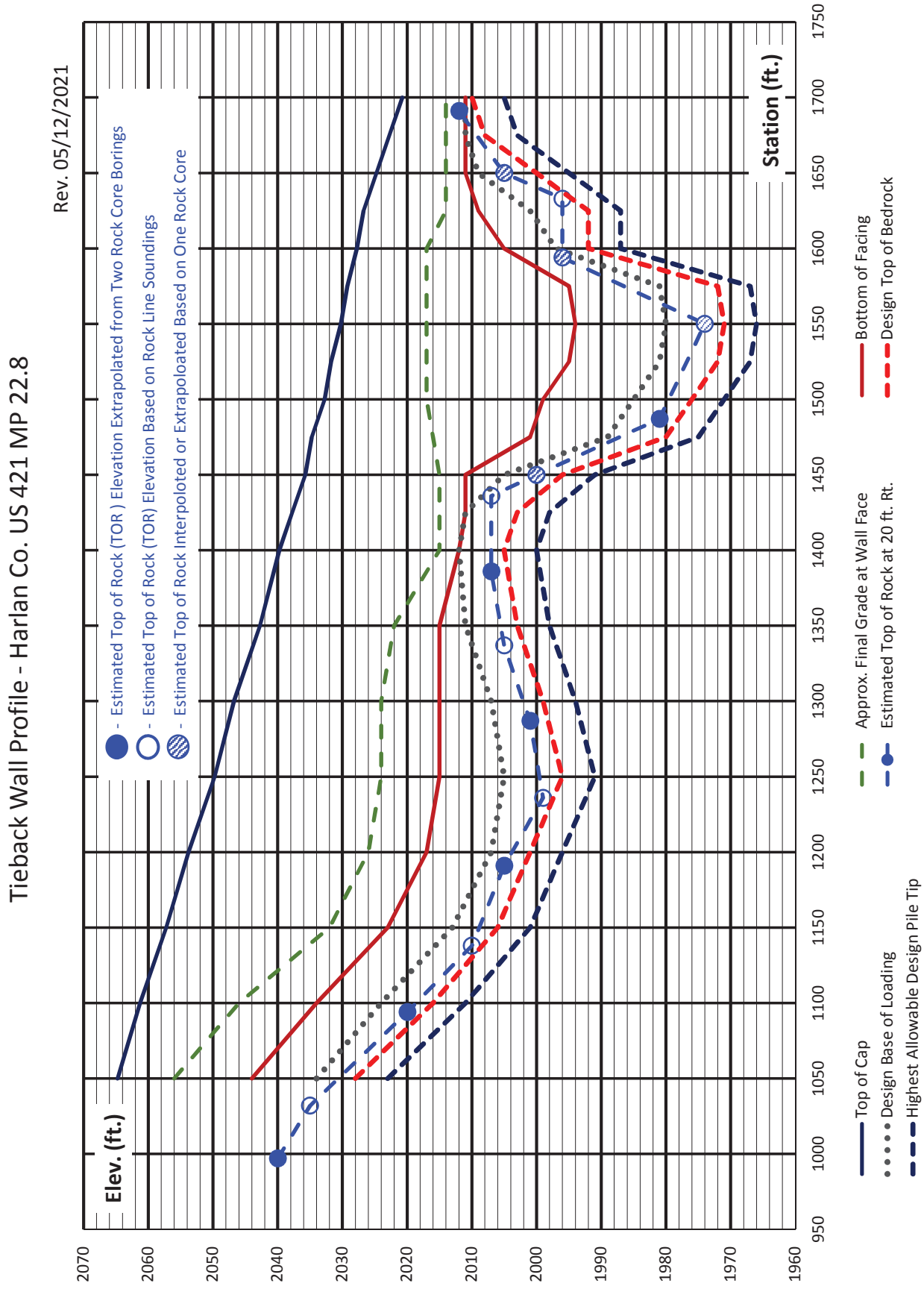
The wall area for payment based on height from top of cap to bottom of facing.

Loads Factored for AASHTO LRFD strength limit state design

Factored Earth Load = A x (Design Height) ^{2}

Factored Earth Pressure = A x (Design Height)

"Design Height" defined with regard to earth pressure loading


Tieback Wall Profile - Harlan Co. US 421 MP 22.8
Rev. 05/12/2021
Elev. (ft.)
Station (ft.)
2070
2060
2050
2040
2030
2020
2010
2000
1990
1980
1970
1960
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700
1750
- Estimated Top of Rock (TOR) Elevation Extrapolated from Two Rock Core Borings
- Estimated Top of Rock (TOR) Elevation Based on Rock Line Soundings
- Estimated Top of Rock Interpoloted or Extrapoloated Based on One Rock Core
Bottom of Facing
Design Top of Bedrock
Approx. Final Grade at Wall Face
Estimated Top of Rock at 20 ft. Rt.
Top of Cap
Design Base of Loading
Highest Allowable Design Pile Tip

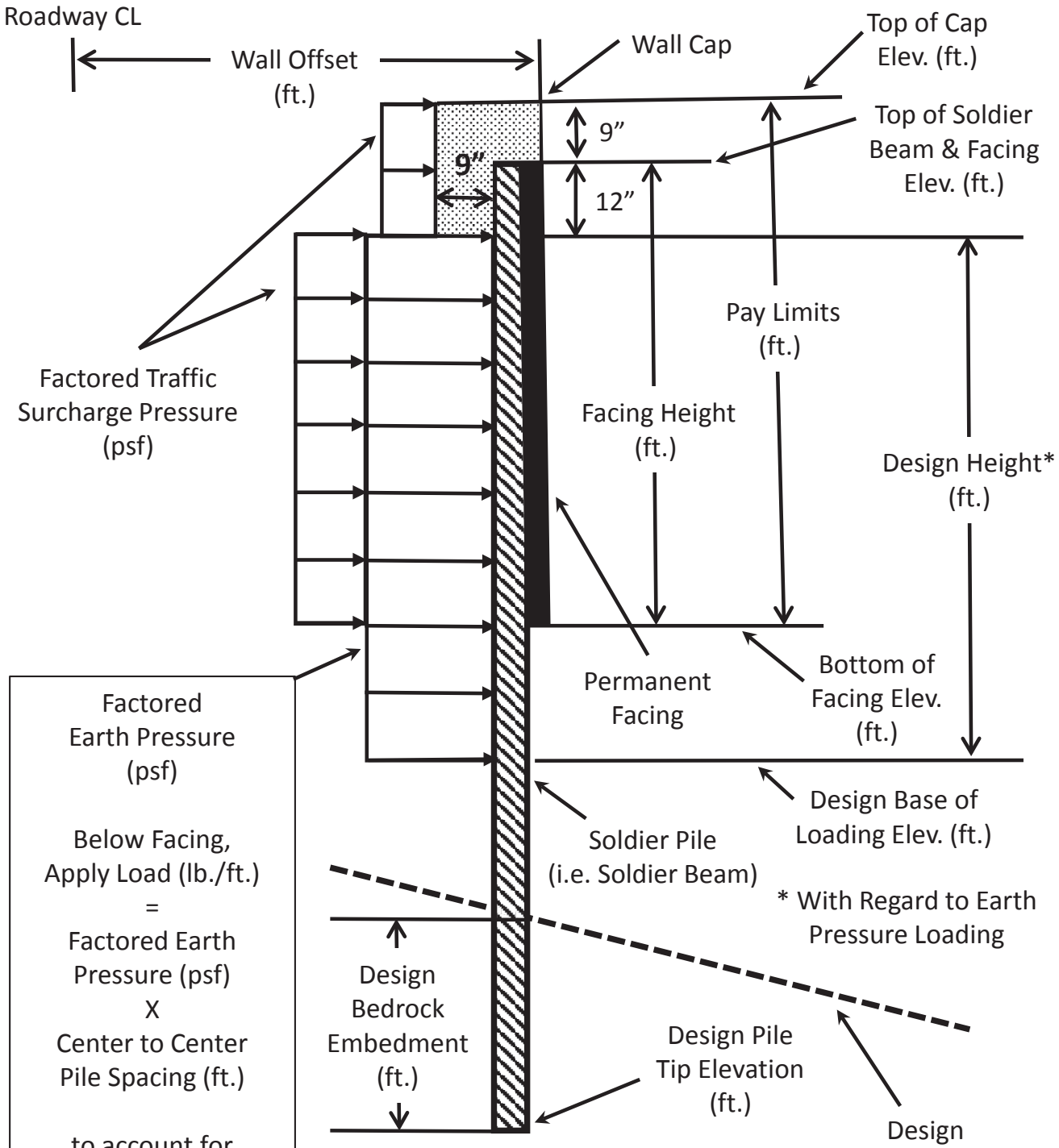
Tieback Wall Schematic

Harlan Co. US 421, MP 22.8

(Not to Scale)

Rev. 05/12/2021

Refer to Tieback Wall Design Summary Table
for specific values if not provided here.



See next page for soldier pile requirements.

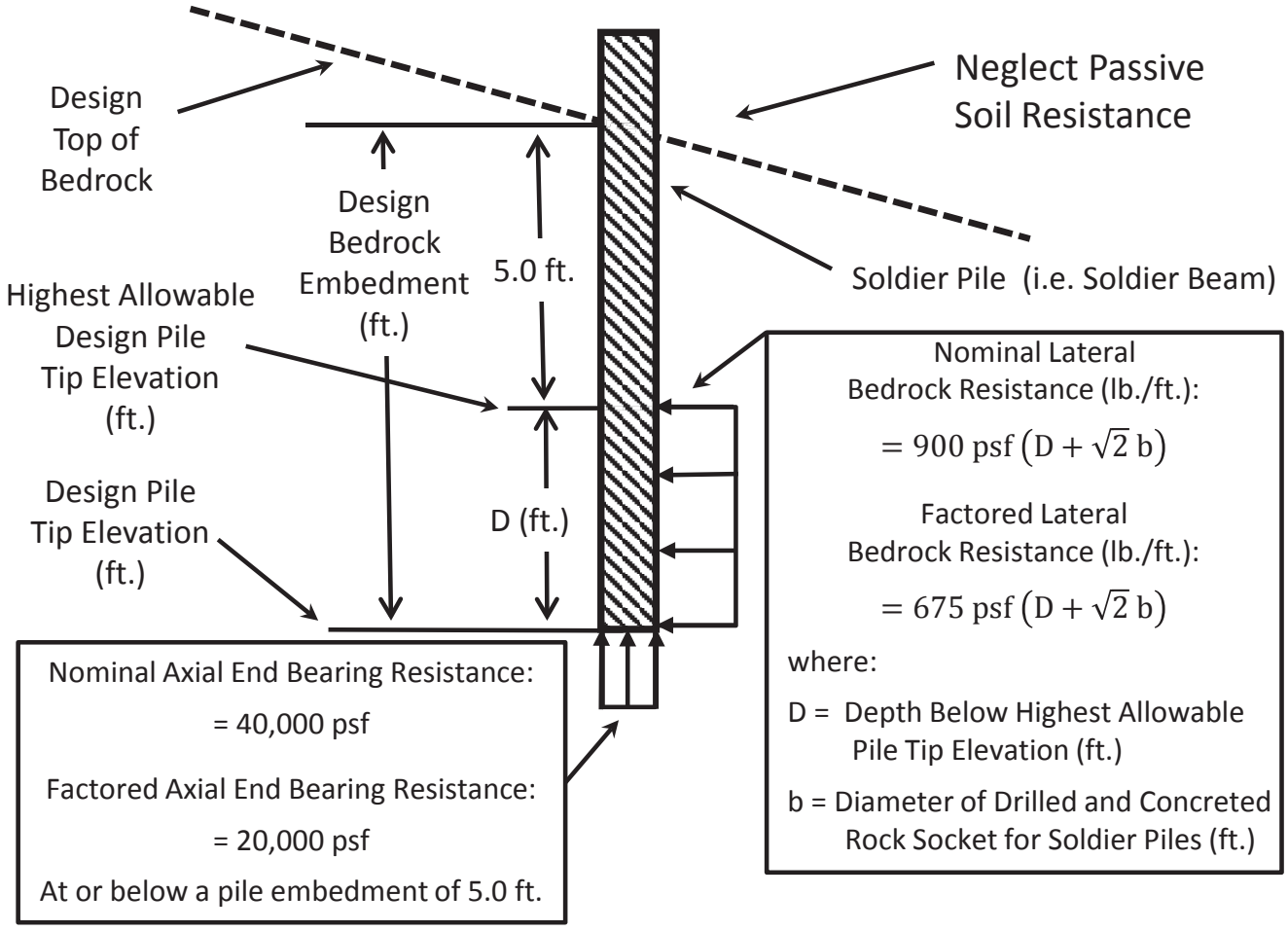
Tieback Wall Schematic

Soldier Pile Embedment, Resistance & Spacing Requirements

Harlan Co. US 421, MP 22.8
(Not to Scale)

Rev. 04/26/2021

Refer to Tieback Wall Design Summary Table
for specific values if not provided here.



Nominal Lateral Bedrock Resistance (lb./ft.):

$= 900 \text{ psf} \left(D + \sqrt{2}\, b\right)$

Factored Lateral Bedrock Resistance (lb./ft.):

$= 675 \text{ psf} \left(D + \sqrt{2}\, b\right)$

where:

D = Depth Below Highest Allowable Pile Tip Elevation (ft.)

b = Diameter of Drilled and Concreted Rock Socket for Soldier Piles (ft.)

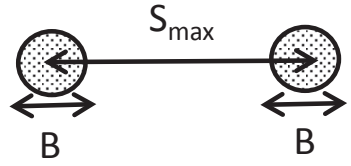
Nominal Axial End Bearing Resistance:

= 40,000 psf

Factored Axial End Bearing Resistance:

= 20,000 psf

At or below a pile embedment of 5.0 ft.



B = diameter of soldier pile concrete backfill from the bottom of lagging to top of rock (ft.)

S_{max} = maximum center-to-center spacing between soldier pile concrete backfill (ft.)

Max. Allowable Center-to-Center Spacing:

Station 10+50 to 14+50:	$S_{max} = 3.5$ B
Station 14+50 to 16+00:	$S_{max} = 3.0$ B
Station 16+00 to 17+00:	$S_{max} = 3.5$ B

The abbreviations below are commonly used in the drawings on the following pages.

BOW – Base of Weathering (same as Base of Weathered Rock)

BWR – Base of Weathered Rock (same as Base of Weathering)

EX. R/W – Existing Right-of-Way

JS – Jar Slake

KYRQD – Kentucky Rock Quality Designation

OW – Observation Well

Qu – Unconfined Compressive Strength

R – Refusal

RDZ – Rock Disintegration Zone

REC - Recovery

SDI – Slake Durability Index

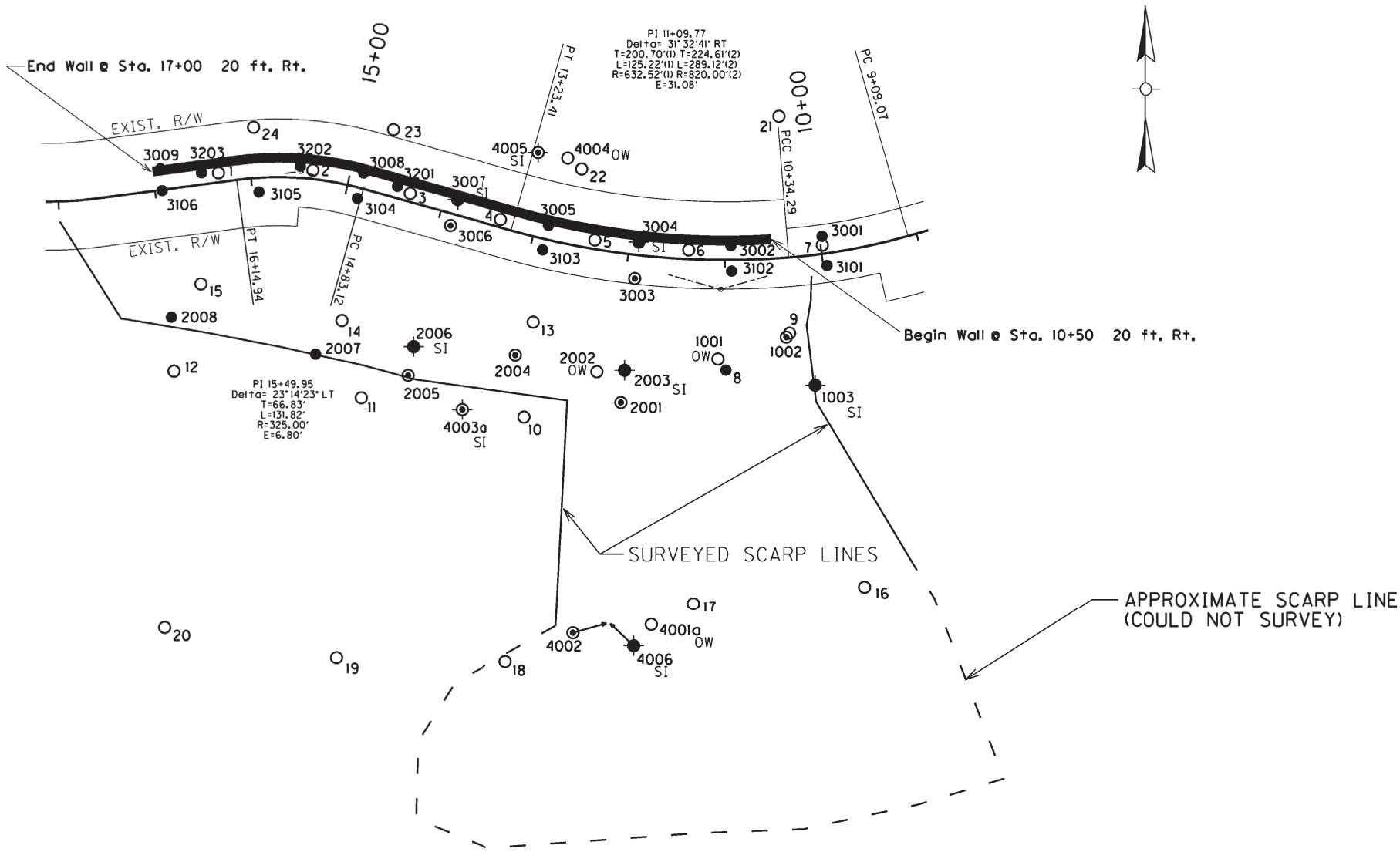
SI – Slope Inclinometer

TOR – Top of Rock

Many of these terms are defined in the Department's Geotechnical Manual, linked below.

https://transportation.ky.gov/Organizational-Resources/Policy%20Manuals%20Library/Geotechnical.pdf

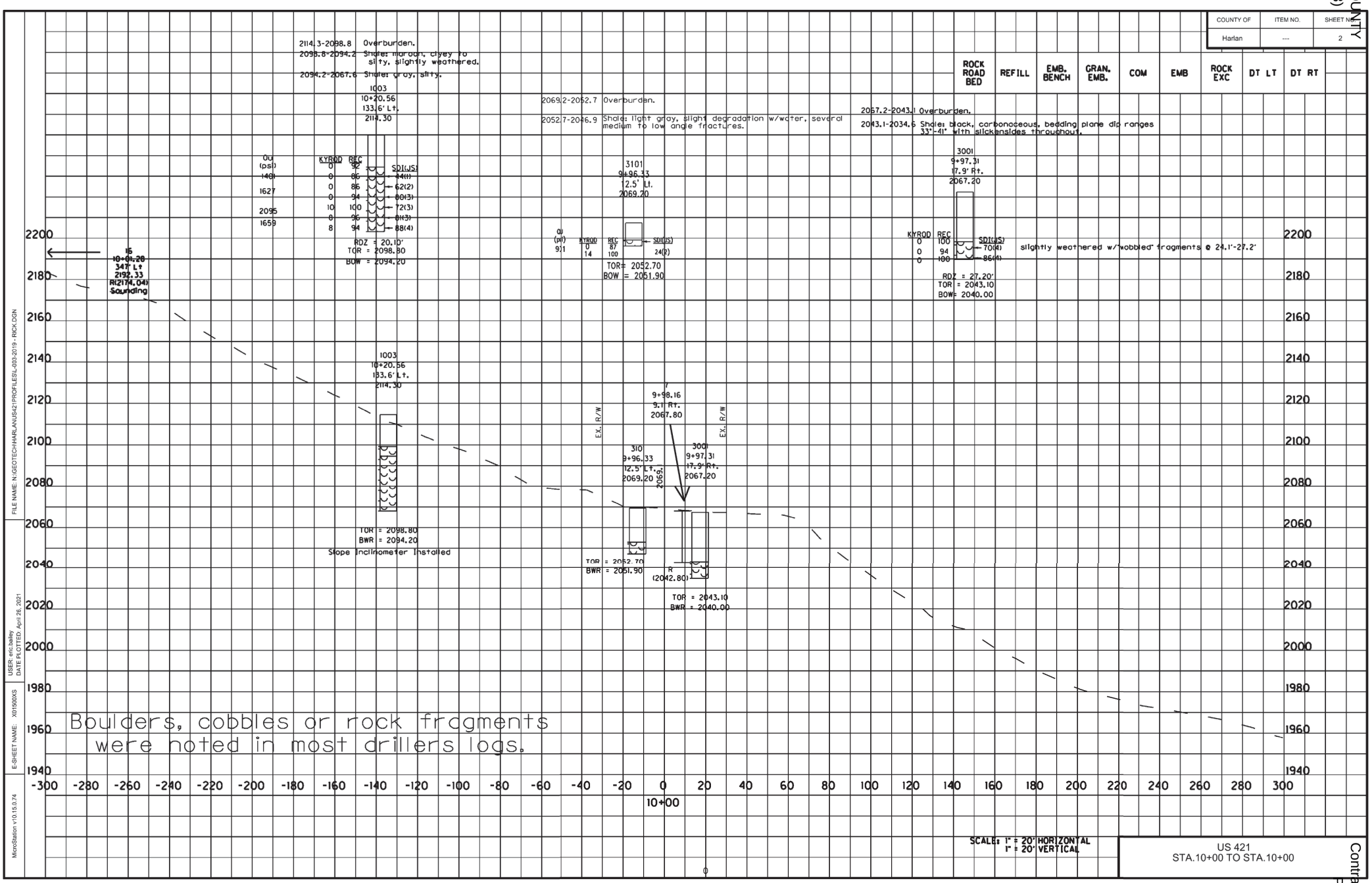
COUNTY OF	ITEM NO.	SHEET NO.
HARLAN		1



US 421
SLIDE REPAIR

MicroStation v10.15.0.74 | E-SHEET NAME: | USER: eric.bailey DATE PLOTTED: April 26, 2021 | FILE NAME: N:\GEOTECH\HARLAN\US421PROFILES\IL-003-2019 - RICK.DGN

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	2

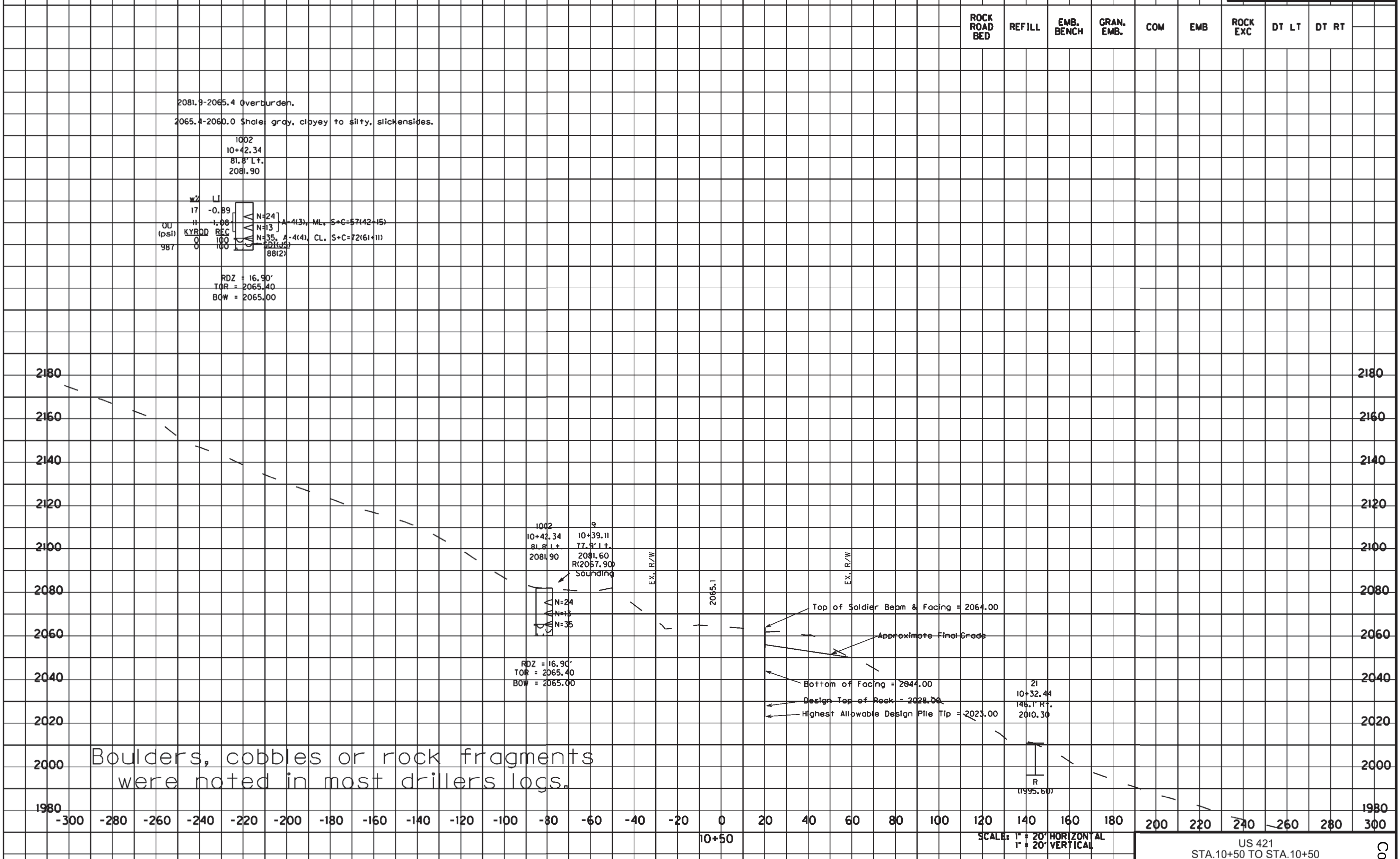


SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.10+00 TO STA.10+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: X01500XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	3



US 421
STA.10+50 TO STA.10+50

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: X01600XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	4

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2062.3-2030.0 Overburden.

2030.0-2029.6 Cored Overburden: w/clay and sandstone fragments.

2029.6-2025.3 Shale: dark gray, fragmented zones, 12° bedding

3102
10+93.40
11.5' Lt.
2062.30

KYROD 0 | REC 100 | SDI(JS) 91(3)

TOR= 2029.60
BOW = 2029.30

2060.1-2050.2 Overburden.

2050.2-2021.8 Overburden: sandstone boulders and fragments w/clay shale.

2021.8-2013.6 Shale: dark gray to black, in part silty, high degree fractures w/slickensided throughout, 22-27° bedding planes.

3002
10+93.78
14.8' Rt.
2060.10

0u (psi) 754 | KYROD 11 | REC 94 | SDI(JS) 91(5)
36 | 100 | 92(5)

RDZ = 39.40'
TOR = 2021.60
BOW = 2021.60

17
11+22.56
355.20
2175.1
R(2158.2)
Sounding

Observation Well Data
Boring 1001

Date	Measured Groundwater Elevation (ft.)
9/28/2020	2077.9
10/26/2020	2078.0
12/3/2020	2078.2
1/4/2021	2076.4
2/4/2021	2076.8
3/30/2021	2078.2

1001
11+06.36
102.20' Lt.
2084.20
O.W.

8
10+99.04
113.7' Lt.
2085.7

(2062.50)

TOR = 2066.7
Note: Not Logged by a Geologist

EX. R/W

2061.5

3102
10+93.40
11.5' Lt.
2062.30

3002
10+93.78
14.8' Rt.
2060.10

EX. R/W

Top of Soldier Beam & Facing = 2060.50

Approximate Final Grade

Bottom of Facing = 2034.00
Design Top of Rock = 2016.00
Highest Allowable Design Pile Tip = 2011.00

TOR = 2029.60
BWR = 2029.30

TOR = 2021.60
BWR = 2021.60

Boulders, cobbles or rock fragments were noted in most drillers logs.

2180 2160 2140 2120 2100 2080 2060 2040 2020 2000 1980 1960

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

11+00

0

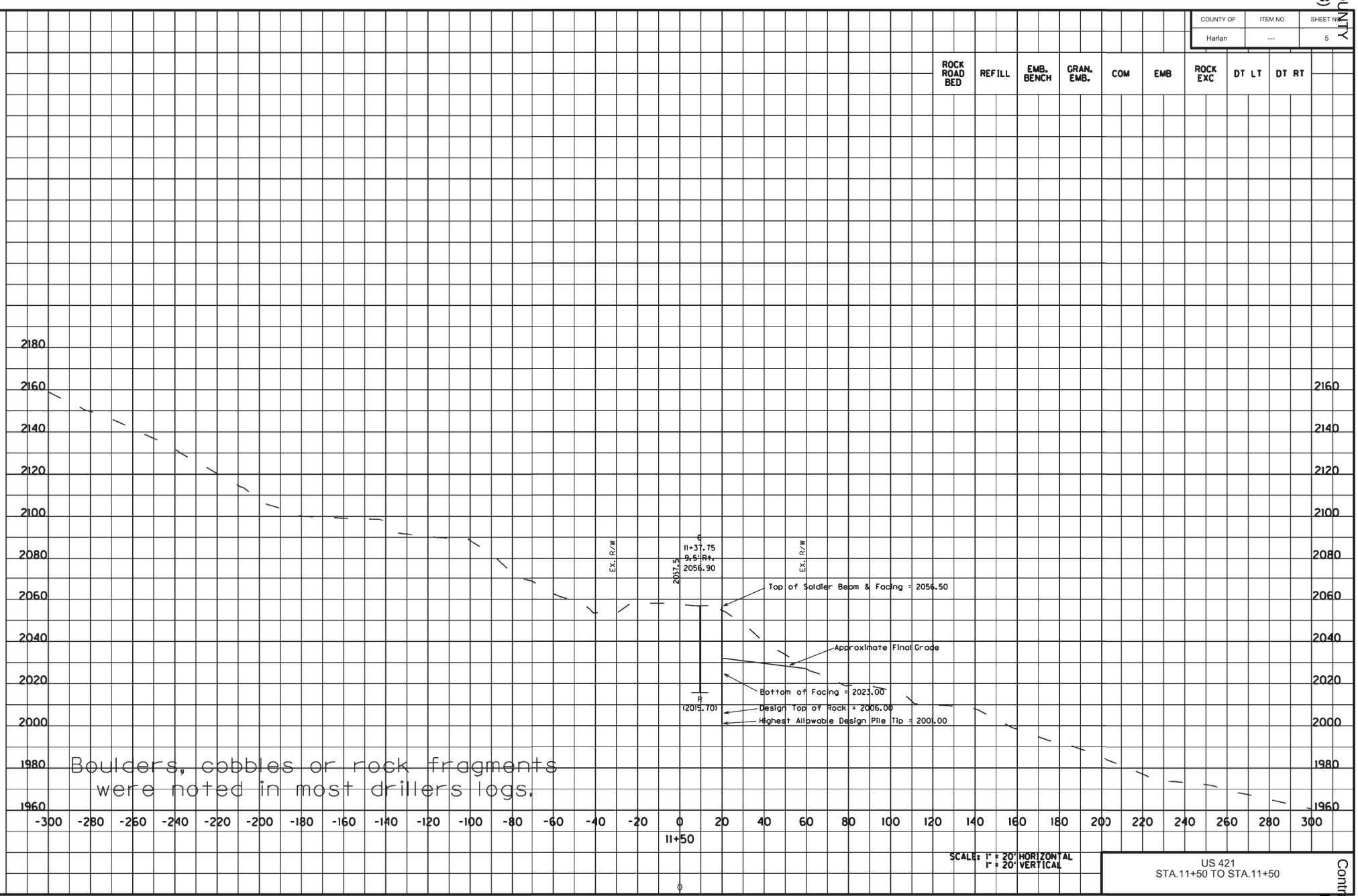
SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.11+00 TO STA.11+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\IL-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: X01700XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	5

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

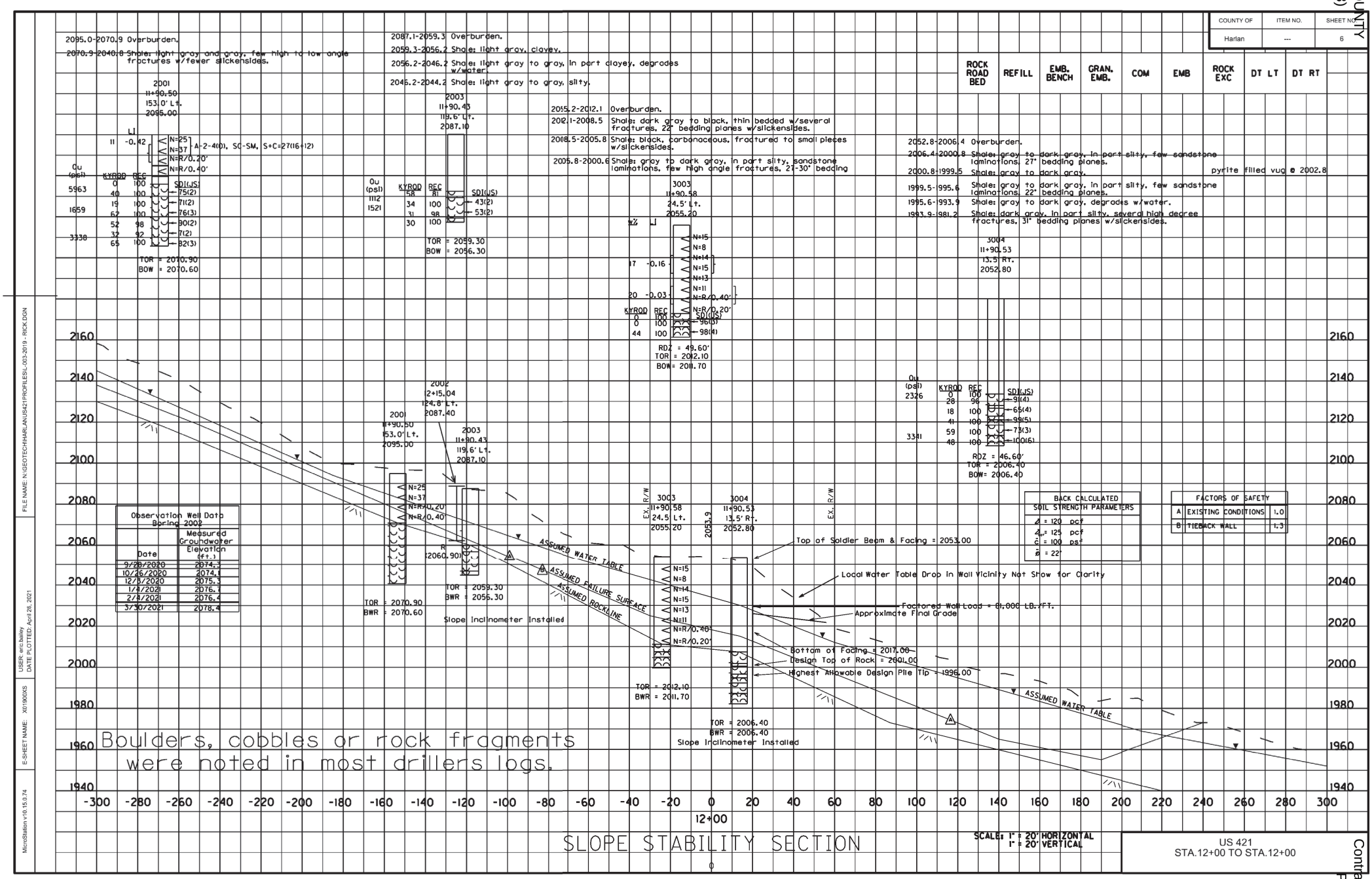


SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.11+50 TO STA.11+50

FILE NAME: N:\GEOTECH\HARLAN\US421PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: X018600S
MicroStation v10.15.07.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	6



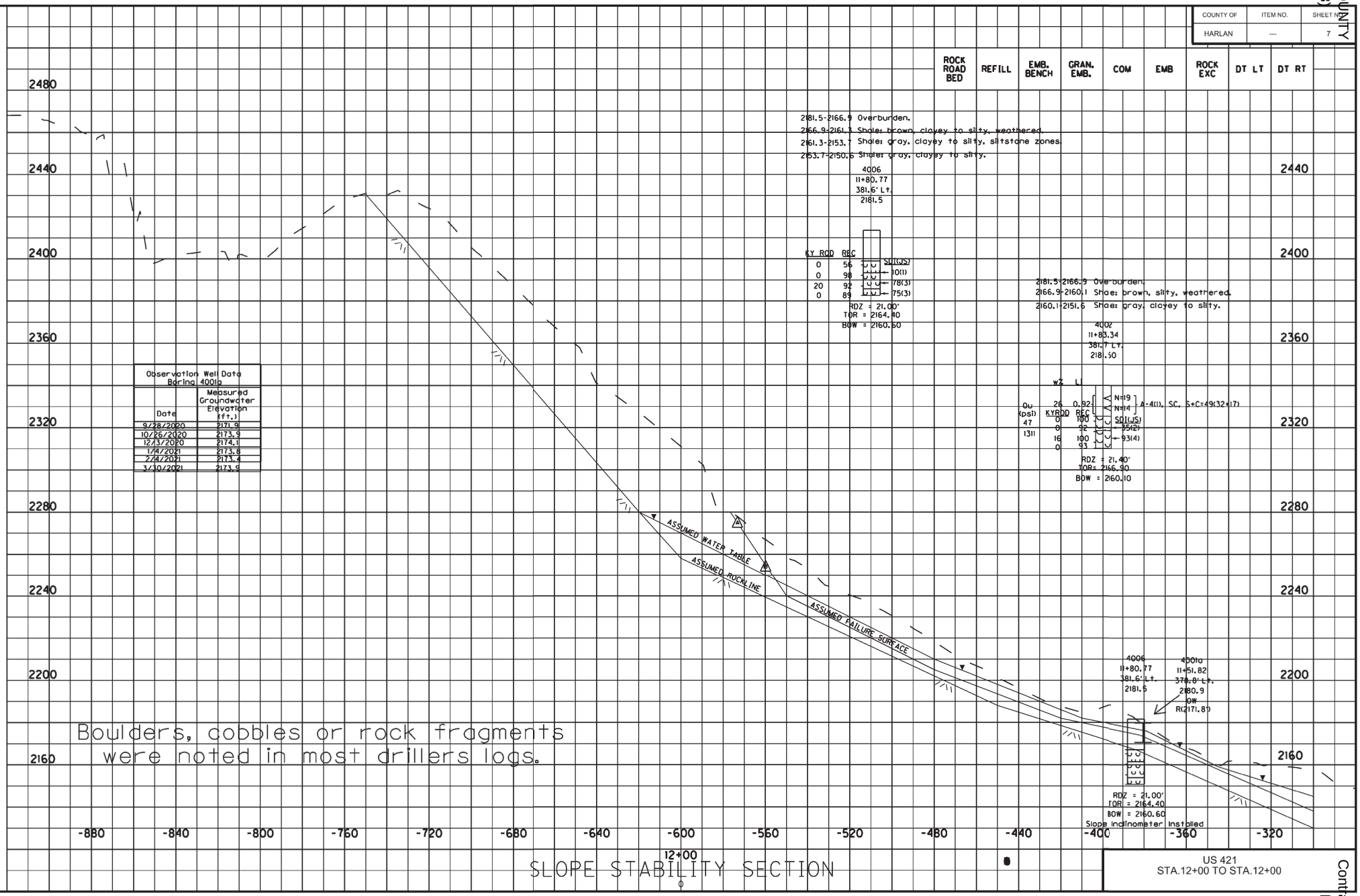
SLOPE STABILITY SECTION

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.12+00 TO STA.12+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 28, 2021
E-SHEET NAME: X019000XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
HARLAN	---	7



Observation Well Data Boring 4001a	
Date	Measured Groundwater Elevation (ft.)
9/28/2020	2171.9
10/26/2020	2173.9
12/3/2020	2174.1
1/4/2021	2173.8
2/4/2021	2173.4
3/10/2021	2173.9

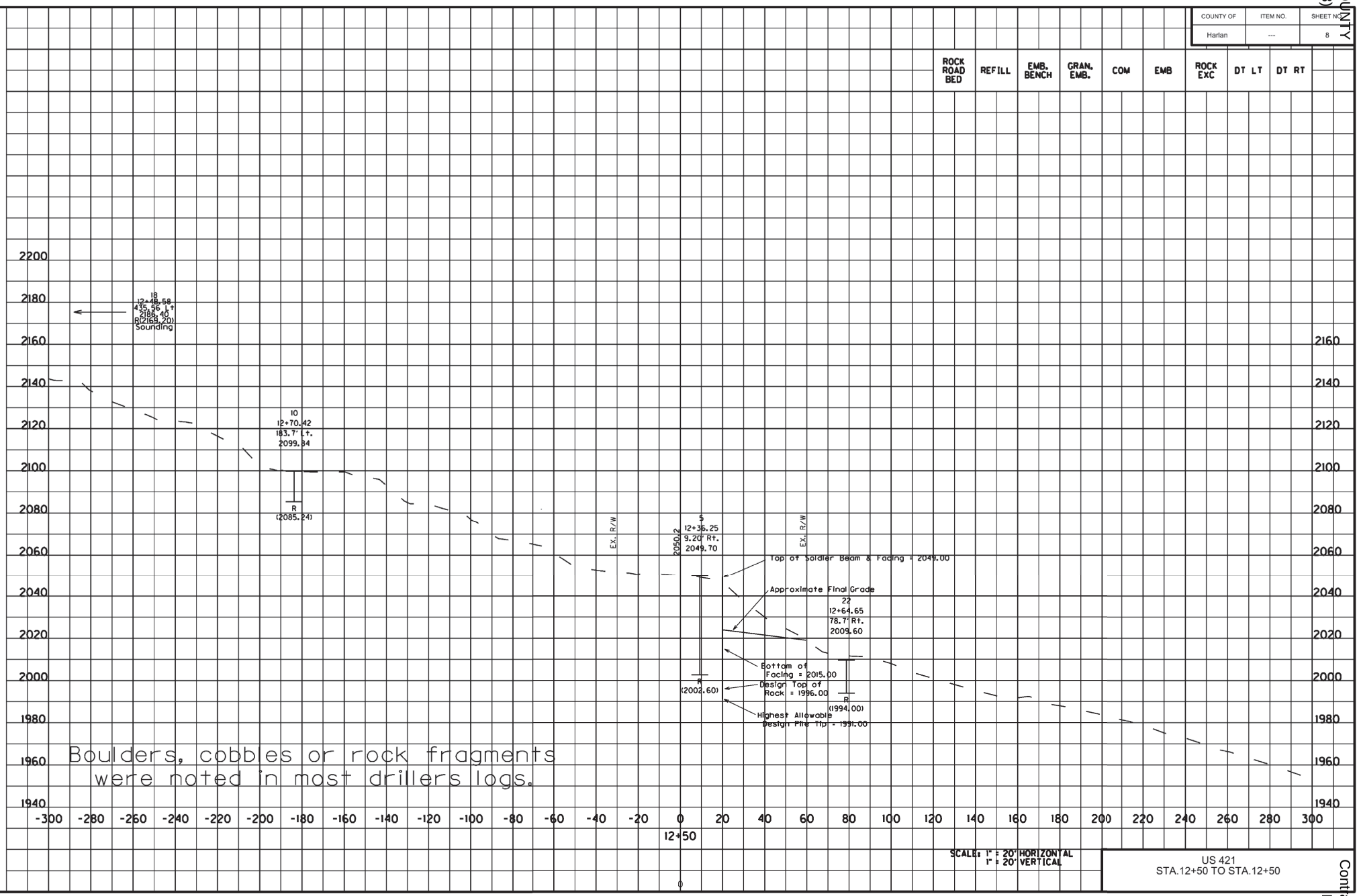
Boulders, cobbles or rock fragments were noted in most drillers logs.

SLOPE STABILITY SECTION

US 421
STA.12+00 TO STA.12+00

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	8

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

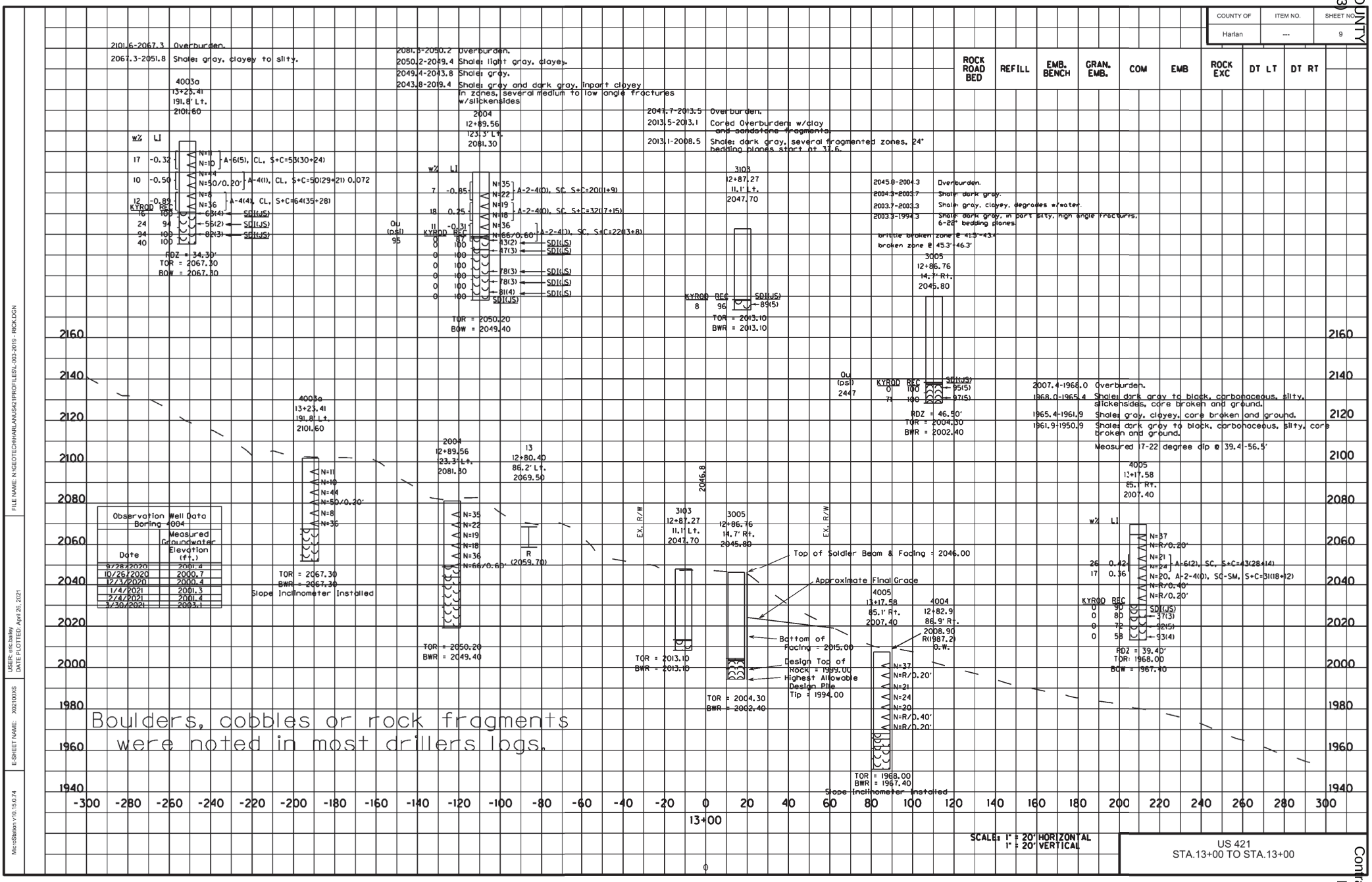


SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.12+50 TO STA.12+50

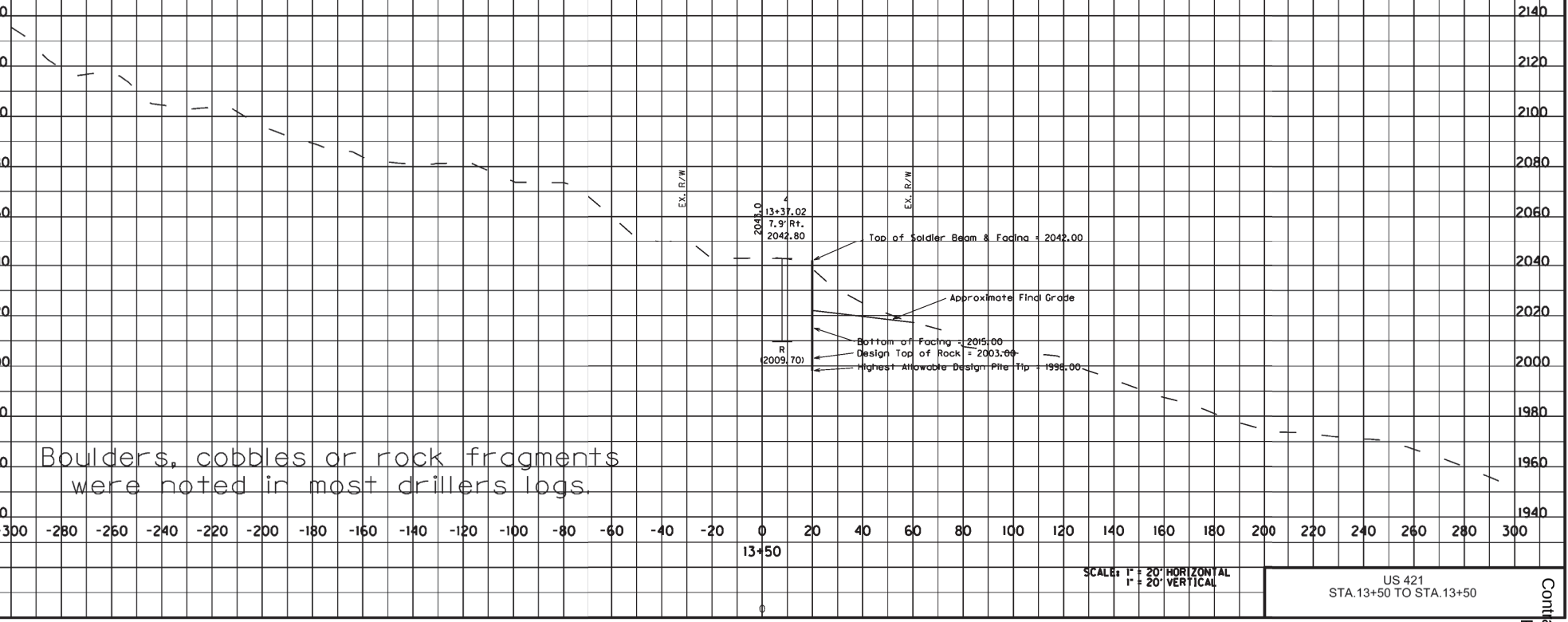
MicroStation v10.15.0.74 | E-SHEET NAME: X02000XS | USER: erin.bailey | DATE PLOTTED: April 26, 2021 | FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\IL-003-2019 - RCK.DGN

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	9



COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	10

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT



SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.13+50 TO STA.13+50

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	11

2080.9-2066.0 Overburden.
2066.0-2059.4 Shale: light gray to gray, degrades w/water.
2059.4-2043.4 Shale: gray and dark gray, in part clayey in zones, few medium angle fractures.
2043.4-2033.6 Shale: dark gray to black, fragmented zones, few low angle fractures.

2074.9-2049.7 Overburden.
2049.7-2046.6 Shale: light gray, clayey, washed out 26.3-28.3'.
2046.6-2043.9 Shale: gray, in part clayey, degrades w/water.
2043.9-2032.6 Shale: gray and dark gray, in part clayey in zones, few medium angle fractures.

2040.0-2019.4 Overburden.
2019.4-2007.9 Shale: dark gray to black, in part silty, heavily fractured throughout, 18-27" bedding planes.

2038.9-2009.0 Overburden.
2009.0-1999.2 Shale: dark gray to black, in part silty, few high angle fractures, 23-29° bedding planes.
1999.2-1992.5 Shale: black, carbonaceous, several high angle fractures, 23-30° bedding planes w/slickensides.

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2005
13+86.72
172.7' Lt.
2080.90

Ou (psi): 226, 549
w% LI: 9 -1.54

KYROD	REC	SDI(JS)
75	81	43(2)
22	100	
14	100	28(2)
0	86	11(1)
0	100	6(2)
0	52	
0	96	66(2)
0	100	

N=3 / N=42 — A-4(2), GM, S+C=49(37+12)

TOR = 2065.70
BOW = 2065.50

19
13+76.36
474' Lt
2194.41
R(2181.21)
Sounding

2006
13+89.40
142.6' Lt.
2074.90

KYROD	REC	SDI(JS)
0	100	10(2)
0	63	
0	96	28(1)
0	96	54(2)
0	100	

TOR = 2049.70
BOW = 2046.50

3006
13+86.28
12.4 Lt.
2040.00

w% LI: 15 0.07 — N=15 / N=19 — A-2-4(0), SC, S+C=33(18+15)
19 -0.11 — N=6, A-7-6(22), CL, S+C=93(51+42)
8 -1.50 — N=50/0.40', A-2-4(0), SC, S+C=26(18+7)

KYROD/REC		SDI(JS)
KYROD/REC →	80	
KYROD/REC → 0	100	69(3)
KYROD/REC → 34	100	85(5)

RDZ = 23.30'
TOR = 2019.40
BOW = 2019.10

3007
13+86.33
15.4' Rt.
2038.90

Ou (psi): 2708

KYROD	REC	SDI(JS)
33	93	
37	98	96(4)
46	100	95(5)
20	100	99(5)

RDZ = 30.30'
TOR = 2009.00
BOW = 2008.60

BACK CALCULATED SOIL STRENGTH PARAMETERS	
γ = 120	pcf
γ_s = 125	pcf
C = 100	psf
ϕ = 22°	

FACTORS OF SAFETY		
A	EXISTING CONDITIONS	1.0
B	TIEBACK WALL	1.3

2005
13+86.72
172.7' Lt.
2080.90
N=3
N=42

2006
13+89.40
142.6' Lt.
2074.90

ASSUMED WATER TABLE
ASSUMED FAILURE SURFACE
ASSUMED ROCKLINE
EX. R/W
EX. R/W

3006
13+86.28
12.4' Lt.
2040.00
2039.9

3007
13+86.33
15.4' Rt.
2038.90

Top of Soldier Beam & Facing = 2039.00
Local Water Table Drop in Wall Vicinity Not Show for Clarity
Factored Wall Load = 27,040 LB./FT.
Approximate Final Grade
Bottom of Facing = 2012.00
Design Top of Rock = 2005.00
Highest Allowable Design Pile Tip = 2000.00
ASSUMED WATER TABLE

N=15
N=19
N=6
N=50/0.40'

TOR = 2065.70
BWR = 2065.50

TOR = 2049.70
BWR = 2046.50
Slope Inclinometer Installed

TOR = 2019.40
BWR = 2019.10

TOR = 2009.00
BWR = 2008.60
Slope Inclinometer Installed

Boulders, cobbles or rock fragments were noted in most drillers logs.

2200 2180 2160 2140 2120 2100 2080 2060 2040 2020 2000 1980 1960 1940

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

14+00

SLOPE STABILITY SECTION

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.14+00 TO STA.14+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: X023X0XS
MicroStation v10.15.07.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	12

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2035.2-2004.3 Overburden.

2004.3-1993.6 Shale: dark gray, few limestone laminations, clayey, broken and fractured throughout, numerous slicken sides, dipping approx 32 degrees.

3201
14+50.00
12.0' Rt.
2035.2

REC	KY ROD
0	64
0	66
0	100

TOR = 2004.27
BOW = 1998.67

11
14+26.88
208.1' Lt.
2084.40

R
(2077.60)

14
14+67.68
196.7'
2077.4

R(2062.8)

3
14+35.52
8.5' Rt.
2036.40

EX. R/W

2036.2

EX. R/W

3201
14+50.00
12.0' Rt.
2035.2

Top of Soldier Beam & Facing = 2035.00

23
14+69.79
67.2' Rt.
2008.90

Approximate Final Grade

R
(2013.40)

Bottom of Facing = 2011.00

Design Top of Rock = 1996.00

TOR = 2004.3
BOW = 1998.7

R
(1988.30)

Highest Allowable Design Pile Tip = 1991.00

Boulders, cobbles or rock fragments were noted in most drillers logs.

2120 2100 2080 2060 2040 2020 2000 1980 1960 1940

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

14+50

0

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.14+50 TO STA.14+50

MicroStation v10.15.0.74 | E-SHEET NAME: X0240DXS | USER: eric.bailey | DATE PLOTTED: April 26, 2021 | FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RCK.DGN

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	13

2083.4-2064.4	Overburden.
2064.4-2058.1	Shale: gray, in part clayey, degrades w/water.
2058.1-2046.8	Shale: gray to dark gray, few fragmented zones, several low angle fractures w/fewer slickensides.
2046.8-2044.3	Shale: brown and dark gray, in part clayey, few low angle fractures w/slickensides.
2044.3-2033.8	Shale: gray to dark gray, high to low angle fractures w/fewer slickensides.

2032.9-1996.9	Overburden.
1996.9-1991.1	Shale: black, carbonaceous, thin bedded w/several low angle fractures, 16" bedding planes.

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT
2032.9-1984.6	Overburden.							
984.6-1984.5	Cored Overburden: sandstone fragments.							
984.5-1974.6	Shale: gray to dark gray, in part silty, few sandstone laminations, few high degree fractures, 14-16" bedding planes w/few slickensides.							

2007
14+86.44
177.3' Lt.
2083.40

KYROD	REC	SDI(JS)
15	100	43(1)
0	100	22(2)
0	100	52(1)
0	100	60(1)
0	100	49(3)
0	100	86(3)
0	100	

TOR= 2064.40
BOW = 2064.40

3104
14+86.68
11.1' Lt.
2032.90

KYROD	REC	SDI(JS)
0	100	
0	100	93(4)

TOR = 1996.90
BOW = 1996.90

3008
14+86.96
15.6' Rt.
2032.90

KYROD	REC	SDI(JS)
0	100	98(4)
41	100	94(4)

RDZ = 48.90'
TOR = 1984.50
BOW = 1984.00

BACK CALCULATED SOIL STRENGTH PARAMETERS	
γ = 120	pcf
γ_s = 125	pcf
$\bar{c}$ = 100	psf
$\bar{\phi}$ = 22°	

FACTORS OF SAFETY		
A	EXISTING CONDITIONS	1.0
B	TIEBACK WALL	1.4

2007
14+86.44
177.3' Lt.
2083.40

TOR = 2064.40
BWR = 2064.40

3104
14+86.68
11.1' Lt.
2032.90

TOR = 1996.90
BWR = 1996.90

3008
14+86.96
15.6' Rt.
2032.90

TOR = 1984.50
BWR = 1984.00

2033.3

EX. R/W

EX. R/W

ASSUMED WATER TABLE

ASSUMED FAILURE SURFACE

ASSUMED ROCKLINE

Top of Soldier Beam & Facing = 2032.00

Local Water Table Drop in Wall Vicinity Not Show for Clarity

Approximate Final Grade

Factored Wall Load = 84,640 LB./FT.

Bottom of Facing = 1999.00

Design Top of Rock = 1976.00

Highest Allowable Design Pile Tip = 1971.00

ASSUMED WATER TABLE

Boulders, cobbles or rock fragments were noted in most drillers logs.

2120 2100 2080 2060 2040 2020 2000 1980 1960 1940 1920

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

15+00

SLOPE STABILITY SECTION

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.15+00 TO STA.15+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
USER: eric.bailey
DATE PLOTTED: April 26, 2021
E-SHEET NAME: XD2500XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	14

2029.4-1978.7 Overburden.
1978.7-1977.9 Cored Overburden: with boulders.
1977.9-1973.3 Shale: dark gray to black, clayey, with limestone laminations, broken and fractured throughout, numerous slicken sides, dip approximately 28-32 degees.
1973.3-1971.3 Shale: grennish gray, clayey galuconitic, lithoclats, broken and fractured throughout, dipping approximatley 28-32 degrees..
1971.3-1967.4 Shale: black, clayey broken and fractured throughout, few limestone laminations..

3202
15+50.00
12.0' Rt.
2029.4

TOR = 1977.90
BOW = 1977.40

2
15+37.27
9.3' Rt.
2030.50

Boring terminated prior to refusal due to equipment failure

EX. R/W

EX. R/W

2030.5

3202
15+50.00
12.0' Rt.
2029.4

Top of Soldier Beam & Facing = 2029.50

Approximate Final Grade

N.R.
(2014.80)

Bottom of Facing = 1994.00

Design Top of Rock = 1971.00

Highest Allowable Design Pile Tip = 1966.00

TOR = 1977.90
BOW = 1977.40

Boulders, cobbles or rock fragments were noted in most drillers logs.

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2120 2100 2080 2060 2040 2020 2000 1980 1960 1940 1920

-280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

15+50

0

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.15+50 TO STA.15+50

FILE NAME: N:\GEOTECH\HARLAN\US421PROFILES\L-003-2019 - RICK.DGN
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E-SHEET NAME: X026000S
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	15

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2026.3-2000.6 Overburden.

2000.6-1994.6 Shale: black, carbonaceous, thin bedded w/several low angle fractures, 22° bedding planes.

3105
15+92.98
14.6' Lt.
2026.30

KYROD 0 8 | REC 90 100 | SDI(LS) 97(5)

TOR = 2000.60

BOW = 1999.40

EX. R/W

EX. R/W

3105
15+92.98
14.6' Lt.
2026.30

2028.2

TOR = 2000.60

BOW = 1999.40

24
15+93.91
52.30' Rt.
2015.40

Top of Soldier Beam & Facing = 2027.00

Approximate Final Grade

R
(1991.90)

Bottom of Facing = 2005.00

Design Top of Rock = 1992.00

Highest Allowable Design Pile Tip = 1987.00

Boulders, cobbles or rock fragments were noted in most drillers logs.

2120 2100 2080 2060 2040 2020 2000 1980 1960 1940 1920

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

16+00

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.16+00 TO STA.16+00

FILE NAME: N:\GEOTECH\HARLAN\US421\PROFILES\L-003-2019 - RICK.DGN
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DATE PLOTTED: April 26, 2021
E-SHEET NAME: X027000XS
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	16

ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2025.6-2009.1 Cored Overburden: soil with rock fragments.

2009.-2006.1 Shale: dark gray to black, clayey, weathered at top water staining, limestone laminations, numerous slicken sides, dipping approx. 28-32 degress.

3203
16+50.00
12.0' Rt.
2025.6

TOR = 2009.14
BOW = 2006.34

15
16+65.66
101.4' Lt.
2068.70

R
(2053.40)

1
16+32.59
9.6' Rt.
2026.40
R
(2005.40)

EX. R/W

EX. R/W

3203
16+50.00
12.0' Rt.
2025.6

2025.3

Top of Soldier Beam & Facing = 2024.00

Approximate Final Grade

Bottom of Facing = 2011.00
Design Top of Rock = 2000.00
Highest Allowable Design Pile Tip = 1995.00

TOR = 2009.14
BOW = 2006.34

Boulders, cobbles or rock fragments were noted in most drillers logs.

2140 2120 2100 2080 2060 2040 2020 2000 1980 1960 1940 1920

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

16+50

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.16+50 TO STA.16+50

FILE NAME: N:\GEOTECH\HARLAN\US421PROFILES\L-003-2019 - RICK.DGN
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DATE PLOTTED: April 26, 2021
E-SHEET NAME: X028000S
MicroStation v10.15.0.74

COUNTY OF	ITEM NO.	SHEET NO.
Harlan	---	17

2088.6-2066.2 Overburden.
2066.2-2065.4 Shale: brownish black, in part clayey.
2065.4-2035.6 Shale: black w/brownish weathering, thin bedded w/several fragmented zones, several low angle fractures.
2035.6-2028.6 Shale: dark grey to black, decreasingly carbonaceous w/depth.

2021.5-2019.2 Overburden.
2019.2-2016.2 Shale: black w/brown water staining, clayey. 0.7' recovered.
2016.2-2010.2 Shale: black w/brown water staining, few high angle fractures, 19° bedding planes.

2022.2-2012.0 Overburden.
2012.0-2005.5 Shale: dark gray to black, thin bedded, water stained bedding planes and high angle fractures throughout. 15-20° bedding planes.
slightly weathered w/water staining @ 10.2'-16.7'
clay zone @ 13.8'-14.3'

	ROCK ROAD BED	REFILL	EMB. BENCH	GRAN. EMB.	COM	EMB	ROCK EXC	DT LT	DT RT

2008
17+00.33
131.5' Lt.
2086.60

Qu (psi)	KYROD	REC	
	0	67	SDI(JS)
	0	96	→ 81(4)
	0	60	→ 89(3)
	0	76	→ 95(3)
	0	60	→ 92(4)
	0	70	→ 97(4)
	0	96	→ 90(3)
5334	7	96	→ 98(4)
	0	100	

TOR = 2066.20
BOW = 2065.30

3106
16+92.55
0.9' Lt.
2021.50

KYROD	REC	
0	54	SDI(JS)
10	95	→ 99(5)

TOR = 2019.20
BOW = 2016.10

3009
15+91.28
21.9' Rt.
2022.20

KYROD	REC	
0	100	SDI(JS)
0	100	→ 92(4)

RDZ = 10.20'
TOR = 2012.00
BOW = 2012.00

2008
17+00.33
131.5' Lt.
2086.60

TOR = 2066.20
BWR = 2065.30

12
17+05.13
18' Lt.
2088.40

(2072.00)

EX. R/W

EX. R/W

2021.0

3106
16+92.55
0.9' Lt.
2021.50

3009
16+91.28
21.9' Rt.
2022.20

Top of Soldier Beam & Facing = 2020.00
Approximate Final Grade
Bottom of Facing = 2011.00
Design Top of Rock = 2010.00
Highest Allowable Design Pile Tip = 2005.00

TOR = 2019.20
BWR = 2016.10

TOR = 2012.00
BWR = 2012.00

Boulders, cobbles or rock fragments were noted in most drillers logs.

2140 2120 2100 2080 2060 2040 2020 2000 1980 1960 1940 1920

-300 -280 -260 -240 -220 -200 -180 -160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

17+00

SCALE: 1" = 20' HORIZONTAL
1" = 20' VERTICAL

US 421
STA.17+00 TO STA.17+00

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Special Note for Temporary Shotcrete Facing

Harlan Co. US 421; MP 22.8

1.0 DESCRIPTION

This special note addresses the requirements for the contractor to construct a temporary shotcrete facing for the tieback wall.

2.0 SCOPE OF WORK

This special note applies only if the contractor elects to construct a temporary shotcrete facing in lieu of using temporary timber lagging.

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 Documents include the Special Note for Tieback Walls with Appendices.
3.2 The "Kentucky Standard Specifications for Road and Bridge Construction", Current Edition with supplements. This document may be referred to as "Standard Construction 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 “AASHTO LRFD Bridge Design Specifications”, 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 tieback wall facing 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. **Electronic submittals in pdf format are required.**

4.1 Personnel Experience Requirements The Department considers a satisfactory record of experience in tieback wall design and construction important to complete this work successfully. Use personnel meeting the requirements below on this project and submit all information necessary to verify that they meet the requirements. **Submit this information no later than *fourteen (14)* 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 type (soil/rock) and number of anchors and soldier piles or drilled shafts.
5. The maximum wall design height.

The Department will review the experience requirements and respond to the Contractor within *fourteen (14) 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.

4.1.1 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 three (3) years, with work totaling at least 5,000 square feet of area.

4.1.2 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.

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

1. A written summary report that describes the overall shotcrete wall facing design.
2. Applicable code requirements and design references.
3. Details, dimensions, and schedules for all reinforcing steel, wire mesh, and/or attachment devices for shotcrete, cast-in-place or prefabricated facings.
4. Dimensions and schedules of all reinforcing steel including reinforcing bar bending details.

The Department will complete the review within *fourteen (14) 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 drawings. Review and acceptance of the drawings 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.

4.3 Construction and Materials Submittals Submit **no later than 30 calendar days after acceptance of all items referenced in Sections 4.1 and 4.2 above.**

1. 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.

The Department will complete the review within fourteen (14) calendar days after accepting the Design Calculations and Construction drawings or within fourteen (14) 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 drawings. 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.

5.0 DESIGN

Design shotcrete facing according to “AASHTO LRFD Bridge Design Specifications”, Current Edition, with all interims. Design permanent shotcrete facing to meet the requirements of Cast-in-Place Concrete facing in the Special Note for Tieback Walls. Refer to the Special Note for Tieback Walls for additional information to be used for the design of the shotcrete facing, including Wall Plan and Elevation Views and Loading Information.

5.1 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 Design Specifications, applicable FHWA guidance or other KYTC documentation for any specific items that may not be addressed herein or elsewhere in the Contract Documents.

5.2 Provide details in the construction drawings to ensure that temporary shotcrete does not extend beyond the front flange of the soldier beams.

6.0 MATERIALS

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

6.1 Temporary Shotcrete and Wall Drainage Materials

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 Superplastisizer	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
Section References are in the current Kentucky Standard Construction Specifications	

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.

6.1.1 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.

6.1.1.1 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 650 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.

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

6.1.1.3 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.

6.1.1.4 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.

6.1.2 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 nozzlemen 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.

6.1.2.1 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^2 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 18x18inches square and at least 4 inches thick.

6.1.2.2 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.

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 tieback wall is safely constructed.*** Perform the wall construction and excavation sequence in accordance with the Construction Drawings. 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 ground anchors while assuring stability of the excavated face and minimizing ground movements. Limit excavation in front of walls to 2 ft. below any ground anchor until that anchor has been completed, tested, and locked off. It is acceptable to excavate up to 4 ft. below an anchor in the immediate vicinity of an anchor as required to accommodate testing. Perform any local excavation lower than 2 ft. below the anchor within four (4) hours prior to testing. Leave temporary excavation lifts open no more than 24 hours without the temporary shotcrete facing installed. After applying temporary shotcrete, excavate the next lift only after the shotcrete strength reaches 2000 psi.

8.2 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, weep holes and horizontal drains (if required), drainage gutter, reinforcing steel and shotcrete for the temporary shotcrete construction facing. 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 a 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 “Retaining Wall” per “Square Foot”.

8.3 Wall Drainage Network Install and secure all elements of the wall drainage network as shown in the Construction Drawings, 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.

8.3.1 Geocomposite Drain Strips Install geocomposite drain strips centered between offset solider piles as shown in the Construction Drawings. Use drain strips at least 12 inches wide and place the geotextile side against the ground such that the width of drain strips is at least 12 inches per 5 ft. of center to center spacing between drain strips. 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.

8.3.2 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.

8.3.3 Connection Pipes and Weep holes 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 Drawings 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.

Provide weep holes, if required, through the construction facing to drain water from behind the facing. Install as shown in the Construction Drawings. Use PVC pipe to form the weep hole 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.

8.4 Temporary Shotcrete Construction Facing

8.4.1 Shotcrete Alignment and Thickness Control Ensure that the minimum thickness of shotcrete that shown in the Construction Drawings, 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 Drawings.

8.4.2 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.

8.4.3 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 to maximize compaction. Pay special attention to encapsulating reinforcement. Do not work rebound back into the construction.

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.

8.4.4 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.

8.4.5 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 Drawings. Clean and wet the surface of a joint before adjacent shotcrete is applied.

8.4.6 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.

8.4.7 Weather Limitations Protect the shotcrete if it must be placed when the ambient temperature is below 32^{o}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 700 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^{o}F or more than 95^{o}F.

Suspend shotcrete application during high winds and heavy rains unless suitable protective covers, enclosures or windbreaks 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.

8.4.8 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.

8.4.9 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
Spacing between reinforcing bars, from plan dimension	1 inch
Reinforcing lap, from specified dimension	1 inch
Thickness of shotcrete	0.4 inch

8.4.10 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.

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

8.6 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^2, perform a minimum of three flexure/shear pullout tests with the anchor located approximately mid-span between two adjacent soldier piles and with the soldier piles or other reaction points located approximately one-half the soldier pile spacing from the anchor. For facing areas in excess of 5000 ft^2, perform one additional flexure/shear pullout test for each additional 2500 ft^2 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.

9.0 MEASUREMENT AND PAYMENT

All work referenced in this Special Note is included in the unit bid price for "Retaining Wall" at the contract unit bid price per "Square Foot". Refer to the Special Note for Tieback Walls for detail Measurement and Payment information.

Special Note for Horizontal Drains

Harlan Co. US 421; MP 22.8

1.0 DESCRIPTION

Install horizontal drains at the approximate locations below in accordance with the requirements herein. The specific locations are subject to change.

Approximate Station Interval	Approximate Outlet Location	Estimated Number of Drains	Approx. Length (ft.)	Estimated Quantity (ft.)
10+50 to 17+00 Tieback Wall	Approximately 3 to 5 ft. above final grade in front of wall facing Install one drain between soldier piles in each wall bay. A pile spacing of 5 ft. was assumed for quantity estimate. In the first bay adjacent to Station 10+50 install two additional drains using a fan pattern in order to extend coverage to back station of 10+50. Submit proposed specific horizontal drain layouts and elevations with the submitted tieback wall construction drawings.	132	50	6600
10+00 to 17+50 Slope Left of Centerline	Approximately 3 to 5 ft. above ditch line on approximate 10 ft. centers Submit proposed specific locations on a plan view layout and cross-sections to install drains from within right-of-way considering drill rig accessibility, anticipated rock line elevations, etc. In intervals where drains cannot be installed in right-of-way use fan patterns to maximize coverage.	75	40	3000
			Total	9600

2.0 MATERIALS

Use only acceptable materials as specified in this note or contract.

2.1 Horizontal Drains Use 1½ inch slotted plastic pipe. Polyvinyl chloride, Schedule 80, Type II, PVC 2110 conforming to ASTM D 1785 with two (2) rows of slots cut circumferentially in the pipe on two (2) of the three points (120 degrees apart). For each row, the average number of slots must be 42 per foot plus or minus one slot per row, using 0.020-inch slots with a minimum of 1.10 in^2 of opening per linear foot of slotted pipe.

2.2 Fittings Use Type I high impact solvent weld type fittings made of rigid polyvinyl chloride having higher bursting pressure than the pipe.

2.3 Outlets Use non-slotted PVC plastic pipe meeting the same requirements as the slotted pipe.

3.0 PRE-BID REQUIREMENTS

3.1 On-Site Inspection Make a thorough inspection of the site prior to submitting a bid to become familiar with existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid as being evidence of the inspection and will not honor claims resulting from failure to inspect the site.

3.2 Preconstruction Submittals Either the tieback wall contractor or a subcontractor prequalified by the Department's Division of Construction Procurement for "DRILLING OF HORIZONTAL DRAINS" (I45) may install the horizontal drains. If a contractor other than the tieback wall contractor is to install the horizontal drains, submit a list containing at least five (5) projects in the last five (5) years on which the horizontal drain contractor has installed horizontal drains similar to those shown on the plans and proposal. List names and phone numbers of owner's representatives who can verify the contractor's performance on those projects. Submit information documenting the experience of personnel in construction horizontal drains. Submit the name of the person in charge having satisfactory experience.

4.0 CONSTRUCTION REQUIREMENTS

4.1 Installation of Horizontal Drains Drill and install horizontal drains as shown on the plans. Drains should be sloped to ensure positive drainage. Make adjustments as necessary due to outlet elevation, drill setup, and projected rock line intersection as approved or required by the Engineer. Locations and sequence of placement may be changed at the direction of the Engineer. Drill holes with rotary equipment capable of drilling 3 to 6 inch diameter holes up to 75 feet in length to designated lines and grades through soil and rock formation. Use drill rod with an inside diameter large enough to allow the 1½ inch diameter pipe to be installed through it.

Dispose of water used for drilling and water developed during drilling operations to insure no damage results to the work, roadway embankments, other highway features, or adjacent private property off the right of way. Conform to Sections 212 and 213 of the Standard Specifications.

During the drilling operations, determine the elevation of the upper end of the completed drain hole. Furnish all labor, materials, tools, equipment, and incidentals necessary for determining the elevations. Provide record of drain elevations to the Engineer.

Install plastic pipe by inserting it inside the drill rod and then retracting the drill rod so that the drilled hole is cased for the full length. Seal the entrance end of the plastic pipe. Solvent weld each joint of pipe when installed to form a continuous tube; telescoping will not be allowed. Plug the space between the drilled hole and the pipe tightly with earth for a length of at least 2 feet at the outlet of the hole.

Install 3 to 20 feet of non-slotted PVC plastic pipe meeting the same requirements as the slotted pipe at the outlet of the drain. Extend drain outlets a minimum of 3 feet beyond the soil face or tieback wall front face. The Engineer will not make direct payment for these extensions.

4.2 Right-of-Way Limits Limit activities to Right-of-Way, Permanent or Temporary Easements, and work areas secured by the Department through consent and release of adjacent property owners and be responsible for all encroachments onto private lands.

4.3 Property Damage Accept responsibility for all damage to public and/or private property resulting from work performed.

5.0 METHOD OF MEASUREMENT

The Engineer will measure the quantity of PVC pipe in linear feet of drilled and installed horizontal drains. Any additional pipe beyond the drilling limits is incidental. For drains installed in the tieback wall, the Engineer will pay will be from the front face of wall.

6.0 BASIS OF PAYMENT

The accepted quantity of 1½ inch slotted and non-slotted PVC pipe, excluding non-slotted material used in outlet drain pipe will be paid for at the contract unit price per linear foot. This will be full compensation for all labor, equipment, materials, and incidentals necessary to furnish and install the pipe as detailed on the plans, including all connections and fittings. Re-drill horizontal drain if not acceptable for payment due to the failure to meet specified tolerances.

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

Code	Pay Item	Pay Unit
22410EN	Horizontal Drains	Linear Foot

Special Note for Tieback Wall Quality Control Inspection

Harlan Co. US 421; MP 22.8

This Special Note is in addition to the requirements set forth in Section 113 of the Standard Specifications for Road and Bridge Construction, current edition.

The Federal Highway Administration's **Geotechnical Engineering Circular No. 4, Ground Anchors and Anchored Systems** (FHWA-IF-99-015) presents information on cement-grouted ground anchors and anchored systems for highway applications. Ensure that Quality Control field and office personnel have access to and are familiar with this document.

1.0 DESCRIPTION

This work consists of developing, furnishing, executing, and maintaining a Quality Control Plan (QCP) for the inspection of the tieback anchor installation, grouting and testing. QC personnel will answer directly to the Department's Section Engineer. The Department will be responsible for inspection of all other tieback wall construction such as installation of soldier piles, lagging, horizontal drains, etc.

The work includes but is not limited to inspecting, testing, and ensuring conformance to the contract. The Contractor is responsible for executing the QCP, which includes checking and tracking material shipments, construction inspection, and on-site materials testing pertaining to drilling, installing and testing of ground anchors. This includes ensuring conformance with applicable sections of the Special Note for Tieback Walls and appendices. The Department will be responsible for quality assurance, any off-site material testing, and inspection of other wall components such as soldier pile and facing construction and all other items in the contract.

2.0 QUALITY CONTROL PLAN (QCP) PERSONNEL

In addition to conforming to Subsection 113.03 of the Standard Specifications for Road and Bridge Construction, conform to the following requirements.

The QCP personnel's sole duty on the project will be implementing the QCP. Provide a QCP organization to be on the site at all times during the progress of work on the specified bid items, with complete authority to take any action necessary to ensure compliance with the Contract. These individuals must not be responsible for the production of the project.

Tieback ground anchor testing is considered production work performed by the Specialty Contractor's production personnel (extended creep, performance, and proof testing). However, the QCP personnel will be responsible for monitoring the tests, independently recording data, and reviewing the Contractor's test reports.

The size and composition of the QCP organization may vary as the job progresses but at all times must be compatible with the level of effort and capability required by the Contract requirements.

Any engineering firm that previously performed engineering analyses and/or design for this project in the last 10 years will not be permitted to perform QC Inspection, due to the potential for conflict of interest.

Original Quality Control Plan (QCP) Submittal for Acceptance Submit the QCP to the Engineer no later than 30 calendar days after receiving Notice to Begin Work and at least thirty 30 calendar days before beginning a specific work activity. The Department will return the QCP to the Contractor within 14 calendar days (estimated) after submittal with requests for changes, if applicable. The Contractor will then have seven (7) calendar days to correct and make changes and resubmit the QCP to the Engineer. Work cannot begin on an activity until after the Engineer has approved the QCP for that activity.

Subsequent Approvals Once the Contractor begins work under the approved QCP, continuously prosecute the work in accordance with the QCP. Changes must be approved by the Engineer prior to implementation.

Electronic submittals in pdf format are required.

2.1 QCP Personnel

As part of the QCP organization, provide a QCP Manager and specialized inspection personnel to assist and be responsible to the QCP Manager and to be physically present at the construction site during all activities covered by the QCP. Provide a QCP organization with a minimum of four (4) persons, as follows:

- 1 QCP Manager and 1 Alternate QCP Manager - Required
- 1 Lead Inspector and 1 Alternate Lead Inspector - Required
- Assistant Inspector(s) - Optional

The actual number of personnel required may be less than four (4) and will be dictated by the project size, complexity, and schedule, and is subject to Department acceptance. However, the four persons above must be available.

Provide personnel with the experience and credentials below. For lead and assistant inspectors, education may be substituted for experience as follows:

- A Bachelor's Degree in Engineering, Engineering Technology, Surveying, Construction Management, Geology, or other related technical field (at the discretion of the Department), will count for two (2) years of experience.
- An Associate's Degree in Engineering Technology, Surveying, Construction Management or other related technical field (at the discretion of the Department), will count for one (1) year of experience.

At the discretion of the Engineer, the Department may consider limited substitutions of similar experience (e.g. soil nails, micropiles, etc.) on a case-by-case basis. Do not begin ground anchor installation other than stockpiling of materials, until the Engineer receives and accepts the QCP.

2.1.1 QCP Manager and Alternate QCP Manager(s)

- Licensed Professional Engineer with a minimum of five (5) years of engineering experience in one or more of the following areas: construction, materials, geotechnical, or structure design. A Master's Degree in Engineering will count for one (1) year of experience.
- Experience on a minimum of three (3) projects involving the interpretation of pullout test results for drilled and grouted anchors such as soil and/or rock anchors, soil nails, rock bolts, etc.; or experience on a minimum of one (1) project involving the interpretation of pullout test results for drilled and grouted anchors such as soil and/or rock anchors, soil nails, rock bolts, etc. supplemented by design-related experience on a minimum of one (1) tieback ground anchor retaining wall project and other experience with interpretation

of geotechnical-related field test results (e.g. deep foundation load testing, geotechnical instrumentation, etc.)

- Field construction engineering and/or inspection experience on a minimum of three (3) geotechnical-related projects.

2.1.2 Lead Inspector and Alternate Lead Inspector(s)

- A minimum of five (5) years of construction and/or materials inspection experience showing evidence of supervisory experience on geotechnical-related projects.
- Construction inspection experience on a minimum of two (2) projects involving inspection of installation and pullout testing of drilled and grouted anchors such as soil and/or rock anchors, soil nails, rock bolts, etc.; or experience on a minimum of one (1) project involving inspection of installation and pullout testing of drilled and grouted anchors such as soil and/or rock anchors, soil nails, rock bolts, etc., supplemented by related experience such as post-tensioned concrete inspection, deep foundation load testing, etc.
- ACI Level I Concrete Field Testing Technician, supplemented by a minimum of one (1) other construction-related technician certification (NICET, KYTC, etc.).

2.1.3 Assistant Inspector(s)

- A minimum of two (2) years of construction and/or materials inspection experience on geotechnical-related projects.
- Experience on a minimum of one (1) project involving one or more of the of the following:
  - construction inspection of installation and pullout testing of drilled and grouted anchors such as soil and/or rock anchors, soil nails, rock bolts, etc.
  - construction inspection of drilled or driven deep foundations
  - drilling-related experience (e.g. geotechnical exploration drilling)
- ACI Level I Concrete Field Testing Technician.

2.2 QCP Personnel Duties Duties for the QCP personnel include, but are not limited to the duties described below.

2.2.1 QCP Manager and Alternate QCP Manager(s)

The QCP Manager must be available during construction activities as indicated on the QCP Plan. The QCP Manager may be removed from the project for noncompliance of quality products. Identify an Alternate QCP Manager in the QCP Plan to manage the QCP effort during the QCP Manager's absence. In no instance may the QCP Manager be absent and the Alternate QCP Manager

serve for more than a 2-week period without written permission from the Engineer.

The QCP Manager and Alternate QCP Manager must visit the project site at least one time during the first two (2) weeks of activities covered by the QCP (approximately 1 to 2 hours minimum per visit).

The QCP Manager and/or Alternate QCP Manager must review all review all QCP reports and documentation and submit letters to the Section Engineer documenting that they have done such.

2.2.2 Lead Inspector

The Lead Inspector or Alternate Lead Inspector must be present during all activities covered by the QCP. The Lead Inspector or Alternate Lead Inspector may request prior verbal approval for short absences from the Section Engineer or authorized representative. Approval will be subject to the experience and competency of the Assistant Inspector(s) on the project.

The Lead Inspector or Alternate Lead Inspector must review and sign all QCP reports and documentation prior to submittal to the department.

3.0 QCP Organization and Procedures

The QCP must include the following:

3.1 A description of the quality control organization, including an organizational chart showing lines of authority and acknowledgment that the QCP staff shall implement at least a 3-phase control system for all aspects of work as specified herein. Phase I Preparatory Phase prior to beginning work; Phase II Construction Phase during execution of work; and Phase III Acceptance of Work.

3.2 The name, qualifications in resume format, duties responsibilities, authorities, and certifications of the QCP Manager, Alternate QCP Manager, Lead Inspector and Alternate Lead Inspector and all other personnel.

3.3 A copy of the letter to the QCP Manager, signed by an authorized official of the Contractor that describes the responsibilities and delegates sufficient authority to adequately perform the functions of the QCP Manager, including authority to stop work that does not comply with the Contract. The QCP Manager must issue a letter of direction to all other various quality control representatives outlining

duties, authorities and responsibilities. Include copies of these letters in the QCP.

3.4 Procedures for managing submittals and approvals, including but not limited to, source of materials, shop drawings and subletting requests.

3.5 Procedures for tracking construction deficiencies from identification through acceptable corrective action shall be on the QCP. These procedures will establish verifications that identified deficiencies have been corrected. A Non-Conformance Report (NCR) with each item numbered consecutively will be prepared and signed by the QCP Manager at least weekly with recommended action, action taken and date corrected and filed separately. See Exhibit 1.

3.6 The scope of the project, including a list of definable work activities. A definable work activity is separate and distinct from other tasks, requires specific crews or Subcontractors, has different specifications, and has separate control requirements. It could be identified by different crews or Subcontractors, or it could be work performed by the same trade in a different environment. Each activity must have construction tolerances and workmanship standards identified for use by construction crews and sampling/testing frequencies identified for the QCP personnel. This list will be agreed upon during the coordination meeting.

4.0 CONTROL

QCP is the means by which the Contractor ensures the quality and construction, to include subcontractors and suppliers, and complies with the requirements of the Contract. At least three phases of control must be conducted by the QCP Manager for each definable work activity as follows:

4.1 Preparatory Phase Perform this phase prior to beginning work in an activity and include:

4.1.1 Review all the Contractor's Construction and Materials Submittals (including those required by the Special Note for Tieback Walls, steel mill test reports, tendon QC reports, shop drawings, etc.) and provide written comments signed by the QCP Manager and Lead Inspector, to the Department within 14 calendar days; include specific recommendations for acceptance, acceptance with revisions, or non-acceptance of each submittal.

4.1.2 Prior to the start each work activity, the Contractor and QCP Manager are encouraged to conduct a meeting with each crew to discuss in detail with each crewmember the quality standards and workmanship identified in the Preparatory Phase. The importance and role of each crew member in achieving quality should be stressed.

4.1.2 A review of each paragraph of applicable specifications.

4.1.3 A review of Contract Documents and Construction Drawings.

4.1.4 A check to assure that all materials, equipment, and subletting requests have been submitted, tested and approved.

4.1.5 A review of control inspection and testing requirement has been completed.

4.1.6 Examination of the work area to assure that all required preliminary work has been completed and complies with the Contract.

4.1.7 A physical examination to assure all required materials and equipment are on hand, and conform to approved shop drawings, or submitted data and are properly stored.

4.1.8 Notify the Department at least 24 hours prior to beginning aggregate or concrete work.

4.1.9 Preparation and approval of QCP staffing plan which corresponds to the working schedule.

4.1.10 Discussion of procedures for controlling quality of work, including repetitive deficiencies, with all contractor managers. Assure availability of appropriate documentation.

4.2 Construction Phase This phase includes the control measures from start to completion of a work activity.

4.2.1 Once the work zone has been established, check it to ensure conformance with the Contract requirements.

4.2.2 Monitor the producers' QC testing to ensure specifications are being met.

4.2.3 Inspect, test and document in accordance with the Contract requirements to ensure quality standards are being identified, corrective actions taken and documented using the NCR. The Lead Inspector will be responsible for completing a Daily Work Report (DWR) to document each day's activities on the retaining wall work. Submit the DWR to the Section Engineer or representative no later than the close of the next workday. Verify quality standards as work progresses and adjust the QCP.

4.3 Acceptance Phase

4.3.1 Pre-final Inspection At the completion of any work activity or any increment thereof, the QCP Manger, Contractor, and Section Engineer (or representative) must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Include such a list of deficiencies in the QCP documentation as required herein and include the estimated date by which the deficiencies will be corrected. The Contractor must ensure all items on this list have been corrected when the Final Inspection is scheduled.

4.3.2 Final Acceptance Inspection Final acceptance and any corrective work will be in accordance with the requirements of Section 105.12 of the Standard Specifications.

5.0 DOCUMENTATION

The Contractor and QCP personnel are advised that any deliberate action to the detriment of the QCP will be grounds for defaulting the Contract. This includes but is not limited to any deliberate omissions, deliberate cover-ups, or attempts by the Contractor to withhold information from the Department. Allow direct communication between QCP personnel and the Department. The Contractor and any Subcontractor involved in such detrimental action will not be considered for future bids until requalified.

Maintain current records providing factual evidence that required quality control activities and tests have been performed. Include the work of subcontractors and suppliers. Document extended creep, performance, and proof tests in accordance with the Special Note for Tieback Walls. Generate and update an anchor test summary similar to what is shown in Exhibit 2. Forms for these records must be approved by the Department. Submit all records with the last pay estimate, including but not limited to sketch books, and as-built plans. The Department will make the final payment only after all documentation has been submitted.

6.0 MEASUREMENT AND PAYMENT

The Department will pay for Quality Control at the contract Lump Sum amount. The Department considers payment as full compensation for all labor and costs associated with performing Quality Control. In addition to conforming to Subsection 113.09 of the Standard Specifications for Road and Bridge Construction, there are the following requirements. The Department will include payment for 20 percent Lump Sum for the QCP in the first estimate after acceptance of the QCP. The Department will pay the remaining 80 percent based on the percentage of work completed.

The Department will make additional payment for the QCP when time or extra work is added according to Subsection 104.03 for the work scope included in the QCP. Additional work added to other parts of the contract will not permit additional payment for the QCP.

Code	Pay Item	Pay Unit
02572	Quality Control	Lump Sum

SPECIAL NOTE FOR EASEMENTS

- Construction Easement
  - Station 8+10 to 10+34 – extended from R/W to 60 ft. Rt.
  - Station 10+34 to 20+00 – extended from R/W to 150 ft. Rt.
  - Station 9+50 to 18+00 – extended from R/W to 50 ft. Lt.

- Permanent Subterranean Easement for Anchors and Horizontal Drains
  - Station 9+50 to 18+00 – extended from R/W to 150 ft. Lt.

KENTUCKY TRANSPORTATION CABINET
Department of Highways
DIVISION OF MAINTENANCE

TC 71-14
Rev. 03/2009
Page 1 of 1

CONSENT & RELEASE

SECTION 1: LOCATION INFORMATION

COUNTY	**ROUTE #** US	**MILE POINT**		
Harlan	421	22.7 to 23		
ROAD NAME	**ADDRESS**	**CITY**	**STATE**	**ZIP**
Harlan-Hyden Road	5075 North U.S. Highway 421	Bledsoe	KY	40810

SECTION: AGREEMENT

WHEREAS, the Transportation Cabinet, Commonwealth of Kentucky, in order to protect Highway No. US 421 finds it necessary to do the following work:
KYTC will install a Tieback Wall System on US 421 from approximately MP 22. 7 to MP 22.85. A total of 650 linear feet of wall will be installed. To construct the permanent rock anchors for the Tieback Wall System, KYTC's will need to extend the permanent rock anchors a maximum of 70 feet beyond KYTC R/W. These anchors are needed to stabilize the wall system. A typical anchor system is shown in the attached appendices. The final design for the anchor system will not be finalized until after contract has been awarded but all work will be contained within the proposed limits. KYTC will provide Martin Marietta with the proposed plans as submitted from the successful bidder. KYTC will also utilize an additional 40 feet beyond R/W on the lower side (North) of US 421 to allow contractor access to work on installation of wall. KYTC will dress, seed, and fertilize disturbed vegetation with an appropriate seed mixture and fertilizer.
This work is necessary to repair a slide significantly impacting the section of US 421 below Martin Marietta's Quarry. KYTC shall take all reasonable steps to prevent injury to persons or property in the performance of these operations at Martin Marietta's site in Harlan County, KY. KYTC and its contractors shall comply with all laws and safety regulations for the control and safety of persons at the site. KYTC agree to defend, indemnify and hold Martin Marietta and its directors, officers agents and employees harmless from any and all damage to Martin Marietta's Property or injury to Martin Marietta's, KYTC, or its Contractor's employees or any other person arising out of or in connection with the presence of this work being performed on Bluegrass's premises or KYTC's performance of the work.

The work will be done on the land of: Bluegrass Materials Company, LLC

NOW, THEREFORE, in consideration of the above and the incidental benefits accruing to the property, I hereby consent and agree that the Transportation Cabinet may come upon the above property and do the work as set out above, and do further agree that I will assert no claim for damages against the Transportation Cabinet by reason of said work, but by these presents shall be forever barred.

DATE _____

PROPERTY OWNER

PROPERTY OWNER

WITNESS *(county superintendent/designated representative)*

APPROVED *(chief district engineer)*

Special Notes

Pavement Removal

All pavement removal on this project will be paid for by square yards of pavement removal. The bid item for pavement removal shall include removing a portion of the subgrade to allow # 2 stone and DGA to be placed back over the slide area. It is estimated that the pavement in this area is in excess of 12 inches. A total of 25.5 inches of asphalt and subgrade shall be removed throughout the slide area. The contractor has the option of removing by excavation or milling machine, however the bid item for payment will by per square yard. One lane of traffic shall be maintained while work is being performed.

If excavation is the choice for removal of pavement, the Beginning and Ending of Pavement Removal shall be saw cut the full depth of the existing pavement.

Crushed Agg # 2

A quantity of crushed aggregate # 2 has been set up to place a 15-inch roadbed throughout the slide area. The crushed aggregate shall be compacted and completely wrapped in Class 1 Geotextile Fabric meeting the requirements of Section 843.05 and Section 214 (for Subgrade Stabilization) of the Standard Specifications, current edition. (Note that the Section 214 reference is to the latest supplemental Specs revised September 2020.)

Culvert Pipes

The existing 30 inch box culvert at Station 11+45 shall be safe loaded with flowable fill. A quantity of flowable fill has been established in the proposal to safe load the box culvert.

The 18 inch culvert pipe at station 15+83 shall be removed and replaced with a 24 inch culvert pipe. The culvert replacement shall be done in a manner that will allow one lane traffic to pass at all times.

The contractor shall be responsible for the establishing the elevation and the alignment of the proposed culvert pipes. This is to allow for the culvert pipes to be constructed in a manner that will not impact the layout of the proposed tie back wall. The proposed culvert pipes shall be installed in the approximate location of the existing culverts. The pipe sheet included in the proposal is to show the location of the existing culverts and are for informational purposes only. The bid items for culvert pipes shall include all labor, equipment, design, and work necessary to install the proposed culverts.

Flowable Fill shall be used for all pipe installations on this project. The flowable fill shall be placed to the bottom of the proposed # 2 stone used for roadbed. The quantity of flowable fill required will be incidental to the bid item for culvert pipe.

The culvert pipe material used on this project shall be HDPE.

Special Note for Thermo Striping Application

Contrary to Section 714.02.05 of the Standard Specifications for Road and Bridge Construction, thermoplastic application will be required to be by ribbon gun at all locations that are to be applied over milled rumble strips in lieu of an extrusion application.

SPECIAL NOTE FOR STAKING

In addition to the requirements of Section 201, perform the following:

1. Contrary to Section 201.03.01, perform items 1-3 usually performed by the Engineer; and
2. Field survey the existing pavement in order to establish the existing cross slopes, transitions and profile. Irregularities in the existing pavement are to be eliminated with the construction of a smooth line and grade of the new asphalt pavement to ensure the best rideability possible.
3. Verify intersection and lane profile and alignment and prepare a Drainage Development Worksheet to provide for positive drainage upon completion of construction; and
4. Prior to incorporating into the work, obtain the Engineers approval of all designs and revisions to be provided by the Contractor; and
5. Produce and furnish to the Engineer "As Built" plans; and
6. Perform any and all other staking operations required to control and construct the work.

Special Note for Sulfate Resistant Cement

Harlan Co. US 421; MP 22.8

Any concrete or grout embedded into Chattanooga Shale must be protected against chemical attack. Use sulfate resistant cement (ASTM C-150 Type II) with a 20% replacement of class F fly ash for all soldier pile backfill concrete and tieback anchor grout. This supersedes any requirements in the Special Note for Tieback Walls or elsewhere in the contract documents. Include this requirement in the tieback wall construction drawings.

Special Note for Construction Milestone Dates

Harlan Co. US 421; MP 22.8

The Department has established the milestone dates below. The Department will assess liquidated damages of $1,000.00 per calendar day for any milestone dates that the Contractor does not meet.

Milestone Date	Requirements
December 15, 2021	Install all solider piles, and install and lock off (at the specified lock-off load) at least 20% of all anchors.
January 31, 2022	Install and lock off (at the specified lock-off load) at least 75% of all anchors with submitted documentation that at least 60% of all anchors meet the acceptance criteria in Section 10.9 of the Special Note for Tieback Walls.
May 31, 2022	100% completion and acceptance of all tieback wall components (including permanent facing and wall cap) and horizontal drains in wall.
July 31, 2022	Entirety of project completed

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

SPECIAL NOTE FOR PAVEMENT WEDGE AND SHOULDER MONOLITHIC OPERATION

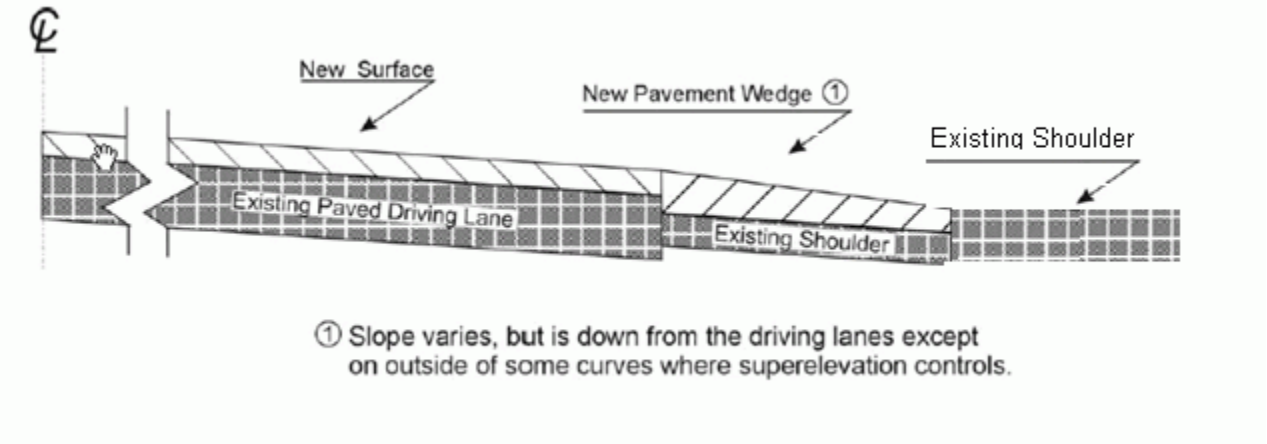
1.0 MATERIALS. Provide an Asphalt Surface Mixture conforming to Section 403 of the Standard Specifications, as applicable to the project, for the pavement wedge.

2.0 CONSTRUCTION. Place the specified Asphalt Surface Mixture on shoulders monolithically with the driving lane. Prime the existing shoulder with tack material as the Engineer directs before placing the wedge. Construct according to Section 403.03 of the Standard Specifications.

Equip the paver with a modified screed that extends the full width of the wedge being placed and is tapered to produce a wedge. Obtain the Engineer's approval of the modified screed before placing shoulder wedge monolithically with the driving lane.

The wedge may vary in thickness at the edge of the milled area in the shoulder. If the area to receive the shoulder wedge is milled prior to placement, during rolling operations pinch the outside edge of the new inlay wedge to match the existing shoulder elevation not being resurfaced. Unless required otherwise by the Contract, construct rolled or sawed rumble strips according to Section 403.03.08, as applicable.

The following sketch is primarily for the computation of quantities; however, the wedge will result in a similar cross-section where sufficient width exists. Do not construct a shoulder for placing the wedge unless specified elsewhere in the Contract.



3.0 MEASUREMENT. The Department will measure Asphalt Surface Mixture placed as the pavement wedge according to Section 403.

4.0 PAYMENT. The Department will make payment for the completed and accepted quantities of Asphalt Surface Mixtures on pavement wedges according to Section 403.

SPECIAL NOTES FOR GUARDRAIL

I. DESCRIPTION

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

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

(1) Site preparation; (2) 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. Delineators for Guardrail. Furnish Delineators for Guardrail according to the Sepia Drawings.

D. Erosion Control. See Special Notes 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 according to Section 719, except that the Contractor will take possession of all concrete posts and all concrete associated with existing bridge and/or guardrail end treatments. Locate all disposal areas off the Right of Way at sites obtained by the Contractor at no additional cost to the Department. 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, adding and compacting of 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 and 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. 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 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. Support cantilevered terminal sections with an additional post.

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. Delineators for Guardrail. Install delineators for guardrail according to the Standard and Sepia Drawings.

E. 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.

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 as a result of guardrail operations at no additional cost to the Department.

G. Right of Way Limits. The Department has not established 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.

H. 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 Special; Note for Waste and Borrow.

I. Final Dressing, Clean Up, and 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 according to the Special Notes for Erosion Control.

J. Erosion Control. See Special Notes 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 Guardrail, End Treatments, Bridge End Connectors, and Terminal Sections as applicable.

C. Guardrail. See Section 719.04.

D. Delineators for Guardrail. See the Sepia Drawing.

E. Erosion Control. See Special Notes for Erosion Control.

V. BASIS OF PAYMENT

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

B. Guardrail. See Section 719.05.

C. Delineators for Guardrail. See the Sepia Drawing.

D. Erosion Control. See Special Notes for Erosion Control.

SPECIAL NOTE FOR
ASPHALT MILLING AND TEXTURING

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

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

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

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS

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

1-3725 Typical Section Dimensions
01/02/2012

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL GENERAL

Except as provided herein, traffic shall be maintained in accordance with the current Standard Specification and the Standard Drawings, current editions. All items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic". All lane closures used on the project will be in compliance with the appropriate Standard Drawings. Cones WILL NOT be permitted for lane closures or shoulder closures. Channelizing drum spacing shall be 25-foot during all phases of construction.

Contrary to Section 106.01, Traffic control devices used on this project may be new, or used in like new condition, at the beginning of the work and maintained in like new condition until completion of the work. Traffic Control Devices used on this project must conform to the Manuel on Uniform Traffic Control Devices, current edition.

The contractor does have the option of using traffic signals to maintain traffic throughout the work area.

The existing pavement width in this area is approximately 23 feet, if additional width is needed to allow this work to be performed it will be the responsibility of the contractor to provide the additional width and to maintain the additional width at no additional cost to the department. The department will allow traffic to navigate the additional width on stone.

PROJECT PHASING & CONSTRUCTION PROCEDURES

Maintain a minimum of one traffic lane (mainline) in each direction at all times during construction. The clear lane width shall be 11 Feet. Pavement Edges that traffic is not expected to cross, except accidentally, should be treated as follows:

> Less than 2 inches – No protection required. Warning signs should be placed in advance and throughout the drop-off area.
>
> 2 to 4 inches – Place plastic barrels, vertical panels or barricades every 50 feet throughout drop-off area.
>
> Greater than 4 inches – Positive separation or wedge with a 3:1 or flatter slope needed. If there is 4 feet or more distance between the edge of pavement and drop-off, barrels may be used. Spacing on barrels should not exceed 25 feet throughout these areas.

If traffic should be stopped due to construction and an emergency vehicle arrives on the scene on an official emergency run, the Contractor shall make provisions for the passage of the emergency vehicle as quickly as possible.

Lane Closures

When lane closures are in place contractor shall monitor lane closures 24 hours a day to provide safe travel for the general public and to ensure protection of the work zone. All work is incidental to the bid item for “Maintain and Control Traffic”.

CHANGEABLE MESSAGE SIGNS

Provide changeable message signs in advance of and within the project at locations determined by the Engineer. If work is in progress concurrently in both directions or if more than one lane closure is in place in the same direction of travel, provide additional changeable message signs as directed by the Engineer. Place changeable message signs one mile in advance of the anticipated queue at each lane closure. As the actual queue lengthens and/or shortens, relocate or provide additional changeable message signs so that traffic has warning of slowed or stopped traffic at least one mile but not more than two miles before reaching the end of the actual queue. The Engineer may vary the designated locations as the work progresses. The Engineer will determine the messages to be displayed. In the event of damage or mechanical/electrical failure, repair or replace the Changeable Message Sign within 24 hours. The Department will measure for payment the maximum number of Changeable Message Signs in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual Changeable Message Signs 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 Changeable Message Signs or for signs the Engineer directs be replaced due to poor condition or readability. Retain possession of the Changeable Message Signs upon completion of the work.

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

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
- Nor 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 signs 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 thief (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
-

Standard Abbreviations

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

Word	Abbrev.	Example
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 DELWAYS 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 MIL/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
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.

Abbrev.	**Intended Word**	**Word Erroneously Given**
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

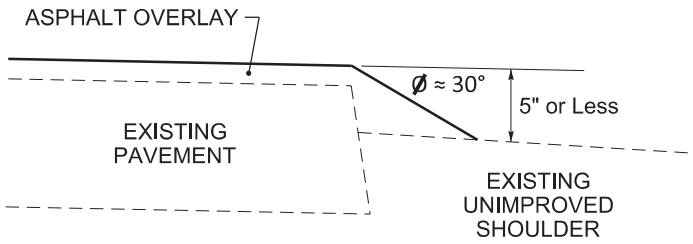
The following is a list of typical messages used on CMS. The list consists of the reason or problem that you want the driver to be aware of and the action that you want the driver to take.

Reason/Problem	Action
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
FREEWAY CLOSED	PREPARE TO STOP
FRESH OIL	REDUCE SPEED
HAZMAT SPILL	SLOW
ICE	SLOW DOWN
INCIDENT AHEAD	STAY IN LANE
LANES (NARROW, SHIFT, MERGE, ETC.)	STOP AHEAD
LEFT LANE CLOSED	STOP XX MILES
LEFT LANE NARROWS	TUNE RADIO 1610 AM
LEFT 2 LANES CLOSED	USE NN ROAD
LEFT SHOULDER CLOSED	USE CENTER LANE
LOOSE GRAVEL	USE DETOUR ROUTE
MEDIAN WORK XX MILES	USE LEFT TURN LANE
MOVING WORK ZONE, WORKERS IN ROADWAY	USE NEXT EXIT
NEXT EXIT CLOSED	USE RIGHT LANE
NO OVERSIZED LOADS	WATCH FOR FLAGGER
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

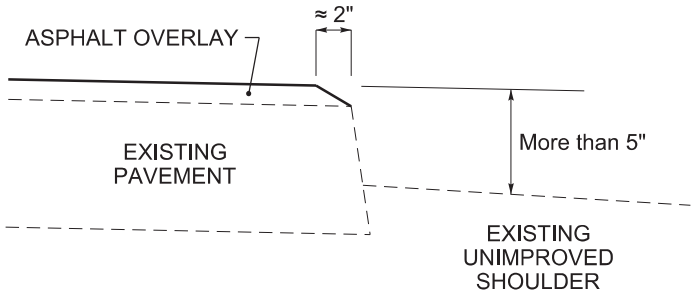
DURABLE PAVEMENT EDGE DETAIL

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



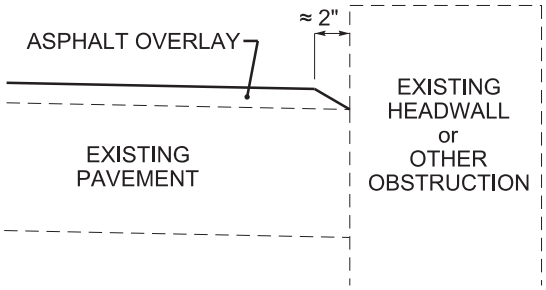
DURABLE PAVEMENT EDGE DETAIL

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



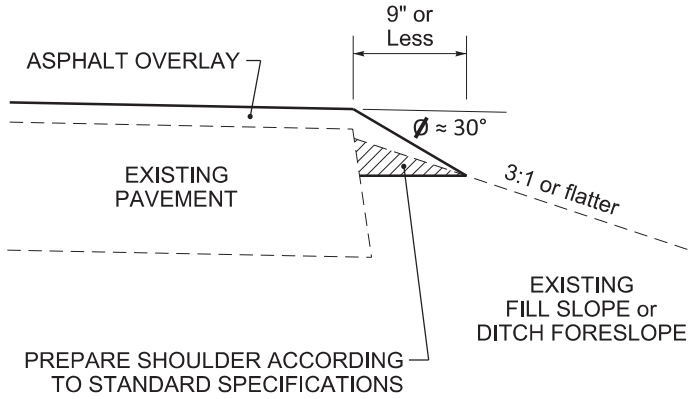
DURABLE PAVEMENT EDGE DETAIL

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



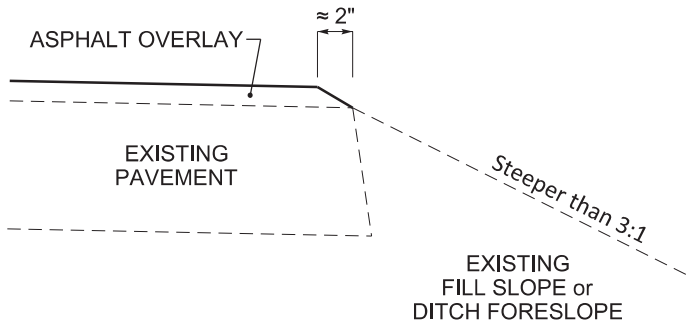
DURABLE PAVEMENT EDGE DETAIL

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



DURABLE PAVEMENT EDGE DETAIL

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



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 APROVED BY THE ENGINEER.

DRAWING NOT TO SCALE

DURABLE PAVEMENT EDGE DETAILS

SPECIAL NOTE FOR EROSION CONTROL

I. DESCRIPTION

Perform all erosion and water pollution control work in accordance with the Department's Standard and Interim Supplemental Specifications, Special Provisions and Special Notes, and Standard and Sepia Drawings, current editions, and 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-RI) 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, and applicable Special Provisions and Special Notes, and 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 Plan 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, and the construction phasing, methods and techniques to be utilized to complete the work. Be responsible for all erosion prevention, sediment control, and water pollution prevention measures required by the BMP for each site. Represent and warrant compliance with the Clean Water Act (33 USC Section 1251 et seq.), the 404 Permit, the 401 Water Quality Certification, and applicable state and local government agency laws, regulations, rules, specifications, and permits. Contrary to Section 105.05, in case of discrepancy between theses notes, the Standard Specifications, Interim Supplemental Specifications, Special 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. Remove sediment from silt traps before they become a maximum of ½ full. Maintain silt fence by removing accumulated trappings and/or replacing the geotextile fabric when it becomes clogged, damaged, or deteriorated, or when directed by the Engineer. Properly dispose of all materials trapped by erosion control devices at approved sites off the right of way obtained by the Contractor at no additional cost to the Department (See Special Note for Waste and Borrow).

As work progresses, add or remove erosion control measures as required by the BMP applicable to the Contractor's project phasing and 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.

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

Erosion Control Blanket. If required by the BMP, the Department will measure Erosion Control Blanket according to Section 212.04.07.

Sodding. If required by the BMP, the Department will measure Sodding according to Section 212.04.08.

Channel Lining. If required by the BMP, the Department will measure Channel Lining according to Sections 703.04.04-703.04.07.

Erosion Control. Contrary to Sections 212.04, 213.04, and 703.04 other than Erosion Control Blankets, Sodding, and Channel Lining, the Department will measure Erosion Control as one lump sum. The Department will not measure developing, updating, and maintaining a BMP plan for each site; providing a KEPSC-RI qualified inspector; locating,

furnishing, installing, inspecting, maintaining, and removing erosion and water pollution control items; Roadway Excavation, Borrow Excavation, Embankment In Place, Topsoil Furnished and Placed, and Spreading Stockpiled Topsoil; Topdressing Fertilizer, Temporary and Permanent Seeding and Protection, Special Seeding Crown Vetch, and Temporary Mulch; Sedimentation Basin and Clean Sedimentation Basin, Silt Trap Type "A" and Clean Silt Trap Type "A"; Silt Trap Type "B" and Clean Silt Trap Type "B"; Silt Trap Type "C" and Clean Silt Trap Type "C"; Temporary Silt Fence and Clean Temporary Silt Fence; Plants, Vines, Shrubs, and Trees; Gabion and Dumped Stone Deflectors and Riffle Structures; Boulders; Temporary Ditches and clean Temporary Ditches; Geotextile Fabric, and all other erosion and water pollution control items required by the BMP or the Engineer, but shall be incidental to Erosion Control.

V. Basis of Payment

Erosion Control Blanket. If not listed as a bid item, but required by the BMP, the Department will pay for Erosion Control Blankets as Extra Work according to Sections 104.03 and 109.04.

Sodding. If not listed as a bid item, but required by the BMP, the Department will pay for Sodding as Extra Work according to Sections 104.03 and 109.04.

Channel Lining. If not listed as a bid item, but required by the BMP, the Department will pay for Channel Lining as Extra Work according to Sections 104.03 and 109.04.

Erosion Control. Contrary to Sections 212.05 and 213.05, other than Erosion Control Blanket, Sodding, and Channel Lining, payment at the Contract lump sum price for Erosion Control, shall be full compensation for all materials, equipment, labor and incidentals necessary to complete the erosion and water pollution control work as specified in these notes, Sections 212 and 213, the Supplemental Specifications, applicable Special Provisions and Special Notes, and Standard and Sepia Drawings, including but not limited to developing, updating, and maintaining a BMP plan for each site; providing a KEPSC-RI qualified inspector; locating, furnishing, installing, inspecting, maintaining, and removing erosion and water pollution control items; Roadway Excavation, Borrow Excavation, Embankment In Place, Topsoil Furnished and Placed, and Spreading Stockpiled Topsoil; Topdressing Fertilizer, Temporary and Permanent Seeding and Protection, Special Seeding Crown Vetch, and Temporary Mulch; Sedimentation Basin and Clean Sedimentation Basin, Silt Trap Type "A" and Clean Silt Trap Type "A"; Silt Trap Type "B" and Clean Silt Trap Type "B"; Silt Trap Type "C" and Clean Silt Trap Type "C"; Temporary Silt Fence and Clean Temporary Silt Fence; Plants, Vines, Shrubs, and Trees; Gabion and Dumped Stone Deflectors and Riffle Structures; Boulders; Temporary Ditches and clean Temporary Ditches; Geotextile Fabric and all other erosion and water pollution control items required by the BMP or the Engineer.

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

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

RIGHT OF WAY CERTIFICATION

☐ Original ☒ Re-Certification

RIGHT OF WAY CERTIFICATION

ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
	Harlan		ER 9020(284)

PROJECT DESCRIPTION

US 421 Harlan County Multiple Ditch Erosions, washouts, Pavement Damage @ MP-1.00-1.4,MP 1.040 MP-1.300,MP-1.400, MP-19.350,MP-21.300,MP-21.390,MP-21.530

☒ **No Additional Right of Way Required**

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

☐ **Condition # 1 (Additional Right of Way Required and Cleared)**

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

☐ **Condition # 2 (Additional Right of Way Required with Exception)**

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

☐ **Condition # 3 (Additional Right of Way Required with Exception)**

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

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

Notes/ Comments (Use Additional Sheet if necessary)
Re-Certification neededde due to adding Mile Points that were omitted from original Certification.

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	Greg Combs
Signature		Signature	Greg Combs 2020.12.28 10:31:19 -05'00'
Date		Date	

Right of Way Director		FHWA	
Printed Name		Printed Name	No Signature Required as per FHWA-KYTC Current Stewardship Agreement
Signature	2020.12.28 10:58:12 -05'00'	Signature	
Date		Date	

UTILITIES AND RAIL CERTIFICATION NOTE

HARLAN COUNTY, ER 9020 (284)
EMERGENCY REPAIR – DITCH, SHOULDER, PAVEMENT REPAIR
US421 MP 1.04-21.53

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.

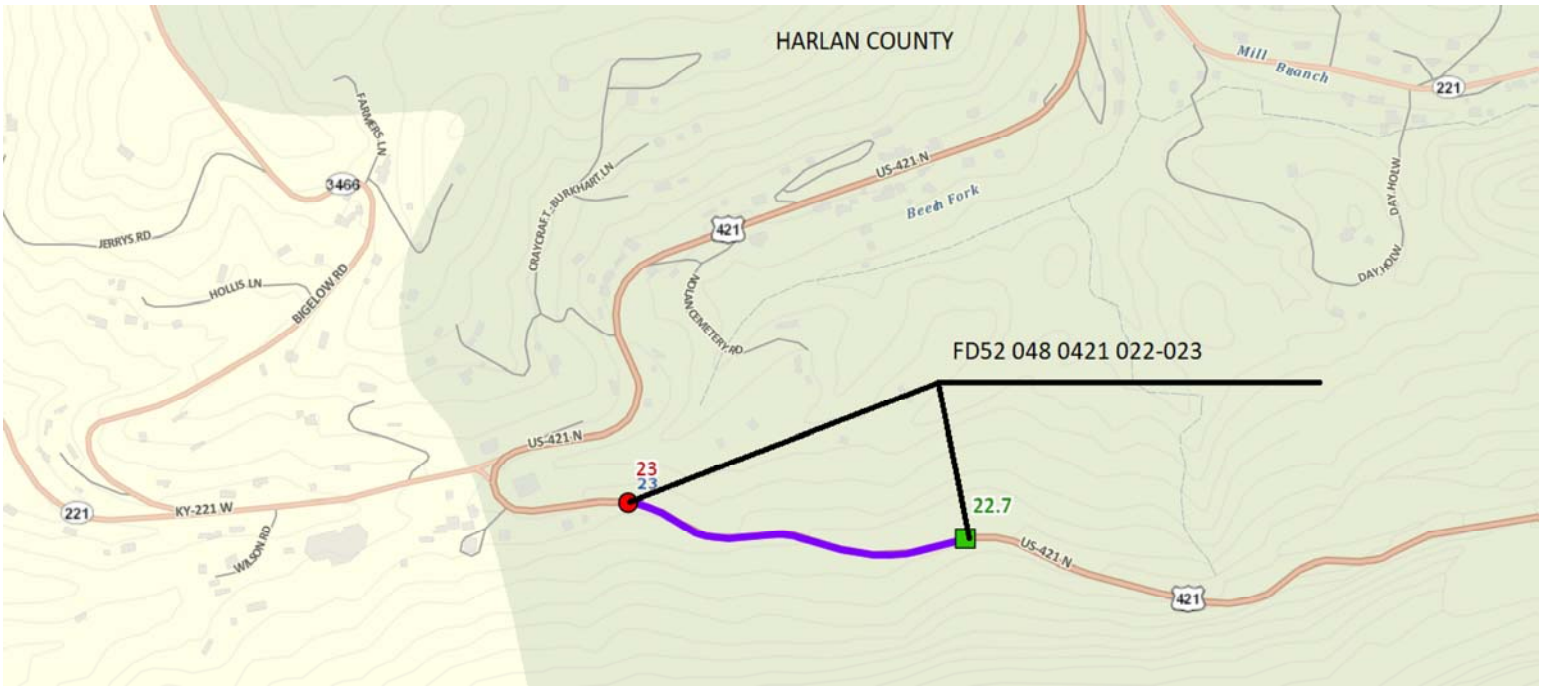
The utility facilities as noted in the previous section(s) have been determined using data garnered by varied means and with varying degrees of accuracy: from the facility owners, a result of S.U.E.,

UTILITIES AND RAIL CERTIFICATION NOTE

HARLAN COUNTY, ER 9020 (284)
EMERGENCY REPAIR – DITCH, SHOULDER, PAVEMENT REPAIR
US421 MP 1.04-21.53

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.


HARLAN COUNTY
Mill Branch
221
FARMERS LN
3466
JERRYS RD
HOLLIS LN
BIGELOW RD
CRAYCRAFT-BURKHART LN
US-421 N
421
Beech Fork
DAY HOLW
DAY HOLW
HOLAN CEMETERY RD
FD52 048 0421 022-023
US-421 N
23
23
22.7
221
KY-221 W
WILSON RD
US-421 N
421

Milling
Summary
FD52 048 0421 022-023

				Total	45

Milepoint	Comment	Length	Width	Avg Depth	Tons
22.700	Edge Key	150	30	0.75	20.62
23.000	Edge Key	150	30	0.75	20.62

FD52 048 0421 022-023

NEW GUARDRAIL							REMOVE GUARDRAIL				
LANE	END TREAT.	BEGIN MILEPOINT	END MILEPOINT	END TREAT.	LIN FEET	REMARKS	LANE	BEGIN MILEPOINT	END MILEPOINT	LIN FEET	REMARKS
North	TY 4A	22.762	23.065	TY 4A	1600.0		North	22.762	22.898	725.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
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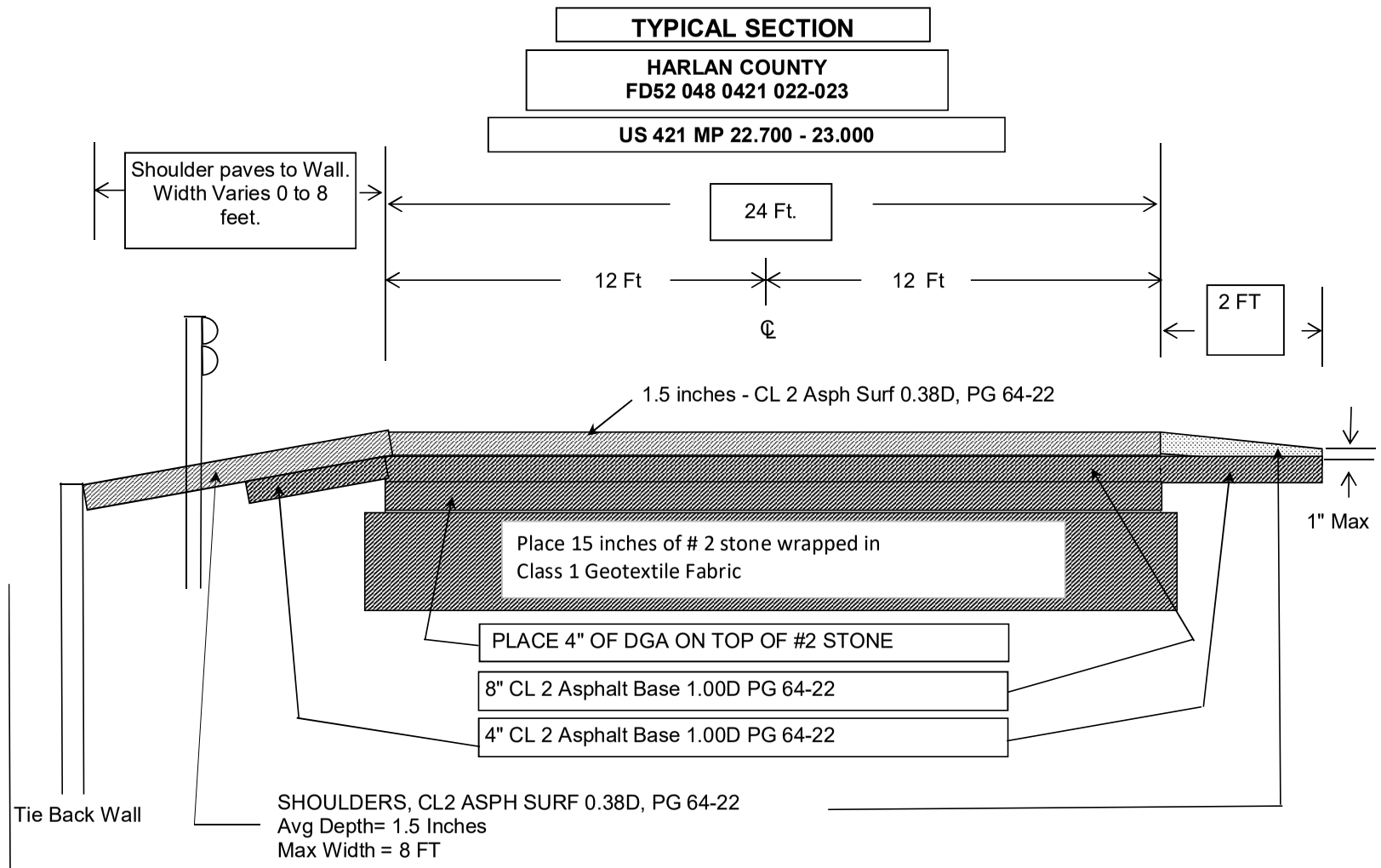
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
					0.0					0.0	
Totals					1600.0					725	

Type I	0.000
Type 2A	0.000
Type 3	0.000
Type 4A	2.000
Type 7	0.000
Terminal	0.000

TYPICAL SECTION

HARLAN COUNTY
FD52 048 0421 022-023

US 421 MP 22.700 - 23.000

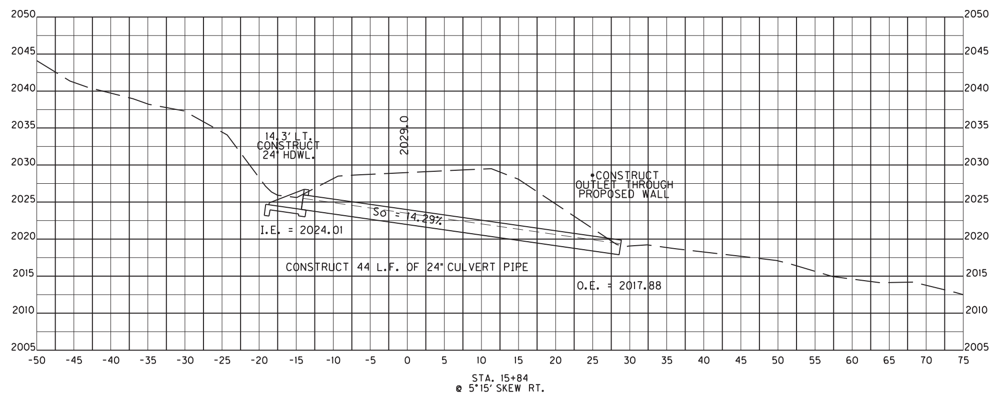


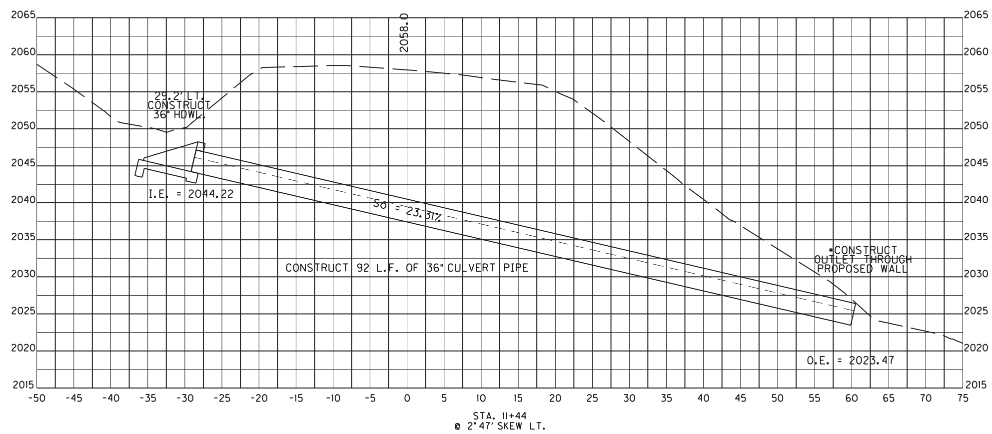
**NOTE: No Heavy Equipment is allowed within 3 Feet of the Tieback Wall. Use Hand-Tamping or other compaction method, as determined by Engineer

COUNTY OF	ITEM NO.
HARLAN	N/A

PIPE DRAINAGE SHEET 1 of 1

CULVERT PIPE 24"	CULVERT PIPE 36"	DESIGN pH LEVEL	MIN. COVER HEIGHT	MAX. COVER HEIGHT	FABRIC GEOTEXT. CLASS 2 FOR PIPE	HEADWALL 24"	HEADWALL 36"
LINEAR FEET	LINEAR FEET		FT	FT	SQYD	EACH	EACH
44		M	2.2	6.1	47	1	
	92	M	14.5	17.9	129		1





*NOTE: THE OUTLET LOCATIONS AND QUANTITIES ON THIS SHEET ARE APPROXIMATE AND FOR INFORMATION ONLY. THE ACTUAL OUTLET LOCATIONS AND QUANTITIES WILL BE DETERMINED ONCE THE DESIGN OF THE PROPOSED RETAINING WALL HAS BEEN COMPLETED BY THE CONTRACTOR.

SCALE: 1"=20'

PIPE DETAIL SHEET

SPECIAL NOTE FOR PRE-BID CONFERENCE
HARLAN COUNTY

The Department will conduct a Mandatory Pre-Bid Conference and Mandatory Field Review for the subject project on **Friday, July 9, 2021 at 10:00 AM prevailing time** at;

Kentucky Transportation Cabinet
Harlan County Maintenance Barn
635 Dayhoit Drive
Loyall, Kentucky 40854

Any company that is interested in bidding on the subject project or being part of a joint venture must be represented at the meetings. No individual can represent more than one company. At the conference and during the subsequent mandatory field review a roster will be taken of the representatives present. **ONLY COMPANIES REPRESENTED AT THE CONFERENCE AND FIELD REVIEW WILL BE ELIGIBLE TO HAVE THEIR BIDS OPENED AT THE DATE OF LETTING.**

The purpose of the conference is to familiarize all prospective bidders with the contract requirements of the contract.

Department of Highways officials present at the conference will answer questions concerning the project.

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 2020.*

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

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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/⇒⇒⇒/
/KEEP/LEFT/⇐⇐⇐/
/LOOSE/GRAVEL/AHEAD/
/RD WORK/NEXT/**MILES/
/TWO WAY/TRAFFIC/AHEAD/
/PAINT/CREW/AHEAD/
/REDUCE/SPEED/**MPH/
/BRIDGE/WORK/***0 FT/
/MAX/SPEED/**MPH/
/SURVEY/PARTY/AHEAD/
/MIN/SPEED/**MPH/
/ICY/BRIDGE/AHEAD/ /ONE LANE/BRIDGE/AHEAD/
/ROUGH/ROAD/AHEAD/
/MERGING/TRAFFIC/AHEAD/
/NEXT/***/MILES/
/HEAVY/TRAFFIC/AHEAD/
/SPEED/LIMIT/**MPH/
/BUMP/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:

Code	Pay Item	Pay Unit
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

2020 KENTUCKY STANDARD DRAWINGS

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 -- Revised May 1, 2012

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

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 contacting 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 administrating 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: KY20210107 01/01/2021

Superseded General Decision Number: KY20200107

State: Kentucky

Construction Type: Highway

Counties: Adair, Barren, Bell, Breathitt, Casey, Clay, Clinton, Cumberland, Estill, Floyd, Garrard, Green, Harlan, Hart, Jackson, Johnson, Knott, Knox, Laurel, Lawrence, Lee, Leslie, Letcher, Lincoln, Magoffin, Martin, McCreary, Menifee, Metcalfe, Monroe, Morgan, Owsley, Perry, Pike, Powell, Pulaski, Rockcastle, Russell, Taylor, Wayne, Whitley and Wolfe Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.95 for calendar year 2021 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 $10.95 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 2021. 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 in 29 CFR 5.5(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.

Modification Number	Publication Date
0	01/01/2021

SUKY2015-047 10/20/2015

	Rates	Fringes
BOILERMAKER	$ 24.65	12.94

BRICKLAYER
Bricklayer.....$ 22.90 8.50
Stone Mason.....$ 21.50 8.50

CARPENTER
Carpenter.....$ 24.90 14.50
Piledriver.....$ 24.55 14.50

CEMENT MASON.....$ 21.25 8.50

ELECTRICIAN
Electrician.....$ 29.36 10.55
Equipment Operator.....$ 26.90 10.31
Groundsman.....$ 17.79 8.51
Lineman.....$ 30.09 10.94
When workmen are required to work from bosum chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and T.V. towers, structural steel (open, unprotected, unfloored raw steel), and bridges or similar hazardous locations where workmen are subject to fall, except where using JLG's and bucket trucks up to 75 feet: Add 25% to workman's base rate for 50 to 75 feet, and add 50% to workman's base rate for over 75 feet.

IRONWORKER.....$ 27.56 20.57

LABORER
Group 1.....$ 21.80 12.36
Group 2.....$ 22.05 12.36
Group 3.....$ 22.10 12.36
Group 4.....$ 22.70 12.36
GROUP 1: Aging and Curing of Concrete (Any Mode or Method), Asbestos Abatement Worker, Asphalt Plant Laborers, Asphalt Laborers, Batch Truck Dumpers, Carpenter Tenders, Cement Mason Tenders, Cleaning of Machines, Concrete Laborers, Demolition Laborers, Dredging Laborers, Drill Tender, Environmental Laborer - Nuclear, Radiation, Toxic and Hazardous Waste - Level D, Flagmen, Grade Checkers, All Hand Digging and Hand Back Filling, Highway Marker Placers, Landscaping Laborers, Mesh Handlers and Placers, Puddler, Railroad Laborers, Rip-rap and Grouters, Right of Way Laborers, Sign, Guard Rail and Fence Installers (All Types), Signalmen, Sound Barrier Installer, Storm and Sanitary Sewer Laborers, Swampers, Truck Spotters and Dumpers, Wrecking of Concrete Forms, General Cleanup

GROUP 2: Batter Board Men (Sanitary and Storm Sewer), Brickmason Tenders, Mortar Mixer Operator, Scaffold Builders, Burner and Welder, Bushammers, Chain Saw Operator, Concrete Saw Operators, Deckhand Scow Man, Dry Cement Handlers, Environmental Laborers - Nuclear, Radiation, Toxic and Hazardous Waste - Level C, Forklift Operators for Masonry, Form Setters, Green Concrete Cutting, Hand Operated Grouter and Grinder Machine Operator, Jack Hammers, Lead Paint Abatement, Pavement Breakers, Paving Joint Machine, Pipe Layers - Laser Operators (Non-metallic), Plastic Pipe Fusion, Power Driven Georgia Buggy and Wheel Barrow, Power Post Hole Diggers, Precast Manhole Setters, Walk-behind Tampers, Walk-behind Trenchers, Sand Blasters, Concrete Chippers, Surface Grinders, Vibrator Operators, Wagon Drillers

GROUP 3: Air Track Driller (All Types), Asphalt Luteman and Rakers, Gunnite Nozzleman, Gunnite Operators and Mixers, Grout

Pump Operator, Powderman and Blaster, Side Rail Setters, Rail Paved Ditches, Screw Operators, Tunnel Laborers (Free Air), Water Blasters

GROUP 4: Caisson Workers (Free Air), Cement Finishers, Environmental Laborer - Nuclear, Radiation, Toxic and Hazardous Waste - Level A and B, miners and Drillers (Free Air), Tunnel Blasters, and Tunnel Mockers (Free Air), Directional and Horizontal Boring, Air Track Drillers (All Types), Powder Man and Blasters, Troxler and Concrete Tester if Laborer is Utilized

PAINTER		
All Excluding Bridges	$ 19.92	9.57
Bridges	$ 23.92	10.07
PLUMBER	$ 22.52	7.80
POWER EQUIPMENT OPERATOR:		
Group 1	$ 29.95	14.40
Group 2	$ 29.95	14.40
Group 3	$ 27.26	14.40
Group 4	$ 26.96	14.40

GROUP 1: Auto Patrol, Batcher Plant, Bituminous Paver, Cable-Way, Clamshell, Concrete Mixer (21 cu ft or over), Concrete Pump, Crane, Crusher Plant, Derrick, Derrick Boat, Ditching and Trenching Machine, Dragline, Dredge Engineer, Elevator (regardless of ownership when used for hoisting any building material), Elevating Grader and all types of Loaders, Hoe-type Machine, Hoisting Engine, Locomotive, LeTourneau or Carry-all Scoop, Bulldozer, Mechanic, Orangepeel Bucket, Piledriver, Power Blade, Roller (Bituminous), Roller (Earth), Roller (Rock), Scarifier, Shovel, Tractor Shovel, Truck Crane, Well Point, Winch Truck, Push Dozer, Grout Pump, High Lift, Fork Lift (regardless of lift height), all types of Boom Cats, Multiple Operator, Core Drill, Tow or Push Boat, A-Frame Winch Truck, Concrete Paver, Grade-All, Hoist, Hyster, Material Pump, Pumpcrete, Ross Carrier, Sheepfoot, Sideboom, Throttle-Valve Man, Rotary Drill, Power Generator, Mucking Machine, Rock Spreader attached to Equipment, Scoopmobile, KeCal Loader, Tower Cranes,(French, German and other types), Hydrocrane, Tugger, Backfiller Gurries, Self-propelled Compactor, Self-Contained Hydraulic Percussion Drill

GROUP 2: All Air Compressors (200 cu ft/min or greater), Bituminous Mixer, Concrete Mixer (21 cu. ft. or over), Welding Machine, Form Grader, Tractor (50 hp and over), Bull Float, Finish Machine, Outboard Motor Boat, Brakeman, Mechanic Tender, Whirly Oiler, Tract-air, Road Widening Trencher, Articulating Trucks

GROUP 3: Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4: Bituminous Distributor, Cement Gun, Conveyor, Mud Jack, Paving Joint Machine, Pump, Tamping Machine, Tractor (under 50 hp), Vibrator, Oiler, Air Compressor (under 200 cu ft per minute), Concrete Saw, Burlap and Curing Machine, Hydro Seeder, Power Form Handling Equipment, Deckhand Oiler, Hydraulic Post Driver

SHEET METAL WORKER	$ 20.40	7.80

TRUCK DRIVER		
Driver (3 Tons and Over), Driver (Truck Mounted Rotary Drill)	$ 23.74	14.50
Driver (3 Tons and Under), Tire Changer and Truck Mechanic Tender	$ 23.53	14.50
Driver (Semi-Trailer or Pole Trailer), Driver (Dump Truck, Tandem Axle), Driver of Distributor	$ 23.40	14.50
Driver on Mixer Trucks (All Types)	$ 23.45	14.50
Driver on Pavement Breakers	$ 23.55	14.50
Driver, Euclid and Other Heavy Earth Moving Equipment and Low Boy	$ 24.31	14.50
Driver, Winch Truck and A-Frame when used in Transporting Materials	$ 23.30	14.50
Greaser on Greasing Facilities	$ 24.40	14.50
Truck Mechanic	$ 23.50	14.50
Truck Tender and Warehouseman	$ 23.20	14.50

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the

cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is

based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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Fringe benefit amounts are applicable for all hours worked except when otherwise noted.

No laborer, workman or mechanic shall be paid at a rate less than that of a Journeyman except those classified as bona fide apprentices.

Apprentices or trainees shall be permitted to work as such subject to Administrative Regulations adopted by the Commissioner of Workplace Standards. Copies of these regulations will be furnished upon request from any interested person.

Before using apprentices on the job the contractor shall present to the Contracting Officer written evidence of registration of such employees in a program of a State apprenticeship and training agency approved and recognized by the U. S. Bureau of Apprenticeship and Training. In the absence of such a State agency, the contractor shall submit evidence of approval and registration by the U. S. Bureau of Apprenticeship and Training.

The contractor shall submit to the Contracting Officer, written evidence of the established apprenticeship-journeyman ratios and wage rates in the project area, which will be the basis for establishing such ratios and rates for the project under the applicable contract provisions.

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

The wages indicated on this wage schedule are the least permitted to be paid for the occupations indicated. When an employee works in more than one classification, the employer must record the number of hours worked in each classification at the prescribed hourly base rate.

OVERTIME:

Overtime is to be paid to an employee at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek. Wage violations or questions should be directed to the designated Engineer or the undersigned.

Director
Division of Construction Procurement
Frankfort, Kentucky 40622
502-564-3500

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (Executive Order 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

GOALS FOR MINORITY PARTICIPATION IN EACH TRADE	GOALS FOR FEMALE PARTICIPATION IN EACH TRADE
4.5%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4, 3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. The notification shall be mailed to:

Evelyn Teague, Regional Director
Office of Federal Contract Compliance Programs
61 Forsyth Street, SW, Suite 7B75
Atlanta, Georgia 30303-8609

4. As used in this Notice, and in the contract resulting from this solicitation, the **"covered area"** is Harlan County.

PART IV

INSURANCE

Refer to
Kentucky Standard Specifications for Road and Bridge Construction,
current edition

PART V

BID ITEMS

212264

PROPOSAL BID ITEMS

Report Date 7/16/21

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00212		CL2 ASPH BASE 1.00D PG64-22	1,525.00	TON		$	
0020	00301		CL2 ASPH SURF 0.38D PG64-22	410.00	TON		$	
0030	00356		ASPHALT MATERIAL FOR TACK	3.00	TON		$	
0040	02697		EDGELINE RUMBLE STRIPS	3,200.00	LF		$	
0050	06510		PAVE STRIPING-TEMP PAINT-4 IN	3,200.00	LF		$	
0060	06542		PAVE STRIPING-THERMO-6 IN W	3,200.00	LF		$	
0070	06543		PAVE STRIPING-THERMO-6 IN Y	3,200.00	LF		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0080	00001		DGA BASE	920.00	TON		$	
0090	00078		CRUSHED AGGREGATE SIZE NO 2	2,760.00	TON		$	
0100	02091		REMOVE PAVEMENT	2,315.00	SQYD		$	
0105	02545		CLEARING AND GRUBBING APPROX 1 ACRE (ADDED: 7-16-21)	1.00	LS		$	
0110	02562		TEMPORARY SIGNS	150.00	SQFT		$	
0120	02572		QUALITY CONTROL	1.00	LS		$	
0130	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0140	02671		PORTABLE CHANGEABLE MESSAGE SIGN	2.00	EACH		$	
0150	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0160	02677		ASPHALT PAVE MILLING & TEXTURING	45.00	TON		$	
0170	02726		STAKING	1.00	LS		$	
0180	04933		TEMP SIGNAL 2 PHASE	2.00	EACH		$	
0190	05950		EROSION CONTROL BLANKET	800.00	SQYD		$	
0200	08003		FOUNDATION PREPARATION	1.00	LS		$	
0210	08018		RETAINING WALL	18,612.50	SQFT		$	
0220	08711		BRIDGE CHAIN LINK FENCE-6 FT	650.00	LF		$	
0230	20610NC		INSTRUMENTATION	1.00	LS		$	
0240	21415ND		EROSION CONTROL	1.00	LS		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0250	00464		CULVERT PIPE-24 IN	44.00	LF		$	
0260	00468		CULVERT PIPE-36 IN	92.00	LF		$	
0270	01208		PIPE CULVERT HEADWALL-24 IN	2.00	EACH		$	
0280	01212		PIPE CULVERT HEADWALL-36 IN	2.00	EACH		$	
0290	01310		REMOVE PIPE	136.00	LF		$	
0300	02220		FLOWABLE FILL	22.00	CUYD		$	
0310	02602		FABRIC-GEOTEXTILE CLASS 1	5,400.00	SQYD		$	
0320	22410EN		HORIZONTAL DRAIN	9,600.00	LF		$	

212264

PROPOSAL BID ITEMS

Report Date 7/16/21

Section: 0004 - GUARDRAIL

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0330	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	33.00	EACH		$	
0340	02351		GUARDRAIL-STEEL W BEAM-S FACE	1,600.00	LF		$	
0350	02381		REMOVE GUARDRAIL	725.00	LF		$	
0360	02391		GUARDRAIL END TREATMENT TYPE 4A	2.00	EACH		$	

Section: 0005 - DEMOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0365	02568		MOBILIZATION	1.00	LS		$	
0370	02569		DEMOBILIZATION	1.00	LS		$	