CALL NO. 101

CONTRACT ID. 141079

SCOTT COUNTY

FED/STATE PROJECT NUMBER NHPP 0756(100)

DESCRIPTION I-75 INTERCHANGE

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 11/1/2016

LETTING DATE: December 12,2014

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME December 12,2014. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 4%

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

TABLE OF CONTENTS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 07

CONTRACT ID - 141079

NHPP 0756(100)

COUNTY - SCOTT

PCN - DE10500751479
NHPP 0756(100)

I-75 INTERCHANGE CONSTRUCT NEW I-75 INTERCHANGE AND APPROACH ROADWAY FROM CHAMPION WAY TO CHERRY BLOSSOM WAY IN GEORGETOWN.GRADE & DRAIN WITH ASPHALT SURFACE SYP NO. 07-00425.00.

GEOGRAPHIC COORDINATES LATITUDE 38:14:35.00 LONGITUDE 84:32:43.00

COMPLETION DATE(S):

COMPLETED BY 11/01/2016 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 Expedite Bidding Program available on the Internet web site of the Department of Highways, Division of Construction Procurement. (www.transportation.ky.gov/construction-procurement)

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 is advised that the Underground Facility Damage Protection Act of 1994, became law January 1, 1995. It is the contractor's responsibility to determine the impact of the act regarding this project, and take all steps necessary to be in compliance with the provision of the act.

SPECIAL NOTE FOR PIPE INSPECTION

Contrary to Section 701.03.08 of the 2012 Standard Specifications for Road and Bridge Construction and Kentucky Method 64-114, certification by the Kentucky Transportation Center for prequalified Contractors to perform laser/video inspection is not required on this contract. It will continue to be a requirement for the Contractor performing any laser/video pipe inspection to be prequalified for this specialized item with the Kentucky Transportation Cabinet-Division of Construction Procurement.

SPECIAL NOTE FOR COMPOSITE OFFSET BLOCKS

Contrary to the Standard Drawings (2012 edition) the Cabinet will allow 6" composite offset blocks in lieu of wooden offset blocks, except as specified on proprietary end treatments and crash cushions. The composite blocks shall be selected from the Cabinet's List of Approved Materials.

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. (See attachment)

10/29/12

Commonwealth of Kentucky
Finance and Administration Cabinet
OFFICE OF THE SECRETARY
Room 383, Capitol Annex
702 Capital Avenue
Frankfort, KY 40601-3462
(502) 564-4240
Fax (502) 564-6785

Steven L. Beshear
Governor

Lori H. Flanery
Secretary

SECRETARY'S ORDER 11-004

FINANCE AND ADMINISTRATION CABINET

Vendor Document Disclosure

WHEREAS, in order to promote accountability and transparency in governmental operations, the Finance and Administration Cabinet believes that a mechanism should be created which would provide for review and assistance to an Executive Branch agency if said agency cannot obtain access to documents that it deems necessary to conduct a review of the records of a private vendor that holds a contract to provide goods and/or services to the Commonwealth; and

WHEREAS, in order to promote accountability and transparency in governmental operations, the Finance and Administration Cabinet believes that a mechanism should be created which would provide for review and assistance to an Executive Branch agency if said agency cannot obtain access to documents that it deems necessary during the course of an audit, investigation or any other inquiry by an Executive Branch agency that involves the review of documents; and

WHEREAS, KRS 42.014 and KRS 12.270 authorizes the Secretary of the Finance and Administration Cabinet to establish the internal organization and assignment of functions which are not established by statute relating to the Finance and Administration Cabinet; further, KRS Chapter 45A.050 and 45A.230 authorizes the Secretary of the Finance and Administration Cabinet to procure, manage and control all supplies and services that are procured by the Commonwealth and to intervene in controversies among vendors and state agencies; and

NOW, THEREFORE, pursuant to the authority vested in me by KRS 42.014, KRS 12.270, KRS 45A.050, and 45A.230, I, Lori H. Flanery, Secretary of the Finance and Administration Cabinet, do hereby order and direct the following:

I. Upon the request of an Executive Branch agency, the Finance and Administration Cabinet ("FAC") shall formally review any dispute arising where the agency has requested documents from a private vendor that holds a state contract and the vendor has refused access to said documents under a claim that said documents are not directly pertinent or relevant to the agency's inquiry upon which the document request was predicated.

II. Upon the request of an Executive Branch agency, the FAC shall formally review any situation where the agency has requested documents that the agency deems necessary to

conduct audits, investigations or any other formal inquiry where a dispute has arisen as to what documents are necessary to conclude the inquiry.

III. Upon receipt of a request by a state agency pursuant to Sections I & II, the FAC shall consider the request from the Executive Branch agency and the position of the vendor or party opposing the disclosure of the documents, applying any and all relevant law to the facts and circumstances of the matter in controversy. After FAC's review is complete, FAC shall issue a Determination which sets out FAC's position as to what documents and/or records, if any, should be disclosed to the requesting agency. The Determination shall be issued within 30 days of receipt of the request from the agency. This time period may be extended for good cause.

IV. If the Determination concludes that documents are being wrongfully withheld by the private vendor or other party opposing the disclosure from the state agency, the private vendor shall immediately comply with the FAC's Determination. Should the private vendor or other party refuse to comply with FAC's Determination, then the FAC, in concert with the requesting agency, shall effectuate any and all options that it possesses to obtain the documents in question, including, but not limited to, jointly initiating an action in the appropriate court for relief.

V. Any provisions of any prior Order that conflicts with the provisions of this Order shall be deemed null and void.

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 Capacity Rating 102.10 Delivery of Proposals
102.08 Irregular Proposals 102.14 Disqualification of Bidders
102.09 Proposal Guaranty

CIVIL RIGHTS ACT OF 1964

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

NOTICE TO ALL BIDDERS

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

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

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

SECOND TIER SUBCONTRACTS

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

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

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

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

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

DBE GOAL

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

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

OBLIGATION OF CONTRACTORS

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

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

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

CERTIFICATION OF CONTRACT GOAL

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

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

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

DBE PARTICIPATION PLAN

Lowest responsive bidders must submit the *DBE Plan/ Subcontractor Request*, form TC 63-35 DBE, within 10 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 Project Code Number (PCN), 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, the DBE's certificate of insurance, and an affidavit for bidders, offerors, and contractors from the DBE to the Division of Construction Procurement. The affidavit can be found on the Construction Procurement website. If the DBE is a supplier of materials for the project, a signed purchase order and an affidavit for bidders, offerors, and contractors 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 and nine (9) copies of this information must be received in the

office of 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 DBE Liaison in the Office of Minority Affairs 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 our 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 submit certified reports on monies paid to each DBE subcontractor or supplier utilized to meet a DBE goal. These reports must be submitted within 14 days of payment made to the DBE contractor.

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.

The Prime Contractor should supply the payment information at the time the DBE is compensated for their work. Form to use is located at:
http://transportation.ky.gov/Construction/Pages/Subcontracts.aspx

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 is Melvin Bynes and the telephone number is (502) 564-3601.

Photocopied payments and completed form to be submitted to: Office of Civil Rights and Small Business Development 6th Floor West 200 Mero Street Frankfort, KY 40622

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.

06/20/2014

TRAINEES

In Compliance with the "TRAINING SPECIAL PROVISION" included in Part III of the Proposal, the Contractor will be required to employ a trainee(s) for this contract.

ASPHALT MIXTURE

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

DGA BASE

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

DGA BASE FOR SHOULDERS

Unless otherwise noted, the Department estimates the rate of application for DGA Base for Shoulders to be 115 lbs/sy per inch of depth. The Department will not measure necessary grading and/or shaping of existing shoulders prior to placing of DGA Base, but shall be incidental to the Contract unit price per ton for DGA Base.

Accept payment at the Contract unit price per ton as full compensation for all labor, materials, equipment, and incidentals for grading and/or shaping of existing shoulders and furnishing, placing, and compacting the DGA Base.

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.

JPC RIDE QUALITY

JPC Pavement Smoothness requirements shall apply on this project in accordance with Section 501 of the current Standard Specifications.

FUEL AND ASPHALT PAY ADJUSTMENT

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

ASPHALT PAVEMENT RIDE QUALITY CATEGORY A

The Department will apply Pavement Rideability Requirements on this project in accordance with Section 410, Category A.

OPTION A

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

MATERIAL TRANSFER VEHICLE (MTV)

Provide and use a MTV in accordance with Sections 403.02.10 and 403.03.05.

Special Note for

Guardrail End Treatment

Contrary to KYTC Standard Drawing RBR-020-05, the guardrail end treatment ET-Plus manufactured by Trinity Industries will not be permitted as an option for bid item “Guardrail End Treatment Type 1”.

COMMONWEALTH OF KENTUCKY

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

SCOTT COUNTY

I-75 SOUTHBOUND VMS SIGN AND CAMERA

LETTING: December 12, 2014
ITEM NUMBER: 7-425.00
PROJECT NUMBER:
FD52 105 0075 126-129

TABLE OF CONTENTS

PROJECT DESCRIPTION

GENERAL

This project includes furnishing and installing 1 overhead VMS on a relocated Truss and install WEB camera relocated 80 foot pole. This equipment will replace the traffic monitoring and advisory capabilities of the District 7.

This ITS Project complies with the requirements of 23 CFR 940. The ITS work to be performed is referenced in the current Kentucky 2014 Statewide ITS Architecture at Appendix C-4,5 and C-4 (Traffic Incident Management System ATMS08, and Traffic Information Dissemination ATMS06), and in the Updated Section 5 and Appendix B of the 2014 Addendum to the Original Kentucky ITS Business Plan.

EQUIPMENT AND MATERIALS

All equipment and materials shall be new, free of defects and damage.

SPECIFICATIONS AND WORKMANSHIP

Unless otherwise specified, all work shall conform to the following:

- Kentucky Standard Specifications for Road and Bridge Construction, latest edition.
- FHWA, Manual on Uniform Traffic Control Devices, latest edition.
- National Electrical Code, latest edition.
- National Electric Safety Code, latest edition.
- KYTC Department of Highways Standard Drawings, current editions.
- KYTC Department of Highways Sepia Drawings, current editions.
- International Municipal Signal Association (IMSA) Specification No. 51-7, current edition.
- AASHTO, Roadside Design Guide, latest edition.
- AASHTO, Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest edition.

All work shall be performed in a neat and professional manner. The Contractor shall remove debris and trash from work areas during construction. The Contractor shall restore areas to original condition and clean up all debris after construction.

DAMAGE TO EXISTING FACILITIES

The Contractor shall be responsible for locating all underground utilities prior to excavation. The contractor shall repair damage caused to any public or private facilities at his expense. Utilities include but are not limited to telephone, power, water, gas, fiber optic cable, underground vaults, roadway lighting wiring, traffic signal wiring, and roadway drainage systems.

MATERIALS LIST

The contractor shall provide an equipment list in Microsoft Excel format to the Engineer containing the following information:

- Type of equipment
- Field location
- Make
- Model
- Serial number
- Date of purchase
- Manufacturer contact information
- Equipment vendor contact information (if different)
- Date of Installation
- Date warranty expires

This list shall be provided to the Division of Traffic Operations prior to burn-in testing.

WARRANTY

The Contractor shall provide a copy of all equipment warranty information to the Division of Traffic Operations. The Contractor shall provide documentation from the manufacturer that ownership of the warranty is transferred to the following:

Kentucky Transportation Cabinet
Division of Traffic Operations
200 Mero Street
Frankfort, KY 40622

TESTING

The Contractor shall demonstrate proper functioning of all devices at the field cabinets.

A 30 day equipment burn-in test will begin after each device is accepted. If a device fails during the 30 burn-in day test the Contractor shall repair or replace the device and demonstrate that the device is functioning at the field cabinet and a new 30 day burn-in test will begin for that device. Each device will be accepted after it has successfully completed its 30 day test. The 30 day burn-in test will be conducted by TOC personnel in Frankfort from the operations center and consist of operational control of PTZ and video of the remote camera location and sign control.

SHOP DRAWINGS

All items that are used on this project shall have shop drawings sent to Engineer, who will contact Division of Traffic Operations for approval. All items shall be approved before purchase of said items.

AS-BUILT DRAWINGS

The Contractor, at the completion of the project, shall submit as-built drawings. As-built drawings shall be submitted in electronic format such as .pdf, .tiff, .dgn or other standard image format acceptable to the Engineer. As-built drawings may be scanned from marked up field plans or drawn in MicroStation. As-built drawings shall be scanned at a resolution that will allow them to be clearly legible on a computer display. As-built drawings shall include the exact location of all above ground equipment, underground conduit, wire, sensors and other equipment. Drawings shall indicate any changes to the design including changes to the numbers of conductors, wire gage, splices, additional conduit, etc. Conduit locations shall be drawn to scale or shall be dimensioned and referenced to permanent roadway features. Turns in conduit shall be referenced so that the conduit paths may be derived from the as-built drawings. Existing underground utilities shall be indicated on the drawings. Two copies of the drawings shall be submitted. One copy of the drawings shall be submitted to the Engineer. One copy of the drawings shall be submitted to the KYTC Division of Traffic Operations Design Services Branch. The Contractor shall correct any drawings that are deemed unacceptable to the Engineer. As-built drawings shall be delivered prior to burn-in testing.

SITE PREPARATION

DESCRIPTION

Site Preparation shall be performed in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Site Preparation shall include all materials required to access and protect the work area.

INSTALLATION

The Contractor shall coordinate with the Engineer prior to performing any site preparation work. This item includes excavation, guardrail removal, guardrail replacement, temporary ditch crossings, temporary barriers and clearing of debris and foliage. Salvaged materials may be used at the discretion of the Engineer. Site preparation shall be one per VMS sign location/Web camera location. There shall not be site preparation for locations where services are installed (this is incidental to the installation of the service).

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Site Preparation will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

ADVANCED GROUNDING SYSTEM

DESCRIPTION

Furnish and install Advanced Grounding System in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Unless otherwise specified, the grounding system provided will be as shown in "Advanced Grounding System Details". Minimum ground resistance reading needs to be 10 ohms or less as tested via the 3 point fall of potential test method.

If the installation of the advanced grounding system is not possible due to physical constraints of the location or other extenuating factors, the Traffic Engineer may allow for a standard ground installation. The standard installation would be with ground wiring consisting of solid bare copper #4 AWG and securely connected inside enclosures with #4 AWG copper clamp connectors. Nuts and washers securing the wire are not acceptable. All grounding shall meet the National Electric Code. Ground wires shall be exothermically welded to the ground rods. Ground rod clamps are not acceptable. The following devices shall be grounded to an array of two or three, 10' X 1" copper coated steel ground rods:

- Model 334/336 Enclosures (two ground rods required)
- Camera Poles (three ground rods required)
- Side-mounted VMS(two ground rods required)
- Service Locations(two ground rods required)

All ground rods in arrays shall have a minimum of 6' separation.

The resistance to ground shall be less than 10 Ohms as measured with an AEMC clamp on ground resistance meter or equivalent. The Contractor shall leave all exothermic welds exposed for inspection by the Traffic Engineer before backfilling.

INSTALLATION

All grounding shall be according to standards shown on "Advanced Grounding System Details". If contractor needs help with installation, they can contact Alltec Corporation for further assistance at 800-203-2658.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Advanced Grounding System will be measured for payment per each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

POLE BASE

DESCRIPTION

Furnish and install Pole Base in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Pole Base includes concrete, anchor bolts (bolts will be incidental to bid item 24751ED), reinforcing steel, and conduit within base. The Contractor shall submit to material testing at the discretion of the Engineer.

INSTALLATION

The Contractor shall stake all proposed pole base locations and obtain approval before excavation. The Contractor shall have utilities marked in the field prior to requesting approval. The Contractor shall grade and re-seed all disturbed areas and restore the area to the satisfaction of the Engineer. Poles located behind guardrail shall have a minimum 4' spacing from edge of pole to face of guardrail. Otherwise, poles shall be located as according to the plans sheets or a minimum of 30' from all driving lanes. This item includes all excavation including any special equipment required to install the base in rock. Near the pole base 3' wide x 3' long x 3' deep concrete pads will be required for the techinian to stand on while accessing the hand hole. Concrete for the pad is incidental to this item. This item shall include a vented rodent barrier furnished and installed by the contractor. See Vented rodent barrier detail.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Pole Base/Pole Base-High Mast will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

LOWERING DEVICE

DESCRIPTION

Lowering device shall be designed to support and lower/raise a CCTV camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations. The lowering device shall be compatible with the existing 80 foot pole. The lowering device system shall consist of suspension contact unit, divided support arm, pole adapter for attachment to a pole top tenon, pole top junction box, and camera connection box. The lowering device to be furnished shall be the product of a manufacturer with a minimum of two years of experience in the manufacturing of such systems.

MATERIALS

LOWERING DEVICE
Lowering device shall be [MG]² Model CLDMG2, Camera Lowering Systems CDP series or approved equal.

SUSPENSION CONTACT UNIT
The suspension contact unit shall have a load capacity 200 lbs. with a 4 to 1 safety factor. There shall be a locking mechanism between the fixed and moveable components of the lowering device. The movable assembly shall have a latching mechanism with a

minimum of two latches. This latching mechanism shall securely hold the device and its mounted equipment. The latching mechanism shall operate by alternately raising and lowering the assembly using the winch and lowering cable. When latched, all weight shall be removed from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall be weatherproof with a gasket provided to seal the interior from dust and moisture.

The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the power or video cabling. The only cable permitted to move within the pole or lowering device during lowering/raising shall be the stainless steel lowering cable. All other cables must remain stable and secure during lowering/raising operations.

The female side of the socket contact connector shall be made of thermosetting synthetic polymer. Each set shall contain 10 socket contacts permanently molded into the polymer body. There shall be 20 high conductivity brass socket contacts with permanently attached wire leads. The male side of the socket contact block connector shall contain high conductivity brass pin contacts with permanently attached wire leads molded into a polymer body. Each disconnect unit shall have two sets of contacts with ten contacts per set (20 contacts total). The pin and socket halves of the connector shall have current carrying and signal wires in groups of 5. All wire shall be 18 AWG stranded. Pin contact half of connector shall be made of thermosetting synthetic polymer. All pins and wires shall be molded in place. A complete disconnect unit shall have two identical sets of 10 contacts each (20 contacts total). Male Pin contact halves shall be mounted to lower portion of disconnect unit.

The portable lowering device and pulleys for the lowering device shall have sealed, self lubricated bearings, oil tight bronze bearings, or sintered bronze bushings. The lowering cable shall be a minimum 1/8 inch diameter stainless steel aircraft cable with a minimum breaking strength of 1740 pounds and shall be 19 x 7 or 7 x 19.

All electrical and video connections between the fixed and moveable portion of the contact block shall be protected from exposure to the weather by a waterproof seal to prevent degradation of the electrical contacts. The electrical connections between the fixed and movable lowering device components shall be designed to conduct high frequency data bits, one volt peak-to-peak video signals, and power requirements for operation of dome environmental controls. A direct coax connection is acceptable but not required.

The interface and locking components shall be made of stainless steel or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder-coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

INSTALLATION

CAMERA BALANCING
The Camera shall be weighted and balanced to assure that the alignment of pins and connectors are proper for the camera support to be raised into position without binding. The lowering unit shall have sufficient weight to disengage the camera and its control components in order that it can be lowered properly.

CAMERA CONNECTIONS (CCTV cable)
The Contractor shall be responsible for meeting the Ethernet (CAT6 cable) and power requirements for the camera (120 volt, 18 AWG minimum).

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Pole with Lowering Device will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

PORTABLE WINCH LOWERING TOOL

DESCRIPTION

Furnish Portable Winch Lowering Tool in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Portable winch lowering tool shall be made of durable and corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment. The tool shall consist of a lightweight metal frame and winch assembly with cable as described herein, a quick release cable connector, an adjustable safety clutch and a variable-speed, industrial-duty, battery powered drill motor (Dewalt DCD780 with two batteries, charger, case). The tool shall be compatible with the winch accessible through the hand hole of the pole. When attached to the winch, the tool shall support itself and the load assuring raising/lowering operations and provide a means to prevent freewheeling when loaded. The tool shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise/lower a capacity load. The tool shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism. The tool shall be equipped with a positive locking mechanism to secure the cable reel during raising/lowering operations.

INSTALLATION

No installation is required. Portable winch lowering tools shall be delivered to a location determined by the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Portable Winch Lowering Tool will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted

quantities. The Department will consider payment as full compensation for all work required under this section.

WEB CAMERA ASSEMBLY

DESCRIPTION

Furnish and install Web Camera Assembly in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Web Camera Assembly shall be an Axis Network Dome Model Q6044-E or approved equivalent. This item shall include the color camera, zoom lenses, environmental enclosure, pan/tilt unit, housing, dome, parapet mount, and all mounting hardware, POE power cable, connections, and incidentals necessary to complete the work.

Proposed alternates shall be commercially available. The Contractor shall identify an installed site where the proposed alternate Web Camera Assembly has been operating for a period of at least one year in a similar climate region.

INSTALLATION

Web Camera Assembly shall be installed on a wood pole or steel strain pole as specified in the plans and in accordance with the manufacturer's instructions. Installation shall comply with all warranty provisions and warranty contract maintenance services. Installation shall comply with all local, state, and federal building, electrical and construction codes, and Motorola R-56 requirements. All wiring access to the Web Camera Assembly shall be through watertight fittings. Wiring access points shall be on the side or underneath components; no exposed top access is permitted. The Web Camera Assembly shall be installed so that the assembly is located on the side of the pole closest to the roadway when the camera is in its fixed position at the top of the pole. The contractor is responsible to verified all functions of the web camera through a laptop interface.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Web Camera Assembly will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

VIDEO SURVEILLANCE CONTROLLER

DESCRIPTION

Furnish Video Surveillance Controller in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Video surveillance controller shall be compatible with supplied Web Camera Assemblies. The controller shall include handheld installation display (Axis T8412 or approved equal) and video surveillance joystick (Axis 295 or approved equal) or as follows:

Handheld installation display

- 3.5 inch color LCD
- Resolution: 320x240
- Image settings: autosensing
- IP settings: Static IP address, DHCP
- 128 MB RAM
- Battery: rechargeable
- Connectors: BNC in, RJ-45, CAT-5 USB 2.0, PoE
- Local Storage: Micro SD card (should include 8 GIG Micro SD with reader)
- Accessories: Soft carrying case with sunshield, built-in stylus, terminal block for CAT-5, Ethernet cable, BNC cable , car charger 12 V DC, power supply.

Video Surveillance Joystick

- Hall-effect joystick with three axes
- PTZ compatible
- Joystick travel: X/Y-axis +- 18 degrees, Z-axis +- 40 degrees
- Housing: High impact ABS
- Power: Via USB interface (5V DC)
- Operating conditions: -25 to 85 degrees Celsius
- Approvals: EN 55024:1998, EN 55022, FCC Part 15 Subpart B Class B
- Connectors: USB A
- Supported protocols: USB 2.0, DirectX

INSTALLATION

There will be no installation required. Items should be delivered to TOC personnel.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Video Surveillance Controller will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

UNINTERRUPTIBLE POWER SUPPLY (RACK MOUNTED UPS)

DESCRIPTION

Furnish and install Uninterruptible Power Supply in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Uninterruptible Power Supply shall be provided emergency power to the load when the input power sources fails. The Uninterruptible Power Supply shall be APC UPS 1500VA USB RM 2U (networkable card AP9630) or approved equal. The Uninterruptible Power Supply shall be networkable and have the following technical specifications:

Output Power Capacity: 980 Watts/ 1440 VA
Nominal Output/Input voltage: 120 Volts
Efficiency at Full Load: 95%
Waveform Type: Sine Wave
Output/Input Connections: (6) NEMA 5-15R
Battery Type: Maintenance-free sealed Lead-Acid Battery with suspended electrolyte:leakproof

Interface Ports: DB-9 Rs 232, USB
Surge Energy Rating: 459 Joules
Filtering: Meets UL 1449
Mounting: shall be able to mount in 19" rack
Operating Environment: 0-40 degrees Celsius
Regulatory Approvals: CSA, FCC Part 15 Class A, UL 1778
Warranty: At least 3 year for repair or replace

Network card shall have the following:

Protocols: HTTP, HTTPS, IPv4, SMTP, SNMP v1, SNMP v3, SSH V1, SSH V2, SSL, TCP/IP, Telnet
Network Interface Connections: RJ-45 10/100 Base-T
Regulatory Approvals: AS/NZS 3548 (C-Tick) Class A, EN 55022 Class A, En 55024, FCC Part 15 Class A, GOST, ICES-003, VCCI Class A
Warranty: At least 3 year for repair or replace

INSTALLATION

Uninterruptible Power Supply shall be installed in 334/336 Cabinet as specified in the plans sheets. It shall be securely mounted the 19" frame which is included in supplied 334/336 cabinet. All cables, rack Mounting Brackets, Rack Mounting support rails shall be incidental to the item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Uninterruptible Power Supply will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

CONDUIT

DESCRIPTION

Furnish and install Conduit in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Conduit shall be rigid steel, schedule 40 PVC, or flexible, non-metallic conduit as specified. This item includes fittings, connectors, clamps, caps and other materials necessary for proper installation. The Contractor shall submit to material testing at the discretion of the Engineer.

INSTALLATION

All conduit installed above ground or below ground under pavement shall be rigid steel. All conduits installed below ground, not under pavement shall be PVC. Flexible, non-metallic conduit shall be used as required and shall be incidental to the project. Unused conduits shall be capped on both ends. Conduit containing wire or cable shall be sealed with a piece of steel wool and capped off with duct seal putty. All conduits shall be accessible inside junction boxes. All conduits shall have bushings included. If rigid steel conduit, the bushings shall be bonded together with other similar types of conduits.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Rigid Steel and PVC Conduit will be measured for payment per unit linear foot. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section. A direct measurement will not be made for flexible, non-metallic conduit. All flexible, non-metallic conduits shall be incidental to the project.

ELECTRICAL SERVICE

DESCRIPTION

Furnish and install Electrical Service in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Contractor shall coordinate with the local power company to determine the exact materials for the service. This includes but is not limited to conduit, meter base, stainless steel disconnect, fused cutout, ground rod, wire, 35 foot wood pole, 2 anchors, connectors, fittings and all associated hardware required to construct the service. For Jefferson/Oldham, The local power company has stated that all new services will be 3 wires and care should be taken to install the meter in a direction it can be easily read. Some locations will require an AWR meter.

INSTALLATION

The Contractor shall coordinate with the local power company for the exact location of the service. This item also includes all electrical inspection and other fees required to provide electrical service.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Electrical Service will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

MODEL 334 AND 336 ENCLOSURES

DESCRIPTION

Furnish and install Enclosure in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The two types of enclosures are Model 336 (36" H x 24" W x 22" D) and Model 334 (66" H x 24" W x 30" D). All enclosures shall be NEMA 3R rated. The enclosures shall include: all mounting accessories, access doors (minimum of two doors), ventilation, locking system, handles, door stops, rack assembly, light(s), shelves, drawer, and all required peripherals per the requirements of the contract documents and per the equipment submitted by the Contractor. **The contractor shall provide a cabinet, wiring, and all components that are approved as an assembly. This approved assembly shall be incidental to this item. Verification that the cabinet, wiring, and all components are an approved assembly shall be submitted to Central Office Traffic Operations**.

This item includes all excavation and any special equipment required to install the enclosure on a pole for a Model 336 enclosure or construct the concrete base for a Model 334 enclosure.

The Contractor shall provide a terminal facility harness by means of mating "MS" type connectors for interconnections of the field equipment specified. All cabinets of the same type shall be identical in size, shape and quality. In addition, the cabinets shall be equipped internally as specified herein and as required to suit the specific equipment specified on the plans.

Cabinets shall be of welded construction, using 0.125" minimum thickness 5052H32 or equivalent sheet aluminum. The equipment design shall utilize the latest available techniques, minimum number of different parts, subassemblies, circuits, cards and/or modules to maximize standardization and commonality.

Cabinets shall be provided with fully wired back and side panels with all necessary terminal boards, wiring harnesses, connectors and attachment hardware. All equipment shall be shelf or 19" rack mounted. Terminals and panel facilities shall be installed on the lower portion of the cabinet walls below all shelves.

Each field cabinet shall, at a minimum, be supplied with the following:

- Fan and Thermostat
- Left Side Power Distribution Panel
- Air Filter

- Adjustable Shelves (1-4 as needed for equipment submitted by the Contractor)
- Back Panel
- Right Side Panel
- Locking System
- Ground Bus (2)
- Terminal Blocks
- Duplex power outlet
- Drawer that slides out for supporting a laptop computer
- All necessary installation and mounting hardware

All external screws, nuts and locking washers shall be stainless steel; no self-tapping screws are permitted unless specifically approved by the Engineer. All screws, nuts and locking washers used internally shall be manufactured from corrosion resistant materials.

All parts of the cabinet shall be cleaned, smoothed and free from flaws, cracks, dents and other imperfections. The cabinet shall be rigidly constructed to provide vibration free operation of the field equipment when installed. The cabinets shall be dust and rain tight and capable of maintaining a dry internal condition when subject to rain and wind gusts.

All components shall be made of corrosion resistant materials such as plastic, stainless steel, aluminum or brass; or shall be treated with corrosion resistance such as cadmium plating or galvanizing. All materials shall be resistant to fungus growth and moisture deterioration.

Individual cabinet components shall be pre-assembled upon installation in the cabinet such that the components can be easily replaced in the field. Modules of unlike function shall be mechanically keyed to prevent insertion into the wrong socket or connector.

Panels shall be designed to mount in the cabinet on mounting studs. It shall not be necessary to remove the panel to replace any panel-mounted equipment. The panels shall be capable of supporting specified equipment mounted on the panel. A lower input termination panel shall be provided to terminate all input field wires.

Electronic components shall meet the requirements contained herein and shall, at a minimum, comply with EIA Specifications. No component shall be of such design, fabrication, nomenclature or other identification as to preclude the purchase of said component from a wholesale electronics distributor or from the component manufacturer.

Components shall be down-rated by 50 percent with regard to ambient temperature, applied voltage, and power dissipation. All circuits shall be designed for reliability and maximum performance.

The design life of all components, under continuous operating conditions in their circuit application, shall be a minimum of ten years.

Each component shall meet all of its specified performance requirements when the input power is AC, 60 Hz, single phase, 120 volts +/- 20 volts. The equipment shall be designed such that the failure of a particular piece of equipment will not cause the failure of any other.

The cabinets shall be furnished with a power distribution panel mounted on the lower left hand inside wall when facing the front of the cabinet. This panel shall include a 115 VAC, convenience, dual outlet with integral ground fault interrupt protected by a circuit breaker. The left panel shall have:

- Circuit Breaker(s)
- Radio Interference Suppressor
- Power Cable Input and Junction Terminals

Circuit breakers shall be approved and listed by UL. Each cabinet shall have, at a minimum, a circuit breaker to protect the lamp, vent fan, and dual outlet. In addition, a properly rated equipment circuit breaker(s) shall be provided for the equipment shown on the plans. At each cabinet that houses VMS control equipment, a 220 VAC circuit breaker, sized to suit the cables that provide power to the VMS pixels shall be furnished and installed. Breakers shall have a minimum interrupt capacity of 50 amperes.

Each cabinet shall be equipped with a radio interference suppressor installed at the circuit breaker. The suppressor shall provide a minimum attenuation of 50 dB over a frequency range of 200 kHz to 75 MHz. The suppressor shall be hermetically sealed in a case filled with a suitable insulation compound.

The suppressor terminals shall be nickel-plated, with brass studs of sufficient external length to provide space for connection of two appropriately sized conductors and shall be mounted such that the terminals cannot be turned in the case. The suppressors shall be designed for operation at the proper current ampere rating as determined by the Contractor per the equipment specified on the plans and shall be approved by UL and EIA.

Power distribution blocks suitable for use as a power feed and junction points shall be furnished and installed for two and three wire circuits. The line side of each circuit shall be capable of handling the specified number of and size of all wires.

Each cabinet shall include a fully wired equipment panel mounted on the lower rear inside of the wall of the cabinet. The back panel shall be utilized to distribute and properly interconnect all cabinet wiring related to the specific equipment. Each piece of equipment specified shall have its cable harness properly connected at terminal boards on the back panel. All functions available at the equipment connector shall be carried in the connector cable harness to a terminal board point on the back panel.

Wiring shall be provided for the equipment specified. All cabinet wiring, where connected to terminal strips, switches, radio interference suppressor, etc., shall be identified by the use of insulated pre-printed sleeving (wire markers) slipped over the wire before attachment of the lug or terminating the connection. The wire markers shall have a text label with sufficient detail so that a translating sheet is not required.

All wires shall be cut to the proper length before assembly. No wires shall be doubled back to take up slack. Wires shall be neatly secured with nylon lacing or cable ties. Cables shall be secured with nylon cable clamps.

The grounded side of the electric service shall be carried throughout the cabinet to the ground bus without a break.

All electrical connections in the cabinet shall have sufficient clearance between each terminal and the cabinet to prevent a leakage path or physical contact under stress. Where these distances cannot be maintained, barriers must be provided. All equipment grounds shall run directly and independently to the ground bus. The lay of the interconnect cable between the components must be such that when the door is closed, it does not press against the cables or force the cables against the various components inside the cabinet. Sufficient length of cable harnesses shall be provided to easily reach the electronic equipment placed anywhere on the shelves.

All wiring containing line voltage AC shall be routed and bundled separately and/or shielded from all low voltage (i.e. control) circuits. All conductors and live terminals or parts, which could be hazardous to maintenance personnel, shall be covered with suitable insulating materials.

All conductors used in the cabinet wiring shall be 22 AWG or larger with a minimum of 19 strands. The insulation shall have a minimum thickness of 10 MILS. All wiring containing line voltage shall be 14 AWG or larger.

The AC+, AC-, and equipment ground wiring shall be electrically isolated from the other by an insulation resistance of at least 10 Megohms when measured at 250 VAC. Return and equipment grounding wiring shall be color-coded white and green respectively.

Terminal blocks located on the panels shall be accessible such that it shall not be necessary to remove the electronic equipment from the cabinet to make a connection or perform an inspection.

Terminal blocks shall be two-position, multiple-pole, and barrier type. Shorting bars, along with integral marking strip, shall be provided. Terminal blocks shall be arranged such that they do not impede the entrance, training, or connection of incoming field conductors. All terminals shall be identified by legends permanently attached to the terminal blocks. Not more than three conductors shall be brought to any one terminal screw. No electrically live parts shall extend beyond the protection afforded by the barriers. All terminal blocks shall be located below the shelves.

AC terminal blocks shall be Underwriter's Laboratory approved for 600 volts AC minimum and shall be suitable for outdoor use. Terminals used for field connections or interwiring connections shall secure conductors by means of a nickel or cadmium plated brass binder head screw.

All connections to and from the electronic equipment shall terminate at an interwiring block. These blocks shall act as intermediate connection points for all electronic equipment inputs and outputs.

A varistor shall be installed across the thermostat used to control the fan to act as a surge and transient noise suppressor. The varistor shall be GE VI5OLAIOA, Stetron 250NRO7-1, Siemens SIOK150, or approved equal.

MOUNTING

Model 336 cabinets shall be pole mounted or mounted to an existing concrete wall as specified. Model 334 cabinets shall be mounted on a poured concrete base or on existing

concrete surfaces as specified. All holes drilled into existing concrete surfaces shall penetrate the concrete no more than 4 inches unless otherwise approved by the Engineer. Bolts inserted into any concrete surface shall be properly secured and epoxied, per manufacturer's recommendations. Prefabricated fiberglass bases used in lieu of poured concrete bases must be approved by the Engineer. Cabinet installation shall conform to the details shown. All cabinets shall be furnished with stainless steel mounting plates, nuts, bolts, washers and all other necessary hardware to mount the cabinet as shown or described.

DOORS

All cabinets shall be provided with doors in the front and back. Doors shall have secure gaskets to prevent the entrance of dust and moisture. Doors shall be sized to encompass the full area of the cabinet opening. Doors shall be provided with two stop positions to hold the door open at 90 degrees and 135 degrees. The stops shall hold the door securely open until released manually. The front door shall be hinged on the right-hand side by means of three butt hinges with 1/4" minimum stainless steel hinge pins.

VENTILATION

Cabinets shall be furnished with louvers properly designed to provide natural ventilation to the interior. The louver area shall be of sufficient size to permit the free flow of air corresponding to the rated capacity of the associated cabinet fan. A pleated media fiber filter shall be provided and shall cover all louvers.

Cabinets shall be furnished with an electric, thermostatically-controlled ventilation fan or fans mounted in the cabinet. The fan(s) shall have a rated capacity of at least 200 cubic feet per minute. The fan and cabinet ventilation louvers shall be located with respect to each other so as to direct the bulk of the air flow throughout the entire cabinet and, in particular, over the field equipment units. The thermostat shall be adjustable to turn on between 90 degrees and 120 degrees Fahrenheit.

LOCKING SYSTEM

Each door shall be furnished with a 3-point positive locking system. The lock for the door shall be a self-locking, heavy-duty, five-pin tumbler cylinder rim type. The handles shall be made of stainless steel and shall be provided with a padlock feature. Locks shall be keyed identically to Corbin #2. Two keys shall be provided for each cabinet.

LIGHT

A LED light shall be provided in front for all cabinets and also in the back for Model 334 cabinets. A panel mounted 40-Watt equivalent weatherproof LED lamp with an on-off switch shall be positioned to provide light to the face of the equipment installed in the cabinet.

SHELF/DRAWER/RACK

A removable 19" EIA rack shall be provided for mounting sub-assemblies in Model 334 cabinet. Adjustable shelves shall be provided to hold the equipment. Vertical shelf adjustment intervals shall be 2" maximum. The shelves shall be positioned from the top of the cabinet in accordance with the actual equipment configuration of the particular cabinet. All devices/sub-assemblies shall be mounted on the rack if possible. Otherwise, they shall be placed on the shelves.

A sliding drawer shall be provided in each cabinet. The drawer shall be installed below the shelves in a suitable position for placement of a laptop computer. The drawer shall have a nominal depth of 1" and a hinged lid.

LABELING

The letters "KYTC ITS" shall be permanently displayed along the top of each door on the outside of each cabinet. The letters shall be a minimum of 1" tall. The letters shall be die-cut or engraved into the metal before galvanizing and shall be readable after galvanizing. All excess galvanizing shall be brushed off. The location and description of the label must be shown on the shop plan submittal for the cabinets. Stenciling with paint or other markers is not permitted. If required information is placed on a steel plate, the plate must match the surface profile of the cabinet. The plate must then be welded completely around the plate before galvanizing. There shall be a 4" by 6" Arc Flash Warning sticker installed 3" above each door handle. The sticker shall be Metalcraft PLY695 Prem STYLEMARK Label with .007 thickness, with UV white polycarbinate material, and with MC53FL pressure sensitive adhesive. The sticker shall have two colors of black and custom color orange. See example below.

QUALITY ASSURANCE PROVISIONS

The following water spray test shall be performed on each empty cabinet: Water shall be sprayed from a point directly overhead at an angle of 60° from the vertical axis of the cabinet. This procedure shall be repeated for each of eight equally spaced positions around the cabinet for a period of not less than five minutes in each position. The water shall be sprayed using a domestic type-sprinkling nozzle at a rate of not less than one gallon per minute per square foot of the cabinet's surface area. The cabinet shall then be inspected for leakage. Evidence of water leakage shall be cause for rejection.

A manufacturer's certification of successful completion of the water spray test and that the cabinet conforms to these specifications shall be the basis of acceptance of the cabinet. Separate submission of test cabinets shall not be required.

MAINTENANCE

All components and assemblies shall be clearly identified with name, model number, serial number and any other pertinent information required to facilitate equipment maintenance.

All equipment shall be designed for ease of installation and maintenance. Location, accessibility, serviceability and features that will lead to simplified maintenance shall be a prime consideration. All component parts shall be readily accessible for inspection and maintenance. The only tools and test instruments required by maintenance personnel shall be simple hand tools and basic meters.

After the wiring is complete, all conduit penetrations into the cabinets shall be sealed in such a manner as to prevent rodents and insects from entering the cabinet. The conduit sealants and insect traps used shall be approved by the Engineer prior to installation.

DOCUMENTATION

Each field cabinet shall be supplied with three copies of the final cabinet wiring diagram. One copy shall be placed in a clear plastic envelope and left in the cabinet drawer. Two sets of Mylar plans shall be delivered to the Engineer.

INSTALLATION

Model 334/336 enclosure shall be installed in accordance with the plans and specifications. The Contractor shall stake all proposed enclosure locations and shall obtain approval of staked locations before excavation. A representative from the KYTC Division of Traffic Operations, Design Services Branch or the Traffic Engineer, District 7, will approve locations for all field devices. The Contractor shall have all utilities marked in the field prior to requesting approval. The Contractor shall allow two weeks to schedule this location approval with KYTC. KYTC approval of field device locations does not relieve the contractor from his responsibility to repair any damage incurred during construction. Enclosures located behind guardrail shall have minimum 4 foot spacing from edge of pole to face of guardrail. Otherwise, enclosures shall be located as specified on the plan sheets or a minimum of 30’ from all driving lanes. All materials shall be installed in a neat and professional manner. All pole mount cabinets shall be mounted approximately 42” from the ground. All 336 pole mounted cabinets shall a 3’ L x3’ W x4” D concrete pad install for each door. Concrete for the pad is incidental to the cabinets. The Contractor shall grade and re-seed all disturbed areas to the satisfaction of the Engineer. This item includes the furnishing and installing of Fastrac bait bag in each cabinet for rodent control.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Model 334/336 Enclosure will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

FIBER OPTIC CABLE AND FIBER TERMINATION RACK

DESCRIPTION

Furnish and install Fiber Optic Cable and Fiber Termination Rack in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The Contractor shall install specified fiber optic cable and distribution equipment using the stated installation procedures. The fiber termination rack shall include rack enclosure (Corning Fiber CCH01 or approved equal), panel modules 12 fiber (Corning Fiber CCHCP1259 or approved equal), and single mode patch cords (Corning Fiber VDX9YYS3FIS or approved equal).

This shall include furnishing and installing all materials, mounting hardware, and cabling necessary to construct a complete and functional system. This shall also include all labor, tools, equipment, and incidentals necessary to complete the work, including but not limited to integrated fiber optic termination units, connector modules, jumper cables, testing, and documentation.

Fiber optic cable shall be Optical Cable Company BX12 165AD SLX 900 OFNR or approved equal. Fiber optic cable, jumper cables, and distribution equipment shall be fabricated by a certified ISO 9001 manufacturer.

All fiber cable provided under this contract shall be from the same manufacturer utilizing identical specifications. Fiber cables shall be dielectric (constructed from non-metallic materials). Fiber cables shall contain single mode optical fibers, loose tube, filled with a water-blocking material, and shall be suitable for installation in underground conduit and field cabinets.

All optical fiber in the cable shall, at a minimum, comply with the following requirements:

- Min. Cladding diameter: 125+/- 1.0μm
- Core to cladding offset: 0.8μum maximum
- Maximum attenuation: 0.5 dB/km at 1310 nm
0.5 dB/km at 1550 nm
- Maximum chromatic dispersion: 3.2 ps/(nm x km) from 1285 nm to 1330nm
18 ps/(nm x km) at 1550 nm
- Fiber polarization mode dispersion: 0.5 ps/(km), 2 maximum
- Coating diameter: 245 μm +/- 10 μm

The change in attenuation for single-mode from 0° F to -150° F shall not exceed 0.2 dB/km at 1550 nm, with 80 percent of the measured values no greater than 0.1 dB/km at 1550 nm.

The cable design shall have a life expectancy of 20 years when installed to manufacturer's specifications.

Optical fibers shall be contained inside a loose buffer tube. Each buffer tube shall contain 12 fibers. The buffer tubes shall allow free movement of the fibers without fiber damage during installation or normal operation, including expansion and contraction of the buffer tubes. The diameter of all buffer tubes in a cable shall match.

The cable shall have a central member designed to prevent buckling of the cable.

The cable core interstices shall be filled with a non-nutritive to fungus, electrically non-conductive, water-blocking material such as water-swellable tape that is dry to the touch. The water blocking material shall be free from dirt and foreign matter.

The cable shall contain a least one ripcord under the sheath for easy sheath removal.

The cable shall have tensile strength members that minimize cable elongation due to installation forces and temperature. The cable shall withstand a 600 lb. tensile load applied per EIA-455-33. The change in attenuation shall not exceed 0.2 dB during loading and 0.1 dB after loading. The cable shall be rated for a minimum installed tensile service load of 200 lbs.

The cable shall be dielectric (with no armoring) and be either HDPE or MDPE. Jacketing material shall be applied directly over the tensile strength members and water-blocking material.

The markings on the fiber optic cable shall include cable length markings.

The fiber optic cable shall be capable of withstanding the following conditions without damage or decrease in function:

- Cable freezing per EIA/TIA-455-98
- Total immersion in water with natural mineral and salt contents
- Salt spray or salt water immersion for extended periods
- Wasp and hornet spray

Cable shall be furnished in one continuous length per reel and shall be free from optical splices. A minimum length of six feet on each end of the cable shall be accessible for testing.

Information either stenciled or lettered on the reel or provided on a weatherproof tag firmly attached to the reel shall include the following:

- Factory order number
- Job number
- Ship date
- Manufacturer's cable code
- Type of cable (single mode, outdoor, indoor)
- Beginning and ending length markings
- Measured length and attenuation

FIBER OPTIC DISTRIBUTION EQUIPMENT:

SC type Connectors shall used. The measured attenuation of the connector (inclusive of coupler and mated test connector) shall not exceed an average of 0.3 dB for all connectors provided. Any connector found in excess of 0.5 dB will be rejected. Reflectance shall be less than -40 dB, from 14° F to +140° F. The manufacturer shall have a program that periodically tests connectors to ensure that, after 1000 re-matings, the attenuation shall not change more than 0.2 dB.

The connector shall be able to withstand an axial pull of 25 lbs. with no physical damage to the connector and no permanent optical degradation more than 0.3 dB. Connectors shall be pre-wired by the manufacturer.

Fiber optic jumper cables shall, at a minimum, comply with the following requirements:

- Have less than 0.2 dB loss when subjected to EIA/TIA-455-1A, 300 cycles, 0.5 kg
- Have an Aramid yarn strength member
- Have a rugged PVC sheathing
- Have a minimum bend radius of 12.5 inches following installation, 25 inches during installation
- Have a minimum tensile strength of 100 lbs
- Have connectors with strain relief pre-wired by the manufacturer
- Comply with NEC requirements for indoor fiber optic cable

Jumper cables shall be either single or duplex. Duplex jumper cables shall have permanent markings to distinguish between the fibers or connectors.

Connector modules shall consist of a connector panel, couplers, and a protective housing. The measured attenuation of the connector module (inclusive of coupler, fiber, and mated ST test connector) shall not exceed an average of 0.3 dB for all connector modules provided. Any connector module found in excess of 0.5 dB will be rejected. Connector modules shall, at a minimum, comply with the following:

- Have 6 couplers for ST applications
- Have 12 couplers for SC applications
- Have a durable housing that provides physical protection and strain relief for the termination of multi-fiber cable to couplers
- Be easily installed and removed from the termination housing
- Be furnished with protective covers for couplers on the jumper cable side
- Comply with NEC requirements for indoor fiber optic cable

There shall be a fixed correlation between each buffered fiber color and coupler position for all connector modules. Fiber color shall meet the requirements for outdoor fiber optic cable.

Fiber optic termination units shall be properly sized for the required number of terminations subject to the minimum requirements stated for each configuration. The fiber optic termination units shall, at a minimum, comply with the following requirements:

- Be rack mounted

- Have front and rear doors or removable panels
- Have a top, bottom, and 4 sides that fully enclose the interior and protect its contents from physical damage
- Be manufactured using 16 gauge aluminum or equivalent and corrosion resistant
- Have provisions for neatly routing cables, buffer tubes and fan-out tubing
- Have cable management brackets or rings integral to the unit to secure and route cables from the connector modules to the vertical rack members while maintaining a minimum 1.5 inch cable radius

INSTALLATION

Fiber optic cable shall be installed in conduit and cabinets. Fiber optic cable shall be installed in accordance with the manufacturer's installation techniques and procedures. The Contractor shall furnish and install all jumper cables and termination equipment necessary to connect fiber optic cable to the equipment.

The Contractor shall install fiber optic cable as a continuous run, without splices, between the cable ends identified. The Contractor shall label fiber optic cables at each end of the cable run, at the points where the cable enters and exits the cabinet for mid-cable access locations, and in all junction boxes. Labels for fiber optic cable shall identify the cable number and the string numbers of the fiber contained within the cable.

Installation of fiber optic cable and jumper cables shall meet the minimum requirements of local building codes and NEC Article 770. Cable shall not be pulled along the ground, over or around obstructions, over edges or corners, or through unnecessary curves or bends. Bend radius criteria of 10 times the cable diameter no stress and twenty times cable diameter under stress shall not be exceeded. Manufacturer-approved pulling grips, cable guides, feeders, shoes, and bushings shall be used to prevent damage to cable during installation.

When cable is removed from the reel prior to installation, it shall be placed in a "figure-eight" configuration to prevent kinking or twisting. Care shall be taken to relieve pressure on the cable by placing cardboard shims at each crossover, by creating additional "figure-eights", or by an approved equivalent method.

Prior to the installation of any fiber optic cable in conduit, the Contractor shall provide the cable manufacturer's recommended and maximum pulling tensions to the Engineer. Included with these pulling tensions shall be a list of the cable manufacturer's approved pulling lubricants. Lubricants shall be used in quantities and in accordance with the procedures recommended by the lubricant manufacturer.

Prior to the installation of any fiber optic cable in conduit, all cable pulling equipment shall be approved by the Engineer. The cable pulling equipment shall include a meter to display pulling tension and a mechanism to ensure that the maximum allowable pulling tension cannot be exceeded at any time during installation.

The Contractor shall furnish attachment hardware, installation guides, and other necessary equipment, not specifically listed herein, as required to install the fiber optic cable.

Fiber optic cable in junction boxes shall be properly looped and attached to the sidewall.

Slack fiber optic cable shall be coiled, labeled, and attached to cable guides.

All fibers, including spares, shall be installed from the connector modules, terminated at the appropriate fibers, and secured neatly within the termination rack.

Fiber terminations shall be neatly and permanently labeled on the connector modules to designate transmit or receive.

Blank connector panels shall be of the same finish and manufacture as the connector modules and shall be installed for all unused connector module spaces.

Prior to the installation of jumper cables, the Contractor shall provide and maintain protective covers over the optical connectors and terminations. Protective covers on unused terminations shall remain.

Jumper cables shall be installed from connector modules to end equipment, and from end equipment to end equipment in multiple cabinet configurations. Jumper cables shall be secured to provide strain relief at both the connector module and the end equipment. Manufacturer recommended installation and minimum bend radius requirements shall be adhered to. Jumper cables shall be labeled at both ends.

Any approved splices shall be made using the fusion splice technique and shall not induce more than 0.1 dB attenuation for each splice nor 0.07 dB average for all splices. Splices that exceed 0.1 dB attenuation shall be re-spliced by the Contractor at no additional cost.

TESTING

Fiber optic cables shall be tested by the manufacturer in conformance with the procedures of TIA/EIA-526-7A. Submittal of test data shall include a summary sheet that clearly illustrates measured loss versus budgeted loss. Each test result on the summary sheet shall be identified by cable number(s) and begin and end locations. The Contractor shall identify any unacceptable losses and perform corrective work at no additional cost. The maximum permissible loss for cables other than jumpers, terminations, and connector modules is 0.05 dB. Any cable not compliant shall be replaced in its entirely and re-tested for compliance. A copy of the final, summarized, post-installation test results shall be placed in a protective sleeve approved by the Engineer and attached to the rack or door.

Bi-directional (OTDR) tests shall be conducted by the manufacturer for all string paths. The OTDR tests shall document the loss for each component (connector module, jumper cable, etc.). Short runs of fiber shall be tested using a 'lead-in' cable or an 'attenuator' to obtain proper readings from the OTDR. OTDR traces shall be submitted.

Each test shall be clearly annotated with the measured loss identified on the OTDR trace. All tests over 0.05 dB shall be identified on the summary sheet.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Fiber Optic Cable will be measured for payment per unit linear foot. Termination Fiber Rack will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

JUNCTION BOX

DESCRIPTION

Furnish and install Junction Box in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Junction box shall meet or exceed ANSI/SCTE 77-2007, tier 15. Junction box covers shall be marked "Traffic." The junction boxes shall be anchored in the ground with wood pole anchors (may have to be a rock anchor) and this anchor shall be attached to the side of the junction box on two sides (bolts/washers). Covers shall be attached with a minimum of two 3/8“ stainless steel hex bolts. The Lid should have a theft deterrent device that is equal to the LockDown lock assembly for bolt attachment. The junction box lid should be predrilled to install the theft deterrent device. All keys for this junction box shall be returned to the Central office Division of Traffic Operations.

INSTALLATION

Where required, junction box shall be oriented such that the dimensions comply with the NEC. Junction boxes used as pull boxes along a conduit run shall be spaced at a maximum of 250’. Junction boxes shall not be placed in ditch lines or in areas where standing water may accumulate. Junction box covers shall be flush with the finished surface. The Contractor shall restore all disturbed areas to the satisfaction of the Engineer. This item includes the furnishing and installing of Fastrac bait bag in each junction box for rodent control.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Junction Box will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

SURGE DEVICES

DESCRIPTION

Furnish and install video surge device, data surge device, power surge device, and RF surge device in accordance with the plans, specifications and Standard Drawings.

MATERIALS

GENERAL

Each surge device shall be compatible with the equipment it is protecting. Each surge device shall include cables, connectors, power supplies, and all incidentals required for operation.

VIDEO SIGNAL COAX CONDUCTOR SURGE DEVICE

Video Signal Coax Conductor Surge Device shall be EDCO CX12-BNC-Y or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 12 volts when subjected to a 3 kA, 8x20 microsecond wave
- Have a peak surge current of 20kA with 8x20 microsecond wave
- Have BNC connectors
- Pass signals from DC to 80 MHz with less than 3 dB insertion losses
- Be UL 497B listed

DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device shall be for RS 422 and RS 485 Communication conductors shall be EDCO PC642C-015 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 12 volts when subjected to a 1 kA 8x20 microsecond wave
- Have a peak surge current per wire of 10 kA with 8x20 microsecond wave
- Have a maximum inline resistance of 6 ohms
- Have a maximum attenuation of -3db at 50MHz

RS 232 COMMUNICATION DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device for RS 232 Communication conductors shall be EDCO PC642C-015 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 30 volts when subjected to a 1 kA 8x20 microsecond wave
- Have a peak surge current per wire of 3kA with 8x20 microsecond wave
- Have a maximum inline resistance of 6 ohms
- Have a maximum attenuation of -3 db at 0.5 MHz

100 BASE-T AND 10 BASE-T COMMUNICATION DATA SIGNAL CONDUCTOR SURGE DEVICE

Data Signal Conductor Surge Device for 100BaseT and 10BaseT Communication conductors shall be EDCO LCDP-30 or approved equal. This surge protector shall:

- Have a clamping voltage response time of less than one nanosecond
- Have a maximum clamping voltage of 30 volts when subjected to a 0.5 kA 8x20 microsecond wave
- Have a peak surge current per wire shall be 1kA with 8x20 microsecond wave

- Have a maximum attenuation shall be -3db at 100 MHz
- Have a N.E.X.T. worst pair of better than -40 db at 100 MHz
- Have a maximum attenuation of -3db at 0.5 MHz

POWER CONDUCTOR SURGE DEVICE
Conductor Surge Device for power carrying conductors shall be EDCO SHA-1210 or approved equal. This surge protector shall meet or exceed the following specifications:

- Nominal Line Voltage 120 V
- Peak Current 20,000 Amps
- Clamp Voltage 280 volt typical @ 20kA
- Response time <5ns
- Continuous Service Current 10 Amps max. 120 VAC, 60 Hz

RF ANTENNA COAX CONDUCTOR SURGE DEVICE
RF Antenna Coax Conductor Surge Devices shall meet all manufacturer recommendations for the particular use of the radio antenna coax conductors.

INSTALLATION

The Contractor shall supply surge devices in model 334/336 enclosures, VMS signs, on poles, and on sign trusses as specified on layout sheets. Surge devices shall be located in said equipment such that they are easily accessible for maintenance activities.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Surge Device will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

TRANSCEIVERS

DESCRIPTION

Furnish single channel video over fiber transceiver and single channel data over fiber transceiver to be located in cabinets and trusses for protection of and/or communications to CCTV camera cabinets, VMS Signs, and high mast pole installations.

MATERIALS

SINGLE CHANNEL DATA OVER FIBER TRANSCEIVER
Single Channel Data over Fiber Transceiver shall be IFS, DE7200-S or approved equal.

All fiber optic transceivers shall be supplied from a single manufacturer.

Fiber optic Ethernet media converters shall be provided. The system shall provide real-time 10/100 Base-T and 100 Base-FX performance. The transceiver shall be used as an Ethernet media converter supporting one Ethernet 100 Base-T electrical port and one Ethernet 100 Base-FX optical port. The transceiver shall have auto MDI/MDI-X operation that has the capability of being forced on. The transceiver shall be fully

compatible with all standard IEEE 802.3, 802.3u, and 802.3x Ethernet protocols. The transceiver shall have an enhanced mode to provide the back-off algorithm changed from IEEE standard 802.3 binary exponential to aggressive mode, enable half-duplex back-pressure, disable excessive collision drop, and enable jumbo frame for streaming media applications. The transceiver requirements shall be two single mode optical fiber. The transceiver shall have a substantially wide dynamic range so as to never require optical or electrical adjustments. Optical attenuators shall never be required. The transceiver shall provide local diagnostic indicators. The transceiver shall support a remote network management option providing full interoperability with industry standard SNMP/IP protocols. All transceivers shall be available in both card mount and surface mount versions. All transceiver shall have automatic, resettable, polymer fuses on all power rails that shall provide for automatic reset, as well as, transient suppression on all data I/O connections. All card mount transceivers shall have an internal DC power supply. A short circuit in one module shall not affect the operation of other modules powered from the common power supply. All card mount transceivers shall have the ability to be inserted into and removed from the communication management chassis without interrupting power and with no risk of damage to other modules or the communications management chassis during replacement. The system shall have an ambient operating temperature of -40°C to +74°C, an ambient storage temperature of -40°C to +85°C, a relative humidity ability of 0% to 95% (non-condensing), have an option for conformal coating, and a MTBF of > 100,000 hours. The transceiver shall meet or exceed NEMA TS-1/TS-2 and Caltrans Traffic Signal Control Equipment Specifications for operating temperature, humidity, mechanical shock, vibration, and voltage transient protection. The transceiver radiated emissions shall be compliant with FCC Part 15, Class B, and EN55022 specifications. The transceiver shall use lasers that are compliant with FDA Performance Standard for Laser Products, Title 21, Code of Federal Regulations Subchapter J.

SPECIFICATIONS

Data: One (1) channel, bi-directional

DATA SPECIFICATIONS

- Data Protocol: Ethernet
- Operating Mode: Half or full-duplex
- Enhanced or standard IEEE 802.3
- Data Rate: 10/100 Mbps
- Ethernet Compliance: IEEE 802.3, 802.3u, 802.3x
- Ethernet Isolation: 1500 VRMS, One (1) minute

OPTICAL SPECIFICATIONS

- Fiber Type: Single mode
- Wavelength: 1300/1550nm
- Number of Fibers: Two
- Optical Emitter Type: Laser
- Transmitter Output Power: 500µw (-3 dBm)

- Receiver Sensitivity: 5µw (-23 dBm)
- Optical Power Budget: 20 dB

STATUS INDICATOR SPECIFICATIONS

- Power
- Data Rate
- Auto-Negotiate
- Operating Modes
- Optical Link Detect

SINGLE CHANNEL VIDEO OVER FIBER TRANSCEIVER
Single Channel Video over Fiber Transceiver shall be IFS VADT/VADR 14130WDM or approved equal.

All fiber optic modules shall be supplied from a single manufacturer.

Digital fiber optic video and data transmitters and receivers shall be provided as required. The transceiver shall transmit a one-way, single channel of high resolution, true broadcast quality, real-time NTSC or PAL color video. The transceiver shall employ 10-bit digital encoding for transmission of these signals. The transceiver shall meet the RS-250C short-haul standard for video transmission. The transceiver shall provide bi-directional data supporting RS-232, RS-422, or 2 or 4-wire RS-485 data interfaces. The transceiver shall be transparent to all major data protocols (i.e., Manchester Encoding, Bi-Phase, NRZ, NRZI, etc.). The transceiver requirements shall be one single mode optical fiber. The transceiver shall have a substantially wide dynamic range so as to never require optical or electrical adjustments. Optical attenuators shall never be required. The transceiver shall provide local diagnostic indicators. The transceiver shall support a remote network management option providing full interoperability with industry standard SNMP/IP protocols. All transceivers shall be available in both card mount and surface mount versions. All transceivers shall have automatic, resettable, polymer fuses on all power rails that shall provide for automatic reset, as well as, transient suppression on all video and data I/O connections. All card mount transceivers shall have an internal DC power supply. A short circuit in one module shall not affect the operation of other modules powered from the common power supply. All card mount transceivers shall have the ability to be inserted into and removed from the communication management chassis without interrupting power and with no risk of damage to other modules or the communications management chassis during replacement. The transceiver shall have an ambient operating temperature of -40°C to +74°C, an ambient storage temperature of -40°C to +85°C, a relative humidity ability of 0% to 95% (non-condensing), have an option for conformal coating, and a MTBF of > 100,000 hours. The transceiver shall meet or exceed NEMA TS-1/TS-2 Equipment Specifications for operating temperature, humidity, mechanical shock, vibration, and voltage transient protection. The transceiver radiated emissions shall be compliant with FCC Part 15, Class B, and EN55022 specifications. The transceivers shall use lasers that are compliant with FDA Performance Standard for Laser Products, Title 21, and Code of Federal Regulations Subchapter J.

SPECIFICATIONS

Video: One (1) channel, one-way
Data: One (1) channel, bi-directional, RS-232, RS-422, or 2 or 4-wire RS-485

VIDEO SPECIFICATIONS

- I/O: 1 volt pk-pk (75 ohms)
- Bandwidth: 5Hz – 10 MHz
- Differential Gain: < 2%
- Differential Phase: < 0.7°
- Tilt: < 1%
- Signal-to-Noise Ratio (SNR): 67 dB @ maximum optical loss budget

DATA SPECIFICATIONS

- Data Interface: RS-232, RS-422, or 2 or 4-wire RS-485
- Data Format: NRZ, NRZI, Manchester, Bi-Phase
- Data Rate: DC – 230 kbps (NRZ)
- Bit Error Rate (BER): < 1 x 10-9 @ maximum optical loss budget
- Operating Mode: Simplex or full-duplex

OPTICAL SPECIFICATIONS

- Fiber Type: Single Mode
- Wavelength: 1300/1550nm
- Number of Fibers: One
- Optical Emitter Type: Laser
- Transmitter Output Power: 600µw (-2 dBm)
- Receiver Sensitivity: 3µw (-25 dBm)
- Optical Power Budget: 23 dB

STATUS INDICATOR SPECIFICATIONS

- Power
- Video Sync
- Data Receive
- Data Transmit
- Optical Link Detect

This item includes cables, connectors, power supplies, and all incidentals required for operation.

INSTALLATION

The Contractor shall single channel data over fiber transceivers and single channel video over fiber transceivers in Model 334/336 enclosures, VMS signs, on poles, and on sign trusses as specified on layout sheets. The Contractor shall be responsible for the transceivers working properly with other equipment.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Single Channel Data over Fiber Transceiver will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

TRANSFORMERS

DESCRIPTION

Transformer shall be installed where indicated on the plans.

MATERIALS

Transformers used at VMS locations/Web Cameras shall be 10 KVA, dry type, 480 VAC to 120 VAC step down units. Transformer shall be a weatherproof design for mounting without a separate enclosure.

INSTALLATION

Transformer shall be mounted on the structure as indicated in the plans.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The transformer will be measured for payment per unit each, complete and in place. This item includes all related wiring, connectors, conduits, fittings, hardware, special brackets and all other incidentals necessary to provide a functional unit.

TRENCHING AND BACKFILLING

DESCRIPTION

Trenching and Backfilling shall be performed in accordance with the plans, specifications and Standard Drawings.

MATERIALS

All trenches shall be marked with underground utility warning tape.

INSTALLATION

The Contractor shall be responsible for locating all underground utilities prior to excavation. The Contractor shall excavate the trench, place warning tape above the conduit, backfill the trench and restore all disturbed areas to the satisfaction of the Engineer. Backfill material shall be placed and compacted in lifts of 9 inches or less.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Trenching and Backfilling will be measured for payment per unit linear foot. The Department will make payment for complete, inspected, and accepted quantities. The

Department will consider payment as full compensation for all work required under this section.

VARIABLE MESSAGE SIGN

DESCRIPTION

Furnish and install Variable Message Sign in accordance with the plans, specifications and Standard Drawings.

This Specification describes minimum specifications for the VMS required by the contract. The Contractor shall provide all materials, software, and services necessary to deploy a VMS unit that fully complies with the requirements specified herein, including incidental items required for operation that may have been inadvertently omitted.

VMS shall be 3 lines by 24 characters. VMSs shall use amber LED displays to generate 18" characters. VMS enclosures shall be a walk-in type. Enclosure size shall be sufficient for a technician to replace the LED panels, power supplies, control computer, fans, heaters, filters and all other equipment from inside the VMS.

PRE-BUILD HARDWARE SUBMITTAL

A hardware submittal shall be provided prior to production of the equipment to verify that the design operates using the NTCIP. This test will be conducted by the KYTC ITS Integrator. The VMS manufacturer shall supply a VMS controller, power supply, three display modules, and any other equipment required for bench operation of the VMS unit. This equipment will be returned after testing is complete. The VMS manufacturer shall provide documentation and support for all NTCIP components unique to the design.

The pre-build submittal shall also include the following background information regarding the VMS manufacturer:

- Full corporate name
- Corporate address
- Contact person name, telephone number, fax number, and email address
- Names and qualifications of the primary project team members, including the following: sales person, project manager, product manager, application engineer, and manufacturing manager
- Number of years in business under the current corporate name
- Copy of the VMS manufacturer's in-house, quality management system. The in house quality management system shall be ISO 9001:2000 certified. Proof of this shall be submitted with the shop drawings
- Proof of certification of VMS manufacturer's welding procedure to ANSI/AWS D1.2/D1.2M-03 Structural Welding Code for Aluminum
- Proof of certification of all welders to ANSI/AWS D1.2/D1.2M-03 Structural Welding Code for Aluminum
- Name, phone number and address of ANSI/AWS Certified Welding Inspector
- General corporate literature
- VMS product literature

Documentation proving the VMS manufacturer complies with these specifications shall be provided with the pre-build technical submittal. This submittal shall also include references from three other states that have had NTCIP-compliant VMS from the manufacturer installed for a minimum of two years and project information for all of the manufacturer's VMS customers of the last five years, including:

- Equipment owner/operator agency name
- Contact person name, telephone number, fax number, and email address
- VMS unit name and location of operations control center (project name/number, roadway name/number, state, county, and country)
- VMS commissioning date (first date of successful on-site operation)
- VMS quantity
- VMS display pixel technology (LED, fiber optic, flip disk, etc.)
- VMS display matrix size (pixel rows by pixel columns) and type (full matrix, line matrix, or discrete character)
- VMS housing access type (walk-in, front, rear, or other specific access type)
- Communications protocol used (NTCIP or proprietary; if proprietary, provide a name or description)
- Type of communications backbone used (telephone, fiber optic, direct, etc.)
- NTCIP compliance test reports, including contact information, prepared by independent testing companies.

KYTC reserves the right to contact additional references. Any poor or unsatisfactory reference, as determined by KYTC in its sole and absolute discretion, may cause the LED VMS manufacturer to be rejected.

Experiences in the manufacture of other types of electronic sign products will not satisfy the requirements of this VMS specification. Other types may be, but are not limited to:

- Indoor signs of any size or type
- Portable or mobile signs of any size or type
- Neon signs
- Back-lit signs
- Rotating drum or plank signs
- Blank out signs
- Any type of sign that is not pixilated and cannot be programmed to display a nearly infinite quantity of messages
- VMS that have a pixel technology comprised of something other than high-intensity LEDs such as incandescent lamps, liquid crystal, fiber optic, flip disk, flip-fiber combination, and flip-LED combination
- VMS with a display matrix smaller than three lines of fifteen characters per line and having a character height smaller than 18 inches.
- Outdoor electronic signs that are used for purposes other than roadway/motorway traffic management

  Failure to provide complete and accurate submittal information, as specified herein, shall be cause for rejecting the VMS manufacturer.

PRE-BUILD TECHNICAL SUBMITTAL
The VMS manufacturer shall provide a complete technical submittal within 60 days of contract award and shall not proceed with VMS manufacture until the Engineer has approved the submittal.

PRE-BUILD TECHNICAL SUBMITTAL
The VMS manufacturer shall provide a complete pre-build technical submittal within 60 days of contract award and shall not proceed with VMS manufacture until the Engineer has approved the submittal. The submittal shall include:

- All VMS manufacturer qualification information, as specified herein
- VMS shop drawings, including illustrations of the recommended installation method
- VMS structural calculations and certification by a registered professional engineer
- VMS site riser diagram
- AC site power requirements, including the number of legs, current draw per leg, and maximum and typical site power consumption
- Major VMS schematics, including AC power distribution inside and outside the VMS, DC power distribution within the VMS, and control signal distribution inside and outside the VMS
- Drawings of major VMS components, including LED display modules, driver boards, control/logic components, environmental control assemblies, VMS controller, control equipment cabinet assembly, and control cabinet mounting
- Catalog cut sheets for major VMS components, including front face paint material, polycarbonate face material, LEDs, regulated DC power supplies, circuit board conformal coating material, hookup wire, signal cable, surge suppression devices, load center, circuit breakers, utility outlets, VMS controller, ventilation/cooling fans, heaters, ventilation filter, thermostats, and any other major system components
- Test reports and certification for all items identified in the "Product Testing"
- VMS control software operator's manual
- Certificate of NTCIP compliance

VMS MANUFACTURER QUALIFICATIONS
This section describes the minimum qualifications required for a VMS manufacturer. A VMS manufacturer must meet these minimum qualifications prior to bidding. This section also details the product documentation that must be provided by the Contractor.

The VMS manufacturer for this contract shall:

- Have been in the business, under the same corporate name, of manufacturing large, outdoor, permanently mounted, LED VMS that are used to manage vehicular roadway traffic, for a minimum of ten years prior to the contract bid date. An LED VMS is defined as containing display pixels constructed solely of high-intensity, discrete LEDs.
- Have in operation a minimum of one hundred large, outdoor, permanently-mounted, LED VMS as defined above. Each of these VMS shall have been

successfully operated for a minimum period of one year prior to the contract bid date.

- Have in operation, as of the contract bid date, a minimum of ten independently owned and operated VMS systems. Each of these systems shall contain a minimum of ten permanently mounted VMS that use the NTCIP as their primary communications protocol. Each of the VMSs shall be communicating over dial-up telephone, cellular telephone, spread spectrum radio, or fiber optic networks.
- Have previously demonstrated that their VMS controller is NTCIP compliant via compliance testing performed by an independent, third-party testing organization. The testing shall have been completed using industry accepted test tools such as the NTCIP Exerciser, Trevilon's NTester, Intelligent Devices' Device Tester, and/or Frontline's FTS for NTCIP.
- Utilize a documented, in-house, quality management system that has been in place for no less than two years prior to the contract bid date.
- Utilize a documented, certified, welding procedure. All welding shall be by an inert gas process in accordance with the AWS Standards, 2003 ANSI/AWS D1.2/D1.2M Structural Welding Code for Aluminum. The welders and welding procedures shall be certified by an ANSI/AWS Certified Welding Inspector to the above code. Proof of certification of all welders and applicable welding procedures shall be supplied with the submittals. The name, phone number and address of the ANSI/AWS Certified Welding Inspector who certified the welders and procedures shall also be provided with the submittals.

MATERIALS

This section describes the specifications for a full matrix, amber, aluminum, walk-in access, VMS capable of displaying multiple lines of text with multiple characters per line.

The VMS shall be Daktronics VF-2020-27X125-66-RGB OR approved equal.
The following specifications describe major VMS system components required, including:

- Full Matrix, Walk-In access VMS
- VMS controller
- VMS controller enclosure
- VMS control software
- NTCIP communications protocol
- VMS manufacturer qualifications
- Product testing
- Product documentation

The VMS specification describes attributes common to all sizes of 18-inch, full matrix, walk-in access VMS. For features and data that are unique to different VMS sizes, please refer to Table 1. This information can be inserted into the specification using the reference letters provided (A, B, C, etc.):

Table 1: VMS Dimensions

Pixel Rows {A}	Pixel Columns {B}	Cabinet Height {C}	Cabinet Width {D}	Cabinet Depth {E}	Weight Range (lbs) {F}
27	125	7'10" to 8'6"	29'3" to 30'8"	45 ¼" to 47"	3950 to 4080

MATERIAL, MANUFACTURING, AND DESIGN STANDARDS

VMS provided for this contract shall comply with the following standards. If no revision date is specified, the most recent revision of the standard applies:

- General VMS Requirements – The VMS shall be designed in accordance with *NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (VMS), with NTCIP Requirements.*
- Aluminum Welding – The VMS housing shall be designed, fabricated, welded, and inspected in accordance with *ANSI/AWS D1.2-97 Structural Welding Code-Aluminum (1997).*
- Electrical Components – High-voltage components and circuits (120 VAC and greater) shall be designed, wired, and color-coded per the NEC.
- Protection from Environment – The VMS housing shall be designed to comply with type 3R enclosure criteria as described in *NEMA Standards Publication 250-2003, Enclosures for Electrical Equipment (1000 Volts Maximum)*
- Product Electrical Safety - All VMS, associated equipment, and enclosures shall be listed by UL or an accredited third party testing organization, such as ETL Semko, and shall bear the organization's mark. VMS shall be listed as conformant to UL 48 Standard for Electric Signs and UL 50 Enclosures for Electrical Equipment. Control equipment and enclosures shall be listed as conformant to UL 1433 Standard for Control Centers for Changing Message Type Electric Signs.
- Radio Frequency Emissions – All equipment shall be designed in accordance with Federal Communications Commission (FCC) Part 15, Subpart B as a "Class A" digital device.
- Maintenance Access and Safety – The VMS equipment provided shall be compliant with all relevant OSHA requirements.
- Structural Integrity – The VMS housing shall be designed and constructed to comply with all applicable sections of *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, Fourth Edition, 2001,* and the fatigue resistance requirements of *NCHRP Report 412, Fatigue-Resistant Design of Cantilevered Signal, Sign, and Light Supports.*
- Communication Protocols – The VMS controller hardware/firmware and VMS control software shall conform to the applicable NTCIP standards. Refer to the NTCIP section of this specification for detailed NTCIP requirements for this contract.

VMS CONSTRUCTION AND OPERATION

This section describes the minimum construction and operational requirements for the VMS to be supplied under this contract. The contractor shall provide all the materials, software, and services necessary to install VMS and associated equipment that fully comply with the functional requirements specified herein, including incidental items that may have been inadvertently omitted.

GENERAL

The VMS housing shall provide walk-in service access for all LED display modules, electronics, environmental control equipment, air filters, wiring, and other internal VMS components.

The VMS shall contain a full display matrix measuring a minimum of [A] rows high by [B] pixel columns wide (see Table 1). The matrix shall display messages that are continuous, uniform, and unbroken in appearance to motorists.

Each display pixel shall be comprised of multiple color LEDs. Other pixel technologies, such as fiber optic, flip disk, combination flip disk-fiber optic, combination flip disk-LED, liquid crystal, and incandescent lamp, will not be accepted. The centers of all adjacent pixels shall be spaced 2.6" to 2.75" apart, both vertically and horizontally.

The pixel matrix shall be capable of displaying alphanumeric character fonts measuring a minimum of 18 inches high to a maximum of the display matrix height.

The VMS shall be able to display messages composed of any combination of alphanumeric text, punctuation symbols, and graphic images across multiple frames.

Legibility
VMS messages shall, at a minimum, be legible from 150 ft to 900 ft from the VMS display face under the following conditions:

- When the VMS is mounted so its bottom side is positioned between five feet and 20 feet above a level roadway surface
- Whenever the VMS is displaying 18" high, alphanumeric text
- 24 hours per day and in most normally encountered weather conditions
- During dawn and dusk hours when sunlight is shining directly on the display face or when the sun is directly behind (silhouetting) the VMS
- When viewed by motorists that have 20-20 vision
- A range of 3 to 12 feet above the roadway surface

Dimensions (See Table 1)
VMS housing dimensions shall not exceed [C] feet high by [D] feet wide. The front-to-back housing depth shall not exceed [E] ft at its widest point, including the rear ventilation hoods. VMS weight shall not exceed [F] pounds.

Power Requirement
VMS shall operate from one of the following power sources:

- 120 VAC, 60Hz single-phase, including neutral and earth ground
- 120/240 VAC, 60Hz single-phase, including neutral and earth ground
- Two legs of 120/208 VAC, 60Hz three-phase, including neutral and earth ground

VMS Construction
The VMS housing shall be constructed to have a neat, professional appearance. The housing shall protect internal components from rain, ice, dust, and corrosion in accordance with NEMA enclosure Type 3R standards, as described in *NEMA Standards Publication 250-2003, Enclosures for Electrical Equipment (1000 Volts Maximum)*. The VMS housing bottom shall contain small weep holes for draining any water that may

accumulate due to condensation. Weep holes and ventilation/exhaust hoods shall be screened to prevent the entrance of insects and small animals.

External VMS component hardware (nuts, bolts, screws, standoffs, rivets, fasteners, etc.) shall be fabricated from hot dipped or mechanically galvanized steel, stainless steel, aluminum, nylon, or other durable, corrosion-resistant material suitable for roadway signage application.

VMS controller components shall operate in a nominal temperature range of –30ºF to +165ºF and a relative humidity range of 0 to 99%, non-condensing. VMS controller components shall not be damaged by storage at or temporary operational exposure to a temperature range of –40ºF to +185ºF.

Except for the environmental control fans, VMS controller components shall be 100% solid-state.

Electrical components in the VMS controller shall be UL listed and meet all NEC codes applicable to VMS applications.

The presence of ambient radio signals and magnetic or electromagnetic interference, including those from power lines, transformers, and motors, shall not impair the performance of the VMS system. The VMS system shall not radiate electromagnetic signals that adversely affect any other electronic device, including those located in vehicles passing underneath or otherwise near the VMS and its controller.

VMS Housing

The VMS housing shall have a NEMA 3R rating as a minimum. The VMS housing structural frame shall consist of aluminum extrusions made from 6061-T6 and/or 6063-T6 aluminum alloy. All sides of the VMS housing exterior, except the front, shall be covered with 0.125-inch thick aluminum sheets made from 5052-H32 aluminum alloy. This external aluminum skin shall be attached to the structural framework using a proven method of attachment.

VMS housing right, left, and rear walls shall be vertical. The top and bottom sides shall be horizontal. The front VMS wall shall be built with a permanent forward tilt angle of 3°, so that the top of the VMS housing is deeper than its bottom. LED display modules shall be mounted parallel to the front wall, so they are tilted 3° forward toward the motorists and the legible LED viewing area is optimized.

VMS structural assembly hardware (nuts, bolts, washers, and direct tension indicators) shall be stainless steel or galvanized A325 high-strength steel and shall be appropriately sized for the application.

Welding

The aluminum skin shall be welded to the VMS cabinet frame. All exterior sheet seams shall be continuously seam welded to the VMS frame to form a single structure. Stitch welding shall be used on the interior of the cabinet to attach the aluminum skin sheets to the aluminum extrusion frame. The VMS housing shall be welded and inspected in

accordance with the requirements of *ANSI/AWS D1.2-97 Structural Welding Code-Aluminum (1997)*. Compliance with this standard shall include, but shall not be limited to, the following:

- Welding shall be performed according to documented in-house welding procedures
- Personnel who perform welding on the VMS housing shall be certified to *AWS D1.2-97* for all weld types required for housing fabrication
- A CWI shall inspect VMS welding on a daily basis and shall complete written reports that document welding progress, weld integrity, and any corrective action taken. The VMS manufacturer shall archive these reports and make them available for review, upon request of the Engineer

Mounting Brackets
Multiple mounting brackets in the form of I-beam or Z-bar extrusions shall be bolted to the VMS housing exterior rear wall to facilitate attachment of the VMS to the support structure. Mounting brackets shall be:

- Extruded from aluminum alloy number 6061-T6
- Attached to the VMS using stainless steel or mechanically galvanized A325 high-strength steel bolts
- Attached to the VMS using direct tension indicators to verify that mounting hardware is tightened properly
- Attached to the VMS structural frame members, not just the exterior sheet metal
- Installed at the VMS manufacturer's factory
- Installed such that all bracket-to-VMS attachment points are sealed and water-tight
- Designed and fabricated such that the Contractor can drill into them without penetrating the VMS housing and compromising the housing's ability to shed water

The hardware used to attach the mounting brackets (nuts, bolts, washers, and direct tension indicators) to the VMS cabinet shall be stainless steel or galvanized A325 high-strength steel and shall be appropriately sized for the application. This hardware shall be supplied by the contractor. The contractor shall work with the truss manufacturer to supply the appropriate attachment mounting for the VMS to the truss or any other structure. The VMS manufacturer shall be responsible for drilling the proper holes that match the mounting hardware supply by the contractor.

Lifting Hardware
For moving and installation purposes, multiple galvanized steel lifting eyebolts or lifting angles shall be attached to the top of the VMS housing. Eyebolt hardware or angles shall be installed at the VMS factory and attach directly to the VMS housing structural frame. All mounting points for eyebolts or angles shall be sealed to prevent water from entering the VMS housing. Lifting hardware, as well as the housing frame, shall be designed such that the VMS can be shipped and handled without damage or excessive stress being applied to the housing prior to or during VMS installation on its support structure. The eyebolts or angles shall be easily removable without opening or entering the display and without any risk of compromising water-tightness. Special tools shall not be required.

Removal of the eyebolts or angles shall not create holes and no replacement bolts or other hardware shall be necessary to seal the cabinet.

Front Face Construction
The VMS front face shall be constructed with multiple rigid panels, each of which supports and protects a full-height section of the LED display matrix. The panels shall be fabricated using aluminum sheeting on the exterior and polycarbonate sheeting on the interior of the panel.

Front face panels shall provide a high-contrast background for the VMS display matrix. The aluminum mask of each panel shall contain an opening optimizing the contrast ratio for each LED pixel, and shall be finished with a matte-black, licensed-factory-applied, KYNAR 500 Resin, fluoropolymer-based coating system. The face shall be uniform in appearance and completely free from distortion, gouges or any other flaws or defects. A certification shall be provided by the licensed-factory KYNAR 500 coater for all aluminum face materials. Openings shall be large enough to not block any portion of the viewing cones of the LEDs.

Adjacent face panels shall be attached to with stainless steel hardware. Seams that separate adjacent panels shall be sealed. Panels shall be mounted in such a way that they are removable from the interior of the VMS housing. Panels shall not be welded or otherwise permanently mounted to the VMS housing.

Each panel shall have a single polycarbonate sheet attached securely to the inside of the aluminum panel. The polycarbonate sheet shall cover all of the pixel openings. The polycarbonate shall be sealed to prevent water and other elements from entering the VMS. The polycarbonate shall contain UV inhibitors that protect the LED display matrix from the effects of UV light exposure and prevent premature aging of the polycarbonate. Polycarbonate sheets shall have the following characteristics:

- Tensile Strength, Ultimate: 10,000 psi
- Tensile Strength, Yield: 9,300 psi
- Tensile Strain at Break: 125%
- Minimum Tensile Modulus: 330,000 psi
- Minimum Flexural Modulus: 330,000 psi
- Minimum Impact Strength, Izod (1/8", notched): 17 ft-lbs/inch of notch
- Rockwell Hardness: M75, R118
- Heat Deflection Temperature Under Load: 264 psi at 270° F and 66 psi at 288° F
- Coefficient of Thermal Expansion: $3.9X10^{-5}$ in/in/F
- Specific Heat: 0.30 BTU/lb/F
- Initial Light Transmittance: 85% minimum
- Change in Light Transmittance, 3 years exposure in a Southern latitude: 3%
- Change in Yellowness Index, 3 years exposure in a Southern latitude: less than 5%

LED display modules shall mount to the inside of the VMS front face panels. Common hand tools shall be used for removal and replacement.

VMS front face borders (top, bottom, and sides), which surround the front face panels and LED display matrix, shall be coated with semi-gloss black KYNAR 500 resin by a licensed-factory coater to maximize display contrast and legibility.

Wind shall not cause distortion of the VMS front face in a manner that adversely affects LED message legibility.

Exterior Finish

VMS front face panels and front face border pieces shall be coated by a licensed-factory coater with semi-gloss black KYNAR 500 resin or an equivalent brand of oven-fired fluoropolymer coating, which has a minimum outdoor service life of 20 years. All other VMS housing surfaces, including the access doors and VMS mounting brackets, shall be natural mill-finish aluminum.

Service Access

The VMS housing shall provide safe and convenient access to all modular assemblies, components, wiring, and subsystems located within the VMS housing. All internal components and front face panels shall be replaceable by a single technician from inside the VMS enclosure.

A vertically hinged door shall be located on both ends of the VMS housing. Each access door shall be mounted to an integral doorframe, which bolts to the VMS frame using stainless steel hardware. A continuous vertical stainless steel hinge shall support the door and the door shall open outward. In the closed position, the door shall latch to its frame with a three-point draw-roller mechanism. The latching mechanism shall include an internal handle and release lever. The door release lever shall be located such that a person with no key and no tools cannot become trapped inside the housing. Each access door, when open at a 90° angle from the VMS housing rear wall, shall extend a maximum of 38 inches from the housing.

The doorframe shall be double flanged on all sides to shed water. The door shall close around its flanged frame and compress against a closed-cell foam gasket, which adheres to the door. The door shall contain a stop that retains the door in a 90° open position. When open, the door and its stop shall not be damaged by a 40 mph wind. The door shall be furnished with a lock that is keyed for a Corbin #2. There shall be a 4" by 6" Arc Flash Warning sticker installed 3" above each door handle. The sticker shall be Metalcraft PLY695 Prem STYLEMARK Label with .007 thickness, with UV white polycarbinate material, and with MC53FL pressure sensitive adhesive. The sticker shall have two colors of black and custom color orange. See example below.

The VMS shall be equipped with an OSHA compliant safety rail assembly, which prevents service personnel from falling out of the VMS. A rail assembly shall be provided for both doors in the enclosure. The safety rail shall consist of a top rail 42 inches above the interior walkway and a mid rail 21 inches above the interior walkway. The rail assembly shall require no tools to open and close.

The VMS cabinet shall be equipped with an OSHA compliant anchor point at each entrance location for the connection of a personal fall arrest system. These anchorages shall be strong enough to withstand a force of 5,000 pounds as required by OSHA. The anchorages shall be located such that they will not allow a person to free-fall for more than 6 feet when a 6 foot lifeline is used. The anchorages must be located inside each access door within easy reach from the outside.

Interior Work Area

Minimum headroom of 72 inches shall be provided inside the VMS housing. This headroom shall be maintained across the entire VMS housing, with the exception of structural frame members. Structural members shall be designed to not obstruct the free movement of maintenance personnel throughout the VMS interior.

A level walkway shall be installed in the bottom of the VMS housing. The walkway shall be a minimum of 24 inches wide and shall run the entire length of the housing. The walkway's top surface shall be non-slip and shall be free of obstructions that could trip service personnel. The walkway shall be constructed of multiple removable panels and support a minimum load of 300 pounds per linear foot.

Interior Lighting

The VMS housing shall contain a minimum of one 4 foot, 60 watt fluorescent lamp fixture for every eight feet of VMS housing. Lamps shall be evenly spaced across the housing ceiling to provide a uniform light distribution for maintenance purposes. Wire cages shall protect lamps. Lamp ballasts shall be rated for cold weather operation of 0ºF.

Alt. internal lighting
The VMS housing shall be furnished with a minimum of four fluorescent lamps. The lights shall be enclosed in heavy-duty fixtures. Each fixture shall have die-cast aluminum housing, a twist-on guard secured by a set screw, and a porcelain socket.

Utility Receptacles
The VMS housing shall contain a utility outlet circuit consisting of a minimum of three 15 A NEMA 15-R, 120 VAC duplex outlets, with ground-fault circuit interrupters. One outlet shall be located near each end of VMS housing interior, and the third outlet shall be located near the center of the housing.

LED Display Modules
The VMS shall contain LED display modules that include LED pixel array boards and mounting hardware. These modules shall be mounted adjacently in a two-dimensional array to form a continuous LED pixel matrix. Each LED display module shall be constructed as follows:

- Each LED display module shall consist of one LED pixel board and one LED driver circuit board that can be used for controlling multiple displays. The LED driver circuit board shall be mounted to the back of the LED pixel board using durable non-corrosive hardware. LED driver boards shall be electrically connected via one or more header-type connectors. The header connectors shall be keyed such that the boards cannot be connected incorrectly.
- LED display modules shall be mounted to the rear of the display's front face panels using durable non-corrosive hardware. No tools shall be required for module removal/replacement. The modules shall be mounted such that the LEDs emit light through the face panel's pixel holes and such that the face panel does not block any part of the viewing cone of any of the LEDs.
- LED display module power and signal connections shall be via a quick-disconnect, locking-type connector. Removal of a display module from the VMS, or a pixel board or driver circuit board from its display module, shall not require a soldering operation.
- Removal or failure of any LED module shall not affect the operation of any other LED module or VMS component. Removal of one or more LED modules shall not affect the structural integrity of any part of the VMS.
- LED display modules shall be designed to that it is not possible to mount an LED display module upside-down or in an otherwise incorrect position within the VMS display matrix.
- All LED display modules, LED pixel boards and driver circuit boards shall be identical and interchangeable throughout the VMS.

LED Pixel Boards
Each LED pixel board shall be composed of a printed circuit board to which LED pixels are soldered. The LED pixel boards shall conform to the following specifications:

- LED pixel boards shall be manufactured using a laminated fiberglass printed circuit board.

- Each LED pixel circuit board shall contain a minimum of 45 LED pixels configured in a two dimensional array. The pixel array shall be nine pixels high by five pixels wide.
- The distance from the center of one pixel to the center of all adjacent pixels, both horizontally and vertically, shall be 2.6-inches to 2.75 inches.
- Each pixel shall consist of a minimum of two independent strings of discrete LEDs. All pixels shall contain an equal quantity of LED strings.
- The failure of an LED string or pixel shall not cause the failure of any other LED string or pixel in the VMS.
- Pixels shall contain the quantity of discrete LEDs needed to output a minimum intensity of 40 candelas when operated within the forward current limits. This shall yield an overall minimum luminous intensity for the sign face of 9,200 Cd/m^2.
- Each LED pixel shall not consume more than 1.5 watts.
- All exposed metal on both sides of the LED pixel board, except connector contacts, shall be protected from water and humidity exposure by a thorough application of conformal coating. Bench level repair of individual pixels, including discrete LED replacement and conformal coating repair, shall be possible.
- All LED pixel boards shall be identical and interchangeable throughout the VMS.

Discrete LEDs

VMS pixels shall be constructed with discrete LEDs manufactured by Agilent Technologies or approved equal. Discrete LEDs shall conform to the following specifications:

- LEDs used in VMS shall be from the same manufacturer and of the same part number.
    - All LEDs shall have a nominal viewing cone of 30 degrees with a half-power angle of 15 degrees measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed +/- 5 degrees. Using optical enhancing lenses with 15 degree LED's will not conform to 30 degree half-power viewing cone specifications and will be cause for rejection.

    - Red LEDs shall utilize AlInGaP semiconductor technology and shall emit red light that has a peak wavelength of 615-635nm

    - Green LEDs shall utilize InGaN semiconductor technology and shall emit green light that has a peak wavelength of 520-535nm

    - Blue LEDs shall utilize InGaN semiconductor technology and shall emit blue light that has a peak wavelength of 464-470nm

    - The LED packages shall be fabricated from UV light resistant epoxy.

- The LED manufacturer shall perform color sorting of the bins. Each color of LEDs shall be obtained from no more than two (2) consecutive color "bins" as defined by the LED manufacturer.

- The LED manufacturer shall perform intensity sorting of the bins. LEDs shall be obtained from no more than two (2) consecutive luminous intensity "bins" as defined by the LED manufacturer.

- The various LED color and intensity bins shall be distributed evenly throughout the sign and shall be consistent from pixel to pixel. Random distribution of the LED bins shall not be accepted.

- The LED manufacturer shall assure color uniformity and consistency on the LED display face within the 30 degree cone of vision. Inconsistent color shifts or intensity will be cause for rejection.

- LED package style shall be through-hole flush-mount. Through-hole LEDs with standoffs or surface-mount LEDs will not be accepted.

- All LEDs used in all DMS provided for this contract shall be from the same manufacturer and of the same part number, except for the variations in the part number due to the intensity and color. .

- The LEDs shall be rated by the LED manufacturer to have a minimum lifetime of 100,000 hours of continuous operation while maintaining a minimum of 70% of the original brightness.

LED Driver Circuit Board

An electronic driver circuit board shall be provided for each LED pixel module and shall individually control all pixels on that module. The driver circuit boards shall conform to the following specifications:

- LED driver boards shall be manufactured using a laminated fiberglass printed circuit board.
- All exposed metal on both sides of the LED driver board, except connector contacts, shall be protected from water and humidity exposure by a thorough application of acrylic conformal coating or silicone resin conformal coating.
- Bench level repair of individual components, including conformal coating repair, shall be possible.
- LED driver boards shall be microprocessor-controlled and shall communicate with the VMS controller via a wire or fiber optic communication network using an addressable network protocol. The microprocessor shall process commands from the VMS controller to display data, perform diagnostic tests, and report pixel and diagnostic status.
- Constant current LED driver ICs shall be used to prevent LED forward current from exceeding the maximum discrete LED drive current when a forward voltage is applied.
- LED pixels shall be directly driven using PWM of the drive current to control the display intensity. This LED driver circuitry shall vary the current pulse width to achieve the proper display intensity levels for all ambient light conditions. The

drive current pulse shall be modulated at a frequency high enough to provide flicker-free operation and a minimum of 200 brightness levels.

- LED driver boards shall be capable of receiving updated display data at a minimum rate of ten frames per second from the VMS controller.
- LED driver boards shall be capable of receiving multiple power feeds from a minimum of two independent power supplies.
- LED driver boards shall contain a microprocessor-controlled power regulation circuit that controls the voltage applied to the LED strings. The power regulation circuit shall automatically adjust the forward voltage of the LEDs to optimize power consumption efficiency as the temperature changes. Indicator LEDs shall be provided to indicate the status of each power source. The power regulation circuit shall monitor the incoming power supply feeds and automatically select one or more to power the LEDs. If any of the incoming power sources fail, the power system shall automatically switch to one or more of the remaining power sources. The voltage of each power input shall be measured to the nearest tenth of a volt and reported to the VMS controller upon request.
- LED driver boards or shall contain a temperature sensor and shall report the temperature to the VMS controller upon request.
- The LED driver circuitry shall be capable of detecting that individual LED strings or pixels are in an off state and shall report the pixel status to the VMS controller upon request.
- Each LED driver board shall contain a seven segment numeric LED display that indicates the functional status of the driver and pixel boards. At a minimum, it shall indicate error states of the LED pixels and communication network. The indicator shall be positioned such that a maintenance technician can easily view the status code for diagnostic purposes. The status codes shall also be reported to the VMS controller upon request.
- All driver circuit boards shall be identical and interchangeable throughout the VMS.
- Removal or failure of a single driver circuit board shall not affect the performance of any other LED display module in the VMS.
- Individual addressing of each driver circuit shall be configured via the communication wiring harness and connector. No on-board addressing jumpers or switches are allowed.

Regulated DC Power Supplies

Regulated DC power supplies shall be identical and interchangeable throughout the VMS and shall conform to the following specifications:

- Output variance: ± 10%
- Nominal maximum output power rating: 1000 watts
- Operating input voltage range: 90 to 260 VAC minimum
- Operating temperature range: -30ºF to +165ºF minimum
- Maximum output power rating shall be maintained over a minimum temperature range of –30ºF to +140ºF
- Power supply efficiency: 75% to 80% minimum
- Power supply input circuit shall be fused

- Automatic output shut down and restart capability if the power supply overheats or one of the following output faults occurs: over-voltage, short circuit, or over-current
- Power supplies shall be UL listed
- Printed circuit boards shall be protected by an acrylic conformal coating or silicone conformal coating

The LED pixel display modules shall be powered with auto-ranging, regulated, switching, power supplies that convert the incoming AC to DC at a nominal voltage of 12 or 24 volts DC. Power supplies shall be wired in a redundant parallel configuration that uses multiple supplies for the VMS display matrix.

Power supplies within each pair shall be redundant and rated such that if one supply fails, the remaining supply shall be able to operate 100% of the pixels in that display region at 100% brightness when the internal VMS air temperature is +140ºF or less.

The power supplies shall be sufficient to maintain the appropriate LED display intensity throughout the entire operating input voltage range.

The output of each power supply shall be connected to multiple circuits that provide power to the LED modules. Each output circuit shall not exceed 15 A.

Each group of power supplies shall be monitored by a microprocessor-controlled circuit. This circuit shall monitor the voltage of each power supply and the status of each output circuit's fuse. The power supply voltages and fuse states shall be reported via a CAN communication network to the VMS controller upon request.

Environmental Monitoring Systems
The VMS shall include sensors that monitor external light level, internal and external temperature, and internal humidity.

Sensors that measure the outdoor ambient light level and the outdoor ambient temperature at the VMS site shall be mounted in-line with the VMS housing walls. This ambient light and temperature measurement system shall consist of three electronic light sensors.

Two of the light sensors shall be placed such that they measure the ambient light levels striking the front and rear of the VMS. The third light sensor shall be mounted to the floor of the VMS housing and shall face the ground. The VMS controller shall continuously monitor the light sensors and adjust the LED display matrix intensity to a level that displays a legible message on the VMS face.

A minimum of one ambient temperature sensor shall be mounted to either the rear wall or bottom of the VMS housing and shall be placed such that it is never in direct contact with sunlight. The external temperature sensor reading shall be continuously monitored by the VMS controller and shall be reported to the VMS control software upon request.

A minimum of one temperature sensor shall be mounted near the top of the VMS interior. The sensor shall measure the temperature of the air in the cabinet over a minimum range of

-40°F to +176°F. The internal temperature sensor output shall be continuously monitored by the VMS controller and shall be reported to the VMS control software upon request.

The VMS shall contain one sensor that measures the relative humidity of the air inside the VMS cabinet. The sensor shall monitor the humidity from 0 to 100%. The humidity sensor output shall be continuously monitored by the VMS controller and shall be reported to the VMS control software upon request.

Interior VMS Environmental Control
The VMS shall contain systems for internal ventilation, face panel fog and frost prevention, and safe over-temperature shutdown.

Housing Ventilation/Exhaust System
The VMS shall contain a ventilation system designed to keep the internal VMS air temperature lower than +140°F when the outdoor ambient temperature is +115°F or less.

One filtered air intake port shall be provided for each exhaust port. Intake ports shall be located on the rear VMS wall. Each intake port shall be covered with a filter that removes airborne particles measuring 500 microns and larger in diameter. Each exhaust port shall be located near the top of the rear VMS wall.

One or more ball bearing-type fans shall be mounted at each intake port. These fans shall create positive pressure inside the VMS cabinet.

Fans and air filters shall be removable and replaceable from inside the VMS housing.

An aluminum hood shall cover each air intake and exhaust port. Openings shall be screened to prevent the entrance of insects and small animals. All intake and exhaust hoods shall be sealed to prevent water from entering the VMS.

A thermostat or multiple temperature sensors shall be used to activate the ventilation system.

A manual override timer switch shall be located inside the access door or centrally located to manually activate the ventilation system. The switch shall be adjustable from zero to four hours.

Front Face Panel Defog/Defrost System
The VMS shall contain a defog/defrost system that automatically warms the VMS front face when the internal VMS relative humidity is near condensation levels. This system shall keep the front face polycarbonate panel free of frost and condensation. The heat generated by the defog/defrost system shall not damage any part of the VMS. A thermostat or temperature sensors shall automatically activate the defog/defrost system.

Over Temperature Safety Shutdown
The VMS shall automatically shut down the LED modules to prevent damaging the LEDs if the measured internal cabinet air temperature exceeds a maximum threshold temperature.

The threshold temperature shall be configurable and shall have a default factory setting of 140°F.

VMS Controller Signal Interface

For systems with controllers mounted inside the VMS cabinet, the controller to VMS interface shall use shielded Category 5 copper cable. There shall be an access panel for laptop connections mounted at the base of the truss base or in the nearest cabinet for remote access to the sign controller. If CAT 5 cable is used for connection to the external access panel, there shall be a data surge installed and will be the responsibility of the sign manufacturer. The minimum requirements for the surge device will be stated in this document.

Wiring and Power Distribution

Power and Signal Entrances

Two threaded conduit hubs shall be located on the rear wall of the VMS housing. One hub shall be for incoming AC power and the other shall be for incoming VMS signal cabling or a communications line.`

Load Center

The VMS shall contain a power load center and circuit breakers that meet the following minimum requirements:

- Service entrance-rated
- Minimum of 20 circuit breaker mounting positions
- Short circuit rating of 22,000 amps for the main breaker
- Short circuit rating of 10,000 amps for the branch circuit breakers
- UL listed load center and circuit breakers

Internal Wiring

Wiring for the LED display module control, environmental control circuits, and other internal VMS components shall be installed in the VMS housing in a neat and professional manner. Wiring shall not impede the removal of display modules, power supplies, environmental control equipment, or other VMS components. Wires shall not make contact with or bend around sharp metal edges. All wiring shall conform to the NEC.

Earth Grounding

The VMS manufacturer shall provide one lug to be used as an earth ground that is electrically bonded to the VMS housing. The lug shall be installed near the power entrance location on the VMS housing rear wall. The Contractor shall provide the balance of materials and services needed to properly ground the VMS to earth. All earth grounding shall conform to the NEC.

Transient Protection

The VMS controller signal and power inputs shall be protected from electrical spikes and transients as follows:

- Site AC Power - The AC power feed shall be protected at the load center by a parallel-connected surge suppressor rated for a minimum surge of 10 kA.
- Control Equipment AC Power - A series-connected surge suppressor capable of passing 15 amps of current shall protect the VMS controller and other control

and communication equipment. This surge suppressor shall conform to the following requirements:

- Withstand a peak 50,000 ampere surge current for an 8x20 μs wave form
- Maximum continuous operating current of 15 amps at 120 VAC, 60 Hz
- Series inductance of 200 micro henrys (nominal)
- Temperature range of –40ºF to +158°F
- Approximate dimensions of 3" Wide x 5" Long x 2" High
- The device shall be UL-1449 listed
- UL 1449 surge rating of 400 V or less

- Communication Signals- Transient voltage surge suppressors shall protect all communication signals connecting to the control equipment from off-site sources using other cables. Transient voltage surge suppressors shall protect all communication lines used to pass data between the VMS controller and VMS.

PRODUCT TESTING

The VMS manufacturer shall provide documentation indicating that the VMS has been tested to the standards below. It is acceptable for the testing to be performed on scale-sized versions of the actual VMS provided that the test unit is functionally and structurally equivalent to the full size VMS.

Third party test reports shall be submitted for the following:

- *NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements* – Section 2, Environmental Requirements. Test report shall detail results of mechanical vibration and shock, electrical noise and immunity, temperature, and humidity.
- UL 48 Standard for Electric Signs, UL 50 Enclosures for Electrical Equipment, and UL 1433 Standard for Control Centers for Changing Message Type Electric Signs. The UL report numbers for all VMS and control equipment manufactured by the VMS manufacturer shall be listed by UL or an accredited third party testing organization, such as ETL Semko, and shall bear the organization's mark.
- NTCIP 1201:1996, NTCIP Global Object Definitions (including Amendment 1)
- NTCIP 1203:1997, Object Definitions for Dynamic Message Signs (including Amendment 1)
- NTCIP 2101:2001, Point to Multi-Point Protocol Using RS-232 Subnetwork Profile.
- NTCIP 2103 (Draft v1.13), Point-to-Point Protocol over RS-232 Subnetwork Profile.

The test reports shall include testing of sub-network communications, objects in all mandatory conformance groups, and a subset of the remaining objects as deemed appropriate by the testing organization.

When required by the testing standards, the tests shall be performed by independent third party testing facilities. Certified test reports signed by the testing facility personnel shall be submitted for verification by the Engineer.

VMS HOUSING STRUCTURAL CERTIFICATION

A Registered Professional Engineer shall analyze the VMS structural design and shall certify that the VMS is:

- Engineered to 2001 AASHTO and NCHRP Report 411 specifications for basic wind speeds up to 140 mph and centerline sign heights up to 40 feet.
- Engineered to withstand group loading combinations as outlined in *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, Fourth Draft, 2001* including: VMS weight, repair personnel and equipment, snow (40 psf), ice and wind loads, and shall also meet strength requirements for truck-induced gusts as specified in *NCHRP Report 412*.
- Compliant with the fatigue resistance requirements of *NCHRP Report 412, Fatigue-Resistant Design of Cantilevered Signal, Sign, and Light Supports*.
- Capable of withstanding the temporary effects of being lifted by the lifting eyebolts or lifting angles provided

The Professional Engineer shall analyze the complete VMS structural design. This includes the housing, mounting brackets, lifting eyebolts/angles, and bracket-to-housing mounting hardware (nuts, bolts, washers, direct tension indicators, etc.) provided by the VMS manufacturer. Analysis shall include, but shall not be limited to:

- The quantity and type of mounting brackets to be provided
- The quantity and type of hardware (nuts, bolts, washers) used to attach the mounting brackets to the VMS
- Verification that no problem due to the use of dissimilar metals will exist and/or affect the structural integrity of the VMS-to-bracket attachment points
- A recommendation of the number of attachment points and the attachment locations that the installing contractor should use when mounting the VMS to its support structure
- The quantity and type of lifting eyebolts or lifting angles to be provided

The VMS manufacturer shall include a sealed and signed copy of the Professional Engineer's P.E. certification and all supporting calculations with the pre-build technical submittal.

Requirements for VMS Controllers

This section describes the minimum specifications for the VMS controllers to be provided with this contract. Each VMS shall include a VMS controller and associated equipment. The contractor shall provide all the materials, software, and services necessary to install VMS controllers and associated equipment that fully comply with the functional requirements specified herein, including incidental items required for operation that may have been inadvertently omitted.

General Requirements

Each VMS shall be controlled and monitored by an individual VMS controller. One controller shall be provided for each VMS. The VMS controller shall be a stand-alone microprocessor-based system, which does not require continuous communication with VMS control software in order to perform most VMS control functions.

The VMS controller shall meet the following operational requirements:

- Communicate using the NTCIP protocol
- Contain memory for storing changeable and permanent messages, schedules, and other necessary files for controller operation

- Include a front panel user interface with LCD and keypad for direct operation and diagnostics
- Contain a minimum of three NTCIP-compliant RS232 communication ports
- Contain a minimum of one NTCIP-compliant Ethernet port with RJ45 connector
- Contain a built-in Hayes-compatible modem with standard RJ11 connector
- Contain VMS-specific control firmware (embedded software) that monitors all external and internal sensors and communication inputs and controls the display modules as directed by external control software and the front panel interface

NTCIP shall be supported in the VMS controller. External protocol converter or translator devices shall not be allowed

Controller Location
For systems with controllers mounted inside the VMS cabinet, the controller to sign interface shall use shielded Category 5 copper cable. There shall be an access panel for laptop connections mounted at the base of the truss base or in the nearest cabinet for remote access to the sign controller. If CAT 5 cable is used for connection to the external access panel, there shall be a data surge installed and will be the responsibility of the sign manufacturer. The minimum requirements for the surge device will be stated in this document.

Environmental
The VMS controller shall meet the following requirements defined in *NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements.*

VMS Controller Operational Requirements
This section describes the VMS Controller Operational Requirements
Front Panel User Interface
The VMS controller's front panel shall include a keypad and LCD. These devices shall be used to perform the following functions with the VMS controller and VMS:

- Monitor the current status of the VMS controller, including the status of all sensors and a monochromatic WYSIWYG representation of the message visible on the display face
- Perform diagnostics testing of various system components, including pixels, power systems and sensors
- Activate messages stored in memory
- Configure display parameters, including display size and colors
- Configure communications port settings and NTCIP options

The front panel interface shall also include:

- Power switch to turn the controller on and off
- LED power ON indicator
- Local/Remote switch that places the controller in local mode such that it can be controlled from the front panel interface

- LED to indicate state of the Local/Remote mode switch
- Reset switch to quickly restart the controller
- LED "Active" indicator that blinks when the controller is operating correctly
- LED to indicate when any of the NTCIP communication channels are active

Memory
The VMS controller shall have non-volatile, electronically-changeable memory. This memory shall be flash or battery-backed static RAM ICs that retain the data in memory for a minimum of 30 days following a power loss. This changeable memory shall be used to store messages and schedules. The controller memory shall be capable of storing a minimum of 100 changeable messages in non-volatile RAM.

Internal Clock
The VMS controller shall contain a computer-readable clock that has a battery backup circuit. The battery shall keep the clock operating properly for at least five years without external power, and the clock shall automatically adjust for daylight savings time and leap year using hardware, software, or a combination of both. The clock shall be set electronically by the VMS controller microprocessor and shall be accurate to within one minute per month.

Communications
All remote communication ports shall be NTCIP-compatible as defined in the "Requirements for NTCIP Compatibility" section of these specifications.

Communication Modes
VMS controller shall be capable of receive instructions from and provide information to a computer containing VMS control software using the following communication modes:

- Remotely, via direct or dial-up communications, with a remote computer. The system communications backbone and all field modems and signal converters shall provide the VMS controller with an RS232 signal.
- Locally, via direct connection with a laptop computer that is connected directly to the VMS controller using an RS232 null modem connection.

Serial Communication Ports
The VMS controller shall contain a minimum of three NTCIP-compatible RS232 communication ports. These ports shall support multiple communication interfaces, including, but not limited to, direct null-modem (for local laptop control), dial-up and leased-line modems, radio systems, cellular modems, and fiber optic modems. The RS232 ports shall all have standard DB9M connectors.

The baud rate, connection type, and NTCIP communication protocol shall be configurable. Each port shall support all standard serial baud rates ranging from 1200 to 115,200 baud. Each port shall be capable of supporting either NTCIP 2101 (PMPP) or NTCIP 2103 (PPP) sub network profiles. Each port shall also be capable of supporting either NTCIP 2201 (Null) or NTCIP 2202 (Internet) transport profiles. Only one each of the transport and sub network profiles shall be active at any time on a port.

Ethernet Port
The VMS controller shall contain a minimum of one 10/100Base-T Ethernet communication port. This port shall be available for optional use for communicating from the central control system to the VMS controller when an Ethernet network is available. The Ethernet port shall have a standard RJ45 connector.

Communications via the Ethernet port shall be NTCIP-compatible using the NTCIP 2202 Internet transport profile and the NTCIP 2104 Ethernet sub network profile. This shall permit the controller to be operated on any typical Ethernet network using TCP/IP and UDP/IP.

Dial-Up Modem Communication Port
The VMS controller shall include one dial-up modem. The modem port shall have a standard RJ11 connector.

The modem shall be capable of supporting either NTCIP 2101 (PMPP) or NTCIP 2103 (PPP) sub network profiles. The modem port shall also be capable of supporting either NTCIP 2201 (Null) or NTCIP 2202 (Internet) transport profiles. Only one each of the transport and sub network profiles shall be active at any time on the port.

The modem shall be configurable to support both incoming and outgoing calls as supported by NTCIP. The modem shall support a minimum communication speed range from 1200 baud to 28,800 baud. The modem shall support the following protocols at a minimum: AT command set, MNP5, MNP10, and V.42bis.

Controller Addressing
The VMS controller shall use whatever addressing scheme is appropriate for the NTCIP network types used for communications. The controller addressing shall be configurable through the front panel user interface.

NTCIP 2101 (PMPP) networks shall be configured with an address in the range 1 to 255 with a default address of 1. NTCIP 2104 (Ethernet) networks shall use a static IP address. Both the IP address and subnet shall be configurable. NTCIP 2103 (PPP) networks shall not require network addressing.

Transient Protection
The RS232 and Ethernet communication ports in the VMS controller shall be protected with surge protection between each signal line and ground. The telephone communication port shall be protected by a series/parallel two-stage suppression device that protects the modem from over-voltage and over-current conditions.

VMS Control Outputs
The VMS controller shall transmit and receive data packets to and from the VMS via dedicated communication cables. These cables shall be either multi-mode fiber optic cable with ST-style connectors or stranded, twisted pair, optically-coupled, 300 V, shielded cable. This network will communicate with all sensors, drivers, and other devices utilizing a CAN bus network running throughout the VMS.

Data transferred shall include pixel states, sensor values, and I/O readings from various devices, such as door sensors and power supply monitors. Pixel data shall include the information to be displayed on the VMS face as well as diagnostic data retrieved from the LED drivers.

Messaging
The VMS controller shall have the ability to display messages on the VMS display face

Message Presentation on the VMS Display Matrix
The VMS controller shall control the LED drivers such that the appropriate message is displayed on the VMS. At a minimum, the VMS controller shall support the following features

- *Display of alpha numeric characters, including letters, numbers, and punctuation*
- Selection of particular character fonts
- Horizontal alignment of test on the display, including left, center, and right justification
- Vertical alignment of text on the display, including top, middle, and bottom justification
- Adjust the spacing horizontally between characters or vertically between lines of text
- Alternate between pages of a multiple-page message
- Display graphic bitmaps of various sizes ranging from very small to the size of the entire VMS matrix

Message Effects
The VMS shall be capable of displaying messages using the following types of effects:

- Static Message – The selected message is displayed continuously on the VMS face until the VMS controller blanks the VMS or causes the display of another message
- Flashing Message – All or part of a message is displayed and blanked alternately at a rate between 0.1 seconds and 9.9 seconds. The flash rate shall be user programmable in increments of 0.1 seconds
- Scrolling Message – The message moves across the display face from one side to the other. The direction of travel shall be user selectable as either left-to-right or right-to-left with variable display speeds.
- Multiple-Page Message – A message contains up to six different pages of information, with each page filling the entire pixel matrix. Each page's display time shall be user programmable from 0.1 seconds to 25.5 seconds, and adjustable in increments of 0.1 seconds.

Message Activation
Messages shall be capable of being activated on a VMS in three ways:

- Manual – An operator using the front panel LCD/keypad interface or NTCIP-compatible control software manually instructs a particular message to be activated.
- Schedule – The internal time-based scheduler in the VMS shall be capable of being configured to activate messages at programmable times and dates. Prior to activation, these messages and their activation times and dates shall be configured using the control software.

- Events – If configured by the control software, certain events, like a power loss, may trigger the activation of pre-configured messages when they occur.

A displayed message shall remain on the VMS until one of the following occurs:

- The duration of the message expires
- The controller receives a command to change the message
- The controller receives a command to blank the VMS
- The schedule stored in the controller's memory indicates that it is time to activate a different message
- A special event, such as a loss of communication, occurs that is linked to message activation

It shall be possible to confer a "priority" status onto any message, and a command to display a priority message shall cause any non-priority message to be overridden.

Schedule Activation

The VMS controller shall support the activation of messages based on a time/date-based schedule. The format and operation of the message scheduler shall be per the NTCIP 1201 and NTCIP 1203 standards.

Display of Alphanumeric Text

The VMS controller shall support the storage and use of a minimum of 12 fonts with which messages can be formatted and displayed. Each font shall support up to 255 characters. All text font files shall, at a minimum, include the following characters:

- The letters "A" through "Z", in both upper and lower case
- Decimal digits "0" through "9"
- A blank space
- Eight directional arrows
- Punctuation marks, such as: . , ! ? – ‘ ’ “ ” : ;
- Special characters, such as: # & * + / ( ) [ ] < > @

The VMS manufacturer shall equip the VMS controller with the fonts in Table 2 preinstalled. The controller shall support changing or replacing these fonts from the central software using NTCIP.

Table 2: Fonts

Font Name	Character Height	Character Width (avg.)	Variable or Fixed Width	Stroke Width
7x4	7	4	Variable	Single
7x5	7	5	Fixed	Single
7x6	7	6	Variable	Double
Graphic 7	7	N/A	Variable	N/A
8x4	8	4	Variable	Single
8x6	8	6	Variable	Double
9x6	9	6	Variable	Double
11x7	11	7	Fixed	Double

14x8	14	8	Fixed	Double
14x10	14	10	Variable	Triple
16x8	16	8	Variable	Double
16x10	16	10	Variable	Triple

Display of Graphic Images
The VMS control software shall support the inclusion of graphics in messages. If the NTCIP 1203 v2 standard has not reached a "recommended" or "approved" state by the time of contract award, the manufacturer shall support graphics using manufacturer-specific objects and MULTI tags.

If a manufacturer-specific means of supporting graphics is used, the manufacturer shall commit to provide NTCIP 1203 v2 firmware updates at no cost to the cabinet. These updates shall include all current requirements of these specifications and standard graphics support. The updates shall be installed by the vendor no later than six months after the NTCIP 1203 v2 standard reaches the "approved" state.

VMS Intensity Control
The VMS controller shall provide means to change the brightness of the display matrix automatically. This automatic intensity control mode shall monitor the ambient light sensors or photo circuit of the VMS. The control shall have a minimum of 100 intensity levels, which can be communicated to the LED drivers in the VMS.

System Status Monitoring and Diagnostic Testing
The VMS controller shall be capable of monitoring the status of the VMS components and subsystems in real-time and/or manual modes, depending on the component or subsystem. The following sections detail the status and diagnostic information that shall be provided by the controller. The status and diagnostic data shall be available via the front panel LCD screen and shall be transmitted via NTCIP to control software upon request.

Message Display Status
The VMS controller shall be capable of monitoring and displaying the currently active message (if any) on the controller's front panel LCD display. This display shall be in a WYSIWYG format.

LED Pixel Testing
Upon command from either the front panel control interface or via NTCIP using remote software, the VMS controller shall direct all of the LED modules to perform diagnostic tests of all their pixels. The controller shall then collect and report the results of the pixel testing.

The VMS controller shall be capable of real-time, automatic detection of the on/off status of each of the display's pixels and reporting of such information as required. This monitoring shall take place without interfering with the display on the VMS face.

Power Supply Operation
The VMS controller shall be capable of full time monitoring and have the ability to report the voltage (to the nearest tenth of a volt) of each regulated DC power supplies located in the VMS by monitoring diagnostic outputs located on the supplies.

Door States
The VMS controller shall monitor and report the open/closed status of each of the VMS housing's doors (if equipped with door sensors). If a control equipment cabinet is present and is equipped with door sensors, the VMS controller shall also monitor the status of the control cabinet door(s).

Environmental Conditions
The VMS controller shall be capable of monitoring and reporting the readings of constantly. All light, temperature, and humidity sensors installed in the VMS housing.

Error Notification
The VMS controller shall be capable of automatically informing a maintenance operator (via the local LCD panel) and a central control system (via NTCIP communication) of the occurrence of events and subsystem failures.

All component and subsystem errors shall be indicated on the controller's LCD front panel.

The VMS controller shall be capable of sending event notifications to the central control system via SNMP traps as allowed by NTCIP. When an event occurs, the VMS controller shall create a data packet for transmission to the central controller that contains details about the event. The transmission of traps shall be governed by the NTCIP standards. The controller shall be configurable to enable or disable the transmission of traps for each event or error type. This configuration shall include the automatic initiation of these traps, including establishing communications if appropriate, when the NTCIP network permits transmission initiation by the VMS controller.

Error Reporting
The following sections list errors and events that the controller shall report as defined above.

- Over Temperature Shutdown - The VMS controller shall continuously monitor the VMS housing's temperature sensors and shall automatically shut down the VMS if the internal cabinet temperature exceeds a safety threshold. This threshold shall have a default value of +140ºF and shall be configurable at the controller. If the temperature exceeds that threshold, the controller shall trigger a warning notification event. This event shall completely turn off the LEDs.
- Controller Restart - When the VMS controller detects that it has been restarted due to a manual reset or error condition, it shall send a trap notification to the central system. It shall also automatically activate the NTCIP reset message if it is configured to do so.
- Power Loss - When the VMS controller detects that it has lost power, it shall automatically be indicated on the front panel LCD. If configured to do so, it shall send a trap notification to the central system and activate the NTCIP power loss message.
- Power System Failure - The VMS controller shall automatically monitor the power systems in the VMS and detect any failures. Any failures shall be reported

on the front panel LCD and transmitted to the central system in the form of a trap.

- Door Opened - When the VMS controller detects that one of the VMS cabinet or control cabinet doors has been opened, it shall transmit a trap to the central system indicating which door has opened.
- Communication Loss - The VMS controller shall monitor the frequency of communication packets from the central system. If the controller detects that communication has not occurred between the controller and central system for longer than a user configured amount of time, the VMS controller shall automatically activate a communication loss message as defined by NTCIP. This communication loss message shall be configurable and may be disabled as allowed by NTCIP. A trap shall be sent to the central system.

Requirements for VMS Control Software

This section describes the minimum specifications for the VMS control software. The contractor shall provide all software, software media, licenses, and documentation necessary to install and operate a VMS control system that fully complies with the functional requirements herein, including incidental items required for operation that may have been inadvertently omitted.

General Specifications

VMS control software shall, at a minimum, comply with the following:

- Operate on desktop and laptop computers with Intel Pentium III or better processors and Microsoft Windows NT 4.0, 2000 Professional, XP Professional, or Windows 7 operating systems
- Provide a user-friendly, multi-color, GUI
- Be written as a native 32-bit Windows program using Microsoft-certified software development tools (compilers, etc.)
- Be capable of controlling a network of at least 250 VMS
- Utilize a client-server architecture with the client connecting to the server via LAN or WAN and the server handling VMS communications
- Support VMS communications via any combination of dedicated hardwired serial network, fiber-optic network, dial-up telephone lines, leased phone lines, cellular telephone, CDPD, spread spectrum radio, Ethernet, or other
- Support VMS control, monitoring, and diagnostic functions
- Control VMS both remotely from a remote location and locally at the VMS site using a laptop computer
- Be accompanied by a software installation utility
- Furnish an operations manual that includes detailed instructions for configuring and using all parts of the software
- Contain an on-line help system that includes documentation for every screen or dialog box present in the software. The software shall also be context sensitive such that pressing the help button or [F1] key on any screen will launch the help page for that particular screen
- Be fully compliant with the communications protocol requirements of the NTCIP Special Provision

Software Security

VMS control software shall support the creation of user IDs and passwords for up to 100 system users. Only a System Administrator shall be permitted to create users and assign user access rights.

Before a system operator can use the VMS control software, the software shall request a username and password. If the correct username and password are not provided, access to the software shall be declined. The software shall lockout a user after failing to log in after a specified number of attempts.

Client-Server Architecture
The software shall be of a modular design including a server and multiple client modules. The server shall control all VMS communication and shall store all data and messages. The client software modules shall be capable of sending requests to and receive responses from the server over any TCP/IP-based network, including LANs and WANs. Separate clients shall be provided for each of the following software functions:

- Shell client that handles user login and logout and launching the other clients
- Display control client for controlling VMS messaging, monitoring system status, and performing VMS diagnostics
- Message editor client for creating and editing VMS messages
- Message scheduler client for creating time and date schedules for activating messages
- Administration client for VMS system configuration and administration

VMS Control
The VMS control software shall provide a user interface that presents the system's VMS status in both list and graphical formats. The software shall allow the VMSs to be grouped as needed by the administrator. The VMS list and map interfaces shall include only the VMSs for the group currently selected.

List and Map Interfaces
The VMS status list shall clearly display the following information about each VMS:

- VMS identification number, as "1" through "250"
- VMS name, in a descriptive text format
- Icon representation of the type of communication network used for the VMS (e.g. direct or dial-up)
- Name and priority level of message file being displayed
- Date and time of last communication between the control software and the VMS controller
- Error and warning status, including pixel errors, power failures, communication errors, etc.
- Configurable bitmaps that may be used to show all or parts of the system geographically
- Icons for each VMS that may be placed anywhere on the map
- Icon color changes to indicate the status of the VMS (i.e., yellow for warnings or red for errors)
- Icon flashes if a message is running on the VMS
- VMS name if mouse is placed over a VMS icon

Direct Control Operations
The user interface shall provide a means for users to directly perform the following tasks for each VMS:

- Send and activate stored messages from the libraries
- Blank the display
- Activate a quick message that is created immediately, not loaded from a library
- Send and activate schedules
- Retrieve both messages and schedules from the VMS
- Perform diagnostics of VMS subsystems such as power supplies, sensors, etc.
- Perform tests of pixels
- Monitoring of the VMS event log

Polling
The software shall have a feature to poll all or a set of VMS at predefined intervals or at a specific time-of-day. During a poll, the software shall retrieve the most recent status information from the VMS and present it to the user as appropriate in the list and map interfaces.

Scenarios
The administrator shall have the ability to create scenarios that act like macros or scripts to automate a series of often repeated tasks. These scenarios shall have the ability to perform the following actions:

- Send and activate stored messages from the libraries
- Blank the display
- Send and activate schedules
- Perform diagnostics of VMS subsystems such as power supplies, sensors, etc.
- Perform tests of pixels

The scenarios shall be saved to libraries where system operators may activate them through the GUI. The scenarios shall also be capable of running automatically at scheduled times if programmed by the user.

System Monitoring
The software shall be capable of monitoring and displaying to the operator the contents of any communications in progress with VMS. The status of all outgoing and incoming data packets shall be displayed.

Multi-Vendor VMS Control
The software shall be capable of controlling any NTCIP-compatible VMS regardless of the manufacturer. The software shall support all mandatory and optional features typical in LED VMS. The software shall be configurable to enable or disable support for any standard optional NTCIP objects.

Message Creation and Editing
A VMS system operator shall be able to use the VMS control software to create, edit, name, and store message files.

Message Editor Defaults
The message editor shall automatically utilize the following default settings during the

creation of new message files:

- Pixel spacing between adjacent lines of text
- Pixel spacing between adjacent text characters
- Display duration of a given message page
- Color palette to be used for color-capable VMSs
- Beacon activation status (for VMS that contain flashing beacons)
- Effect to be applied to text (e.g., static, scrolling, etc.)
- Effect rate, which shall determine the speed of scrolling messages
- Flash rate, which shall determine the speed of flashing messages
- Message priority classification
- Horizontal text justification supporting left, center, or right
- Vertical text justification supporting top, middle, and bottom

Message Priorities
User-definable default settings shall allow messages to be assigned a priority classification of:

- Emergency
- High
- Normal
- Low
- Minimal

A numeric priority range shall be assigned to each of these five priority classifications. The priority shall allow two different message files to be assigned the same classification. Within that classification, one message can be identified as having higher priority.

The message editor GUI shall present a scaled image of the VMS display matrix, including a complete and accurate representation of the display matrix type (full or line) and the number of display pixels. The VMS editor image shall actively show message content in a WYSIWYG format, while a new message is being created or an existing message is being edited.

The message editor shall provide the operator with the ability to program:

- The number of pages (one to six)that the message is to contain
- Message text
- Message graphics, including pixel-by-pixel editing, lines, area fill, block move, etc.
- Character font type(s) used to construct the message
- The amount of inter-line spacing, measured in pixels
- Horizontal message justification on the VMS display matrix including left, center, and right
- Vertical message justification on the VMS display matrix including top, middle, and bottom
- The type of entry effect (static or scrolling)
- Message page on time and off time
- Message scroll rate, if applicable
- The flash rate of all or part of a message page, if applicable
- Message priority status

- The display status of any flashing beacons mounted to the VMS

The message editor shall provide a method of incorporating data fields into a VMS message. The following data fields shall be provided:

- Time, in 12 hour format
- Time, in 24 hour format
- Temperature, in °F and °C
- Vehicle speed, in kph and mph (for VMS sites that contain speed measurement equipment)
- Day of week
- Day of the month
- Month of the year
- Calendar year, in both two-digit and four-digit formats

The message editor shall provide a convenient means for the operator to:

- Insert, add or delete message text
- Paste graphics from other programs using the Windows clipboard
- Clear the contents of the editing page
- Save the message file under its existing name or a new name
- Delete a message file
- Save all changes

It shall be possible to store message files in both the VMS control computer memory and the VMS controller memory.

The system operator shall have the ability to print any message or library of messages.

Message Libraries

VMS control software shall support the creation, editing and storage of message libraries (file directories), which allow the system operator to categorize message files by:

- VMS matrix size
- Message subject matter

The library editor shall allow a system operator to:

- Create a new library
- Store the same message in multiple libraries
- Select a message from an existing library and edit the message contents
- Search libraries for messages with specified text in message name or contents
- Copy/Paste a message from one library to another
- Delete a message file from a library
- Rename a library
- Delete a library
- Save all changes

Schedule Creation and Editing

VMS control software shall support the creation, editing and storage of message schedules, which instruct the VMS controller to run specific messages at pre-determined times and dates.

Software shall contain an editor, which allows messages to be scheduled via:

- Month of the year
- Day of the week
- Day of the month
- Time of day

The schedule editor shall provide a means for the operator to:

- Create a new schedule
- Rename an existing schedule
- Delete a schedule
- Save all change

It shall be possible to store schedule files in both the VMS control computer memory and the VMS controller memory.

Display Fonts

The software shall support a minimum of 12 fonts for each model of VMS. These fonts shall be configurable by the system administrator. The fonts used shall be selectable from a library containing a minimum of 24 fonts provided by the software vendor. Each VMS model shall be capable of using a different set of fonts. The software shall automatically adjust the available fonts in the message editor based on the VMS model configuration.

The software shall include a font editor to allow the operator to create custom fonts. The font editor shall allow the administrator to create new fonts or modify existing fonts. The operator shall have the capabilities to graphically edit each character within a font in a pixel-by-pixel manner.

All fonts provided by the software vendor or created/modified by the administrator shall be downloadable to the VMS.

Event Logging

The software shall include an event logging system that logs all system events. Each logged event shall, at a minimum, include the following:

- Event ID number
- Operator who initiated the event
- Time and date that the event occurred
- Description of the event (e.g., "Diagnostic Test Performed")
- Source of the event (e.g., VMS name)
- Additional data relevant to the event (e.g., "Failed pixel: (4, 73)")

The events logged shall include, but not be limited to, the following:

- User login/logout
- Failed login attempts
- Communication failures
- Message and schedule activation or display blanking
- Diagnostics test results
- Warning events sent from the VMS
- Other system errors

The system operator shall have the ability to view, sort by category, and print the log file at

any time.

System Configuration
The VMS control software shall allow users with security access rights to configure system parameters and functions. The basic sets of configurable settings include the following:

- VMS models and individual signs
- Communication networks
- System error/warning alarms
- User security rights
- System maps and VMS icon placement
- Default system options settings
- Default message parameters
- Message priority settings

VMS Configuration
At a minimum, the following information for each VMS shall be configurable in the VMS control software:

- VMS viewing area height and width (for full-matrix VMS)
- Number of lines and each line's height and width (for line-matrix VMS)
- Color capabilities (e.g., amber, tricolor, full-color, etc.)
- Site name
- VMS identification number
- Network address
- Communication parameters

Communication Settings
Communication network control shall include the ability to configure and modify VMS communication networks with the following parameters:

- Network type (e.g., direct serial, dial-up)
- Communication port (e.g. COM4)
- Baud rate (ranging from 1200 to 115,200)
- Hardware handshaking
- NTCIP subnetwork and transport protocols
- Communication retries and timeouts

System Alarms
Configurable settings shall allow the system administrator to determine which of the following events will trigger an audio and/or visual (on-screen) alarm:

- Communication failure
- Priority status conflict
- VMS restart
- Power supply failure
- Door open

User Administration
The administrator shall have the ability to add, remove and modify users and user's access rights. The access rights of each user shall be configurable to allow or deny access to any software feature.

System Maps
It shall be possible to configure each VMS group to appear on a map within the software. The administrator shall be able to use the software to select a map, identified as a bitmap file, which can then be imported into the software. Each VMS shall have an icon that may be placed anywhere on the map.

Software Use and Reproduction Rights
The VMS manufacturer shall provide a VMS control software site license with the VMS supplied for this contract. Ten copies of the VMS control software shall be provided to the engineer on CD-ROM within 30 days of contract award. The Cabinet shall have the right to request or reproduce an unlimited number of software copies for use on the VMS system installed for this contract.

Requirements for NTCIP Conformance
This section describes the minimum specifications for the NTCIP communication capabilities of the VMS controller and VMS control software. The contractor shall provide all software, firmware, and services necessary to operate a VMS system that fully complies with the NTCIP functional requirements, including incidental items required for operation that may have been inadvertently omitted.

References
These specifications reference standards through their NTCIP designated names. Table 3 lists the current version of each of these standards.

Each NTCIP device covered by these project specifications shall implement the version of the applicable standard listed in Table 3. Refer to the NTCIP library at http://www.ntcip.org for information on the current status of NTCIP standards.

Table 3: NTCIP Document References

Document Number	Document Title	Document Status
NTCIP 1101:1996 and Amendment 1	*Simple Transportation Management Framework (STMF)*	Jointly Approved
NTCIP 1102 v1.12	*Octet Encoding Rules (OER) Base Protocol*	Recommended Standard
NTCIP 1103 v1.15	*Transportation Management Protocols*	User Comment Draft
NTCIP 1201:1996 and Amendment 1	*Global Object Definitions*	Jointly Approved
NTCIP 1203:1997 and Amendment 1	*Object Definitions for Dynamic Message Signs*	Jointly Approved
NTCIP 2001:1996 and Amendment 1	*Class B Profile*	Jointly Approved
NTCIP 2101:2001	*Point to Multi Point Protocol (PMPP) Using RS-*	Jointly Approved

Document Number	Document Title	Document Status
	232 Subnetwork Profile	
NTCIP 2103 v1.13	*Point-to-Point Protocol Over RS-232 Subnetwork Profile*	Jointly Approved
NTCIP 2104 v1.10	*Ethernet Subnetwork Profile*	Jointly Approved
NTCIP 2201 v1.14	*Transportation Transport Profile*	Jointly Approved
NTCIP 2202:2001	*Internet (TCP/IP and UDP/IP) Transport Profile*	Jointly Approved
NTCIP 2301:2001	*Simple Transportation Management Framework (STMF) Application Profile*	Jointly Approved

Subnetwork Profiles
Each serial or modem port on each NTCIP device shall be configurable to support both NTCIP 2101 and NTCIP 2103. Only one of these profiles shall be active at any given time. Serial ports shall also support external dial-up modems.

Each Ethernet port on the NTCIP device shall comply with NTCIP 2104.

The NTCIP devices may support additional subnet profiles at the manufacturer's option. At any one time, only one subnet profile shall be active on a given port of the NTCIP device. All response datagram packets shall use the same transport profile used in the request. The NTCIP device shall be configurable to allow a field technician to activate the desired subnet profile and shall provide a visual indication of the currently selected subnet profile.

Transport Profiles
Each serial or modem port on each NTCIP device shall be configurable to support both NTCIP 2201 and NTCIP 2202.

Each Ethernet port on the NTCIP device shall comply with NTCIP 2202.

The NTCIP devices may support additional transport profiles at the manufacturer's option. Each NTCIP device shall support the receipt of datagram's conforming to any of the supported transport profiles at any time. Response datagram packets shall use the same transport profile used in the request.

Application Profiles
Each NTCIP device shall comply with NTCIP 2301 and shall meet the requirements for Conformance Level 1.

An NTCIP device may support additional application profiles at the manufacturer's option. Responses shall use the same application profile used by the request. Each NTCIP device shall support the receipt of application data packets at any time allowed by the subject standards.

Object Support
Each NTCIP device shall support all mandatory objects of all mandatory conformance groups as defined in NTCIP 1201 and NTCIP 1203.

Each NTCIP device shall support all mandatory objects in all optional conformance groups. All optional objects listed shall be supported.

The NTCIP devices shall support the optional conformance groups listed in Table 4.

Table 4: Optional Conformance Groups

Conformance Group	Reference
Time Management	NTCIP 1201
Timebase Event Schedule	NTCIP 1201
Report	NTCIP 1201
PMPP	NTCIP 1201
Font Configuration	NTCIP 1203
VMS Configuration	NTCIP 1203
MULTI Configuration	NTCIP 1203
MULTI Error Configuration	NTCIP 1203
Illumination/Brightness Control	NTCIP 1203
Scheduling	NTCIP 1203
VMS Status	NTCIP 1203
Status Error	NTCIP 1203
Pixel Error Status	NTCIP 1203

Table 5 lists objects that are considered optional in the NTCIP standards, but are required by this specification. Table 5 also indicates modified object value ranges for certain objects. Each NTCIP device shall provide the FSORS of all objects required by these specifications unless otherwise indicated in Table 5.

Table 5: Modified Object Ranges and Required Optional Objects

Object	Reference	Project Requirement
ModuleTable	NTCIP 1201 Clause 2.2.3	Shall contain a minimum of one row with moduleType = 3 (software).
maxTimeBaseScheduleEntries	NTCIP 1201 Clause 2.4.3.1	Shall be a minimum of 28
MaxDayPlans	NTCIP 1201 Clause 2.4.4.1	Shall be a minimum of 20
maxDayPlanEvents	NTCIP 1201 Clause 2.4.4.2	Shall be a minimum of 12
maxEventLogConfig	NTCIP 1201 Clause 2.5.1	Shall be a minimum of 50
eventConfigMode	NTCIP 1201 Clause 2.4.3.1	NTCIP Component shall support the onChange, greaterThanValue, and smallerThanValue event configurations
eventConfigLogOID	NTCIP 1201 Clause 2.5.2.7	FSORS
eventConfigAction	NTCIP 1201 Clause 2.5.2.8	FSORS
maxEventLogSize	NTCIP 1201 Clause 2.5.3	Shall be a minimum of 200
maxEventClasses	NTCIP 1201 Clause 2.5.5	Shall be a minimum of 16
eventClassDescription	NTCIP 1201 Clause 2.5.6.4	FSORS
maxGroupAddresses	NTCIP 1201 Clause 2.7.1	Shall be a minimum of 1
communityNamesMax	NTCIP 1201 Clause 2.8.2	Shall be a minimum of 3

Object	Reference	Project Requirement
NumFonts	NTCIP 1203 Clause 2.4.1.1.1.1	Shall be a minimum of 8
MaxFontCharacters	NTCIP 1203 Clause 2.4.1.1.3	Shall be a minimum of 255
defaultFlashOn	NTCIP 1203 Clause 2.5.1.1.1.3	VMS shall support the full range of these objects with step sizes between 0.1 and 0.5 seconds
defaultFlashOff	NTCIP 1203 Clause 2.5.1.1.1.4	VMS shall support the full range of these objects with step sizes between 0.1 and 0.5 seconds
defaultBackgroundColor	NTCIP 1203 Clause 2.5.1.1.1.1	VMS shall support the black background color
defaultForegroundColor	NTCIP 1203 Clause 2.5.1.1.2	VMS shall support the amber foreground color
defaultJustificationLine	NTCIP 1203 Clause 2.5.1.1.1.6	VMS shall support left, center, and right line justification
defaultJustificationPage	NTCIP 1203 Clause 2.5.1.1.1.7	VMS shall support top, middle, and bottom page justification
defaultPageOnTime	NTCIP 1203 Clause 2.5.1.1.1.8	VMS shall support the full range of this object with step sizes no larger than 0.5 seconds
defaultPageOffTime	NTCIP 1203 Clause 2.5.1.1.1.9	VMS shall support the full range of this object with step sizes no larger than 0.5 seconds
defaultCharacterSet	NTCIP 1203 Clause 2.5.1.1.1.10	VMS shall support the eight bit character set
dmsMaxChangeableMsg	NTCIP 1203 Clause 2.6.1.1.1.4	Shall be a minimum of 100
dmsMessageMultiString	NTCIP 1203 Clause 2.6.1.1.1.8.3	VMS shall support any valid MULTI string containing any subset of the MULTI tags listed in Table 6
dmsControlMode	NTCIP 1203 Clause 2.7.1.1.1.1	Shall support, at a minimum, the following modes: local, central, and centralOverride
DmsSWReset	NTCIP 1203 Clause 2.7.1.1.1.2	FSORS
dmsMessageTimeRemaining	NTCIP 1203 Clause 2.7.1.1.1.4	FSORS
dmsShortPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.8	FSORS
dmsLongPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.19	FSORS
dmsShortPowerLossTime	NTCIP 1203 Clause 2.7.1.1.1.10	FSORS
dmsResetMessage	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsCommunicationsLossMessage	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsTimeCommLoss	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsEndDurationMessage	NTCIP 1203 Clause 2.7.1.1.1.15	FSORS
dmsMemoryMgmt	NTCIP 1203 Clause 2.7.1.1.1.16	VMS shall support the normal and clearChangeableMessages memory management modes
dmsMultiOtherErrorDescription	NTCIP 1203 Clause 2.4.1.1.1.20	If the vendor implements any vendor-specific MULTI tags, the VMS shall provide meaningful error messages within this object whenever one of these tags generates an error

Object	Reference	Project Requirement
dmsIllumControl	NTCIP 1203 Clause 2.8.1.1.1.1	VMS shall support photocell and manual illumination control modes
dmsIllumNumBrightLevels	NTCIP 1203 Clause 2.8.1.1.1.4	Shall be a minimum of 255
dmsIllumLightOutputStatus	NTCIP 1203 Clause 2.8.1.1.1.9	FSORS
numActionTableEntries	NTCIP 1203 Clause 2.9.1.1.1	Shall be a minimum of 200
watcdogFailureCount	NTCIP 1203 Clause 2.11.1.1.1.5	FSORS
dmsStatDoorOpen	NTCIP 1203 Clause 2.11.1.1.1.6	FSORS
FanFailures	NTCIP 1203 Clause 2.11.2.1.1.8	FSORS
fanTestActivation	NTCIP 1203 Clause 2.11.2.1.1.9	FSORS
tempMinCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.1	FSORS
tempMaxCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.2	FSORS
tempMinSignHousing	NTCIP 1203 Clause 2.11.4.1.1.5	FSORS
tempMaxSignHousing	NTCIP 1203 Clause 2.11.4.1.1.6	FSORS

MULTI Tags

Each NTCIP device shall support the message formatting MULTI tags in Table 6. The manufacturer may choose to support additional standard or manufacturer-specific MULTI tags.

Table 6: Required MULTI Tags

MULTI Tag	Description
F1	Field 1 time (12 hr)
F2	Field 1 time (24 hr)
F8	Field 8 day of month
F9	Field 9 month
F10	Field 10 2 digit year
F11	Field 11 4 digit year
Fl (and /fl)	Flashing text on a line-by-line basis with flash rates controllable in 0.1 second increments.
Fo	Font
Jl2	Line Justification - Left
Jl3	Line Justification - Center
Jl4	Line Justification - Right
JP2	Page Justification - Top
JP3	Page Justification - Middle
JP4	Page Justification - Bottom
Mv	Moving text
Nl	New line
np	New page up to at least 5 instances in a message (i.e. up to at least 1 to 6 pages/frame in a message counting first page)
Pt	Page times controllable in 0.1-second increments

DOCUMENTATION

NTCIP documentation shall be provided on CD-ROM and contain ASCII versions of the

following MIB files in ASN.1 format:

- The version of each official standard MIB module referenced by the device.
- If the device does not support the full range of any given object within a standard MIB module, a manufacturer-specific version of the official standard MIB module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro. The filename of this file shall be identical to the standard MIB Module except that it shall have the extension "man".
- An MIB module in ASN.1 format containing any and all manufacturer specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros.
- An MIB containing any other objects supported by the device

ACCEPTANCE TESTING
The manufacturer shall provide certification of NTCIP-compliance as part of the pre-build submittal documentation. This certification shall be in the form of a comprehensive test plan and completed test report as performed by either the ITS integrator or a third-party testing agency. The testing shall have been completed using industry accepted test tools such as the NTCIP Exerciser, Trevilon's NTester, Intelligent Devices' Device Tester, and/or Frontline's FTS for NTCIP. Data capture files from the FTS software during the performance of the above testing shall be furnished upon request of the Engineer.

The Engineer may perform additional NTCIP testing if desired. This testing shall be conducted on a production VMS in the manufacturer's facility during the factory acceptance test. The manufacturer shall provide a written NTCIP test procedure to the Engineer a minimum of 30 days prior to the NTCIP testing.

This item includes conduit and wiring on supporting structure. This item includes all costs for the manufacturer field engineer to perform on-site testing and setup. This item includes all costs for engineering analysis required in the VMS specifications.

INTERPRETATION RESOLUTION
If the Engineer or VMS manufacturer discovers an ambiguous statement in the standards referenced by this procurement specification, the issue shall be submitted to the NTCIP VMS Working Group for resolution. If the Working Group fails to respond within 90 days, the Engineer shall provide an interpretation of the specification for use on the project.

WARRANTY
The manufacturer shall supply at least a five year warranty of all components involved with the operations of the VMS sign. This shall include any tech support, replacement parts and shipping of replacement parts. All warranties shall be transferable and shall start when the VMS Sign is commissioned on site by the manufacturer.

INSTALLATION
VMS shall be installed in accordance with the sign and truss manufacturers' specifications. The Contractor shall coordinate with the sign and truss manufacturers to resolve mechanical compatibility problems prior to fabrication of either item. The contractor is responsible for supplying all mounting hardware to the VMS sign.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Variable Message Sign will be measured for payment per unit each. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

WIRE AND CABLE

DESCRIPTION

Furnish and install Wire and Cable in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Unless otherwise specified, wire shall be stranded copper type USE-2. This item shall include all connectors, splicing and insulating hardware, ties, tape, labels and incidentals required for electrical connections. The Contractor shall submit to material testing at the discretion of the Engineer.

INSTALLATION

The Contractor shall install all cable or wire runs splice-free from the controller/service location to each cabinet, VMS sign, or CCTV camera the cable or wire is feeding. All wire shall be labeled inside cabinets and junction boxes. The contractor shall not use excessive force when pulling wire through duct. The contractor shall replace all wire damaged during installation. The Engineer may require testing of wiring for damaged insulation. Wire that does not pass an insulation resistance test of a minimum of 100 hundred megohms to ground shall be replaced by the Contractor at his cost.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Wire and cable will be measured for payment per unit linear foot. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

COMMUNICATIONS CABLE

DESCRIPTION

Furnish and install Communications Cable in accordance with the plans, specifications and Standard Drawings.

MATERIALS

Communications cable shall be General Cable GenSpeed 5000 CAT 5e Outside Plant Cable 8 wire PN: 5136100 or approved equal. The cable shall meet or exceed the following specifications:
Performance:

- ANSI/TIA/EIA 568B (Category 5e)
- MIL-C-24640A Water Penetration
- Propagation Delay: 583 ns @ 100 MHz

- Return Loss @ 100 MHz: 20.1 DB
- Frequency Range: 1-350 MHz

Physical characteristics:

- Nominal Outside Diameter: 0.230 in
- Insulation Type: Polyolefin
- Maximum Pulling Tension: 25 lbs
- Maximum DC Resistance: 9.38 Ohms/100m
- Mutual Capacitance @ 1kHz: 17 pF/100m
- Operating Temperature: -45° C to 80° C

All connectors, terminators, fittings, etc. shall be incidental to the cost of installing the Communications Cable and no separate payment will be made.

INSTALLATION

The Contractor shall install all cable and wire splice-free from the controller/service location to each cabinet, VMS sign, or CCTV camera the cable or wire is feeding. The Contractor shall not use excessive force when pulling wire through duct. The Contractor shall replace all wire damaged during installation. The Contractor shall submit to material testing at the discretion of the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Communications Cable will be measured for payment per unit linear foot The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

REMOVE, STORE, AND REINSTALL CAMERA SYSTEM AND TRUSS

DESCRIPTION

Remove, store, and reinstall camera system and truss in accordance with the plans, specifications and Standard Drawings.

MATERIALS

The contractor will be responsible for furnishing and installing new anchor bolts for the truss bases and the 80 foot camera pole. The contractor shall submit shop drawings and detail analysis for the approval of the anchor bolts to Central office Division of Traffic Operations. The anchor bolts shall meet the minimum standard that is stated in section 834.16. The anchor bolt design shall follow the NCHRP Report 494 Section 2.4 and NCHRP 469 Appendix A Specifications. See the bridges plans for the design of the truss base. See the traffic plans for the design of the 80 foot pole base.
This item also includes all materials used to do additional barrier wall transition from the new truss base.

INSTALLATION

Remove and store existing southbound Truss in the existing rest area. The contractor shall be responsible for any damage that is cause by the removal of the southbound truss at the rest area. If this truss is damaged the contractor shall replace damaged items this with a like item. The removal of the existing median wall shall be incidental to bid item. The existing ladder shall be modified so that the ladder access is accessible from ground level near new truss base. Also the catwalk shall be modified to center the new sign over the existing three lane roadway as shown on this plan sheet. Catwalk also shall be modified so that the new VMS sign door can be accessible and be opened on the existing catwalk. The contractor should make sure the existing attachment hardware on the existing truss will be suitable to attach the new VMS sign (contractor may have to add more attachment hardware). The modification of the ladder, catwalk, and attachment hardware shall be incidental to bid item Remove, Store, and reinstall Truss.

Remove and store existing Camera System (camera pole/336 cabinet/lowering device/camera) at the southbound rest area. The camera and the lowering will be remove from the pole and given to Central Office Division of Traffic Operations. The new camera and lowering device will be paid under a different bid item. The contractor shall be responsible for any damage that is cause by the removal of the existing camera location items at the rest area. If any of the existing items are damage the contractor shall replace damaged items with a like item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Remove, store, reinstall Truss/Camera System will be measured for payment per each unit. The Department will make payment for complete, functioning, inspected, and accepted quantities. The Department will consider payment as full compensation for all work required under this section.

Vented Rodent Barrier Detail

Vented rodent barrier – Prior to erecting tubular structures and poles on concrete foundations formed with conduit sweeps, a double lapped ring barrier of standard commercial grade 27 gauge hot dipped galvanized 1/8 inch woven wire mesh shall be placed inside the foundations bolt circle. The height of the wire mesh ring barrier shall be from the concrete foundation to the top of the leveling nuts and washers plus 1/4 inch. The Contractor shall take all necessary steps to assure the wire mesh ring will remain in place to eliminate any access through the base plate opening of the tubular structure or pole when erected and plumbed. The Contractor shall not weld or drill to the base plate of the pole. Optional vented rodent barrier designs and materials may be used when approved by the Engineer and at no additional cost to the Department.

Vented Rodent Barrier

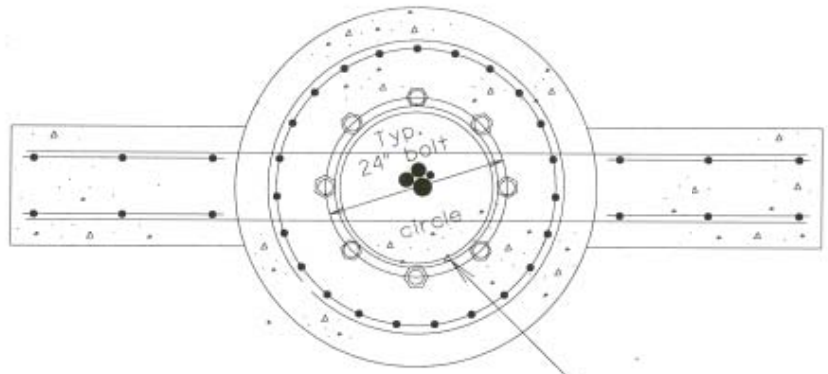
Notes:

1) Wire Mesh Ring
   - 1/8" Woven Hardware Cloth
   - 27 Gauge (Commerical Grade)
   - Hot dipped galvanized
   - Doubled Lapped
   - Length & Height determined by field measurements
   - Secured with Wire Twist Ties

2) Wire mesh ring shall be placed inside the bolt circle before pole is erected and plumbed.

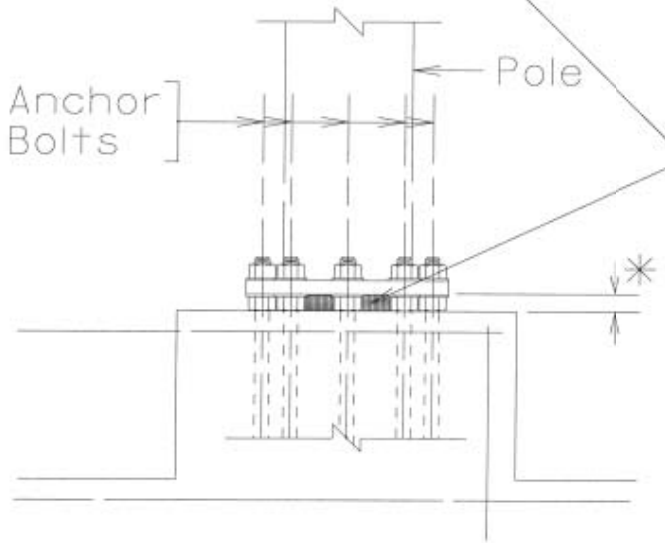
3) Wire mesh ring shall be compressed between pole base plate, concrete foundation and bolt circle. Take all necessary steps to assure the wire mesh ring will remain in place and any access through the pole base plate opening is eliminated.

4) Welding or drilling is not permitted on base plate of pole.



DETAIL "A"

Wire Twist Ties



WIRE MESH RING
(DETAIL "A")

SCALE: NONE

Vented Rodent Barrier

...\Spec\CADD\special\RATBAR~1.DGN 04/08/2004 09:52:45 AM

GLOSSARY

The following acronyms, abbreviations, and definitions shall govern this specification:

- AASHTO – American Association of State Highway and Transportation Officials
- ABS - Acrylonitrile Butadiene Styrene
- AC – Alternating Current
- AlInGaP – Aluminum Indium Gallium Phosphide (refers to the chemical composition of an LED).
- ANSI – American National Standards Institute
- ASCII – American Standard Code for Information Interchange
- ASN.1 – Abstract Syntax Notation 1
- ASTM – American Society for Testing and Materials
- AWG - American Wire Gauge
- AWS – American Welding Society
- BCD – Binary Coded Decimal
- B frames – Bi-directional Predicted Frames
- BGP – Border Gateway Protocol
- Bin – Group of LEDs categorized and sorted by intensity or color. Each bin has upper and lower intensity or color specifications and contains only LEDs that are measured to be within that range. LED manufacturers sort LEDs into bins to ensure consistent intensity and color properties.
- BOOTP – Bootstrap Protocol
- CALTRANS – California Department of Transportation
- CAN – Control Area Network
- CCTV – Closed Circuit Television
- CDPD – Cellular Digital Packet Data
- CLI – Command Line Interface
- CNC – Computer Network Control
- Control Computer – A desktop or laptop computer used in conjunction with VMS control software to communicate with VMS sign controllers. The control computer can instruct a VMS sign controller to program and control the VMS, monitor VMS status, and run VMS diagnostic tests. A control computer can be used for remote control of one of more VMS, as well as for local control of a single VMS
- DC – Direct Current
- DHCP – Dynamic Host Configuration Protocol
- DMS – Dynamic Message Sign. An industry term that applies to various types of changeable sign technology
- DVI-D – Digital Visual Interface - Digital
- EIA – Electronic Industries Association
- ELFEXT – Equal Level Far End Crosstalk
- EPA – Effective Projected Area
- FCC – Federal Communications Commission
- FDA – Food and Drug Administration
- Font – The style and shape of alphanumeric characters that are displayed on the VMS matrix to create messages viewed by motorists and travelers
- Frame – see *Page*

- FSORS – Full, Standardized Object Range Support – an NTCIP term. See the NTCIP standards for additional information.
- GUI – Graphical User Interface
- HDPE – High Density Polyethylene
- HHR – Half Horizontal Resolution
- HTTP – Hypertext Transfer Protocol
- IEEE – Institute of Electrical and Electronic Engineers
- I frames – Intra-frames
- IC – Integrated Circuit
- IGMP
- InGaAlP – Indium Gallium Aluminum Phosphide
- I/O – Input/Output
- IP – Internet Protocol – in transceivers
- IRE – Institute of Radio Engineers
- ISO – International Organization for Standardization
- ITE – Institute of Transportation Engineers
- ITS – Intelligent Transportation System
- Kbps – Kilobits per second
- KYTC – Kentucky Transportation Cabinet
- LAN – Local Area Network
- LCD – Liquid Crystal Display
- LED – Light Emitting Diode
- MDPE – Medium Density Polyethylene
- Message – Information displayed on the VMS for the purpose of visually communicating with motorists. A VMS message can consist of one or more pages of data that are displayed consecutively
- MIB – Management Information Base
- Module – Assembly consisting of a two-dimensional LED pixel array, pixel drive circuitry, and mounting hardware. Modules are installed in the display adjacent to each other to form the display matrix.
- MTBF – Mean Time Between Failures
- MPEG – Moving Picture Experts Group
- NEC – National Electrical Code
- NEMA – National Electrical Manufacturers Association
- NESC – National Electrical Safety Code
- NEXT – Near End Crosstalk
- NCHRP – National Cooperative Highway Research Program
- NRZ – Non Return to Zero
- NRZI – Non Return to Zero Inverted
- NTCIP – National Transportation Communications for ITS Protocol
- NTSC - National Transmission Standards Committee
- Object – An NTCIP term referring to an element of data in an NTCIP-compatible device that can be manipulated to control or monitor the device.
- OER – Octet Encoding Rules
- OSHA – Occupational Safety and Health Administration

- OTDR – Optical Time Domain Reflectometer
- Page – An NTCIP term referring to the data that is displayed on the VMS display matrix at a given moment in time. Also referred to as a frame.
- P frames – Forward Predicted Frames
- PCB – Printed Circuit Board
- Pixel – Picture element. The smallest changeable (programmable) portion of a VMS display matrix
- PMPP – Point to Multi-Point Protocol
- PPP – Point to Point Protocol
- PSELFEXT – Power Sum Equal Level Far End Cross Talk
- PSNEXT – Power Sum Near End Crosstalk
- PTZ – Pan/Tilt/Zoom
- PVC – Polyvinyl Chloride
- PWM – Pulse Width Modulation
- QSIF – Quarter Source Input Format
- RAM – Random Access Memory
- RARP – Reverse Address Resolution Protocol
- RGB – Red-Green-Blue
- Schedule – A set of data that determines the time and date when a VMS sign controller will cause a stored message to be displayed on the VMS
- SDRAM – Synchronous Dynamic Random Access Memory
- SIF – Source Input Format
- SNMP – Simple Network Management Protocol
- STMP – Simple Transportation Management Framework
- Stroke – Refers to the vertical and horizontal width of the lines and curves of a display font. Single stroke denotes character segments that are one pixel wide. Double stroke denotes character segments that are two pixels wide.
- TFTP – Trivial File Transfer Protocol
- TIA - Telecommunications Industry Association
- TMA – Truck Mounted Attenuator
- TOC – Traffic Operations Center
- UL – Underwriters Laboratories
- UPS – Uninterruptible Power Supply
- USB – Universal Serial Bus
- VLAN – Virtual Local Area Network
- VMS – Variable Message Sign. A type of VMS that is fully programmable such that the content of its messages are fully changeable remotely and electronically.
- VMS Controller – A stand-alone computer that is located at a VMS site, which controls a single VMS. A sign controller receives commands from and sends information to a control computer
- WAN – Wide Area Network
- WYSIWYG – What You See Is What You Get. More specifically, what you see on the VMS control computer monitor is a scaled representation of how a message will appear when it is being displayed on the VMS. Similarly, after a pixel diagnostic test routine has been run, what you see on the control computer monitor is a scaled representation of the functional status of each pixel in the VMS display matrix.

Right-of-Way Certification Form

Revised 2/22/11

☑ Federal Funded ☐ Original

☐ State Funded ☐ Re-Certification

This form must be completed and submitted to FHWA with the PS&E package for federal-aid funded Interstate, Appalachia, and Major projects. This form shall also be submitted to FHWA for all federal-aid projects that fall under Conditions No. 2 or 3 outlined elsewhere in this form. When Condition No. 2 or 3 apply, KYTC shall resubmit this ROW Certification prior to construction contract Award. For all other federal-aid projects, this form shall be completed and retained in the KYTC project file.

Date: NOVEMBER 13, 2014

Project Name: I-75 INTERCHANGE AT CHERRY BLOSSOM
Project #: 12FO FD52 105 8851401R
Item #: 7-425.00
Letting Date: DECEMBER
County: SCOTT
Federal #: NHPP 0756 (098)

Description of Project: CONSTRUCT NEW I-75 INTERCHANGE AND APPROACH ROADWAY FROM CHAMPION WAY TO CHERRY BLOSSOM WAY IN GEORGETOWN

Projects that require NO new or additional right-of-way acquisitions and/or relocations

☐ The proposed transportation improvement will be built within the existing rights-of -way and there are no properties to be acquired, individuals, families, and businesses ("relocatees") to be relocated, or improvements to be removed as a part of this project

Projects that require new or additional right-of-way acquisitions and/or relocations

☐ Per 23 CFR 635.309, the KYTC hereby certify that all relocatees have been relocated to decent, safe, and sanitary housing or that KYTC has made available to relocatees adequate replacement housing in accordance with the provisions of the current FHWA directive(s) covering the administration of the Highway Relocation Assistance Program and that at least one of the following three conditions has been met. (Check those that apply.)

☐ **Condition 1.** All necessary rights-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. Fair market value has been paid or deposited with the court.

☐ **Condition 2.** Although all necessary rights-of-way have 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. Trial or appeal of 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. Fair market value has been paid or deposited with the court for most parcels. Fair market value for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract (See note 1 below.)

Note 1: The KYTC shall re-submit a right-of-way certification form for this project prior to AWARD of all Federal-Aid construction contracts. Award must not to be made until after KYTC has obtained full legal possession and fair market value for all parcels has been paid or deposited with the court and FHWA has concurred in the re-submitted right-of-way certification.

Right-of-Way Certification Form

Revised 2/22/11

☐ **Condition 3.** The acquisition or right of occupancy and use of a few remaining parcels are not complete and/or some parcels still have occupants. However, all remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. The KYTC is hereby requesting authorization to advertise this project for bids and to proceed with bid letting even though the necessary rights-of-way will not be fully acquired, and/or some occupants will not be relocated, and/or the fair market value 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. A full explanation and reason for this request, including identification of each such parcel and dates on which acquisitions, payments, and relocations will be completed, is attached to this certification form for FHWA concurrence. (See note 2.)

Note 2: The KYTC may request authorization on this basis only in unique and unusual circumstances. Proceeding to bid letting shall be the exception and never become the rule. In all cases, the KYTC shall make extraordinary efforts to expedite completion of the acquisition, payment for all affected parcels, and the relocation of all relocatees prior to AWARD of all Federal-Aid construction contracts or force account construction.

Approved: REX ALEXANDER (Printed Name) — Rex Alexander (Signature) — Right-of-Way Supervisor

Approved: D M Lay (Printed Name) — (Signature) — 20 Nov 2014 — KYTC, Director of ROW &Utilities

Approved: DAVID WHITWORTH (Printed Name) — (Signature) — 11-20-2014 — FHWA, ROW Officer (when applicable)

Right-of-Way Certification Form

Revised 2/22/11

Date: NOVEMBER 13, 2014

Project Name: I-75 INTERCHANGE AT CHERRY BLOSSOM
Project #: 12FO FD52 105 8851401R
Item #: 7-425.00
Letting Date: DECEMBER

County: SCOTT
Federal #: NHPP 0756 (098)

This project has 3 total number of parcels to be acquired, and 0 total number of individuals or families to be relocated, as well as 0 total number of businesses to be relocated.

____ Parcels where acquired by a signed fee simple deed and fair market value has been paid

____ Parcels have been acquired by IOJ through condemnation and fair market value has been deposited with the court

3 Parcels have not been acquired at this time (*explain below for each parcel*)

____ Parcels have been acquired or have a "right of entry" but fair market value has not been paid or has not been deposited with the court (*explain below for each parcel*)

____ Relocatees have not been relocated from parcels ____, ____, ____, ____, ____, ____, and ____ (*explain below for each parcel*)

Parcel #	Name/Station	Explanation for delayed acquisition, delayed relocation, or delayed payment of fair market value	Proposed date of payment or of relocation
1	WHITAKER LAND COMPANY	DEDICATION WAITING ON LEGAL TO APPROVE DEED THEN MEETING WITH OWNER	12/12/14
2	TOYOTA MOTOR MANUFACTURING USA,	DEDICATION. OWNER IS REVIEWING DEED.	12/12/14
3	US2-62 PARTNERS, LLC	APPRAISAL TO BE APPROVED 11/14 FMV OFFER NEXT WEEK. OWNER SHOULD BE IN AGREEMENT	12/12/14

There are 0 billboards and/or 0 cemeteries involved on this project.

There are 0 water or monitoring wells on parcels ____, ____, ____, ____, and ____. All have been acquired and are the responsibility of the project contractor to close/cap.

Form Effective Date: April 1, 2006
Last Revised: February 22, 2011

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

SCOTT COUNTY, NHPP 0756 (099)
FD52 105 88514
INTERSTATE 75
NEW INTERCHANGE AT TOYOTA
SIX YEAR PLAN ITEM NUMBER 7-425.00

GENERAL PROJECT NOTE ON UTILITY PROTECTION

Utility relocations have not yet begun on this project. The full extent of the necessary Utility relocation work will not be known until all of the Utility Companies have submitted their relocation plan and estimate. It is unknown if the highway contractor will have productive work available through the project, that is for the highway contractor to determine. The highway contractor should not anticipate that any utility relocation work will be complete before the letting, or before the award of the contract; consequently, the highway contractor should prepare the construction schedule accordingly.

Kentucky Utilities Company – Transmissions. The company has stated that construction occurring beneath their facilities will require the Cabinet's contractor to exercise additional diligence and caution. Therefore, in order to provide additional protection to both their facility and any personnel working in the area, they have established a twenty (20) foot clear zone around the conductor and neutral cables. The contractor is cautioned that this clear zone should not be breached in any manner, and should take this into account when determining construction methods and procedures. This note should be viewed as an addition to any other regularly employed safety measures, and is not intended to eliminate any safety measures.

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

Kentucky Utilities Company – Distribution. Aerial crossing at approximate station 5132+00, and at approximate station 5155+00. In addition to, facility adjacent to the project limits. The company has determined that the clearances above the Interstate-75 facility are adequate, and their facility will not require relocation.

Kentucky Utilities Company – Transmission. Crossing the mainline of I-75 at approximate station 5117+50, then continuing northeasterly to a crossing of the proposed Access Road, then proceeding adjacent to the proposed Access Road, from approximate station 160+00, and through the intersection with US-62. Additionally, the company has a facility adjacent to the east right-of-way line through the length of the project, from approximate station 5117+50 to approximate station 5158+00

Kentucky American Water Company facility adjacent to the east right-of-way line through the length of the project. In addition to facility located through the I-75 Access Road corridor from approximate station 120+00 to approximate station 128+50.

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

SCOTT COUNTY, NHPP 0756 (099)
FD52 105 88514
INTERSTATE 75
NEW INTERCHANGE AT TOYOTA
SIX YEAR PLAN ITEM NUMBER 7-425.00

AT&T – Legacy. Facility located adjacent to the west right-of-way line through the length of the project.

AT&T – Kentucky is attached to KU – Distribution poles at the crossing at approximate station 5132+00. The company also has buried facility located on the east side of the I-75 facility from approximate station 5132+00 to approximate station 5150+00, serving the rest areas and the adjacent Toyota facility.

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

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

It is not anticipated that any of the utility facilities will be relocated prior to the letting of the project.

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

Kentucky Utilities Company – Transmission. Adjacent to the east right-of-way line through the length of the project. This facility will be relocated to an area outside of the proposed right-of-way along the east side of I-75, from approximate station 5130+00 to approximate station 5158+00, crossing the Access Road at approximate station 132+00. Additionally, there is a facility crossing the mainline of I-75 at approximate station 5117+50, then continuing northeasterly to a crossing of the proposed Access Road, then proceeding adjacent to the proposed Access Road, from approximate station 160+00, and through the intersection with US-62. The adjustments to this portion of the facility will be the replacement/relocation of two poles, located at approximate stations 156+00 (approximately 280 feet right, along the proposed access road to be "built by others"), and 159+25 (approximately 100 feet right). The delivery of the company's steel structures is not expected until approximately June 2015; and, considering the amount of time the company has estimated will be required to complete the relocation work, the company has been assigned a completion date of December 2016. However, this will also depend on allowable/scheduled outages of the transmission facility, and weather in the area, and through-out the region which may cause unexpected delays.

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

SCOTT COUNTY, NHPP 0756 (099)
FD52 105 88514
INTERSTATE 75
NEW INTERCHANGE AT TOYOTA
SIX YEAR PLAN ITEM NUMBER 7-425.00

Kentucky American Water Company facility adjacent to the east right-of-way line through the length of the project. In addition the company has a facility located through the I-75 Access Road corridor from approximate station 120+00 to approximate station 129+00, and currently located in the area of the proposed bridge construction. The company is expected to relocate their facility to the utility easement areas being acquired at the same time as the right-of-way; consequently, should be relocated to outside of the construction areas, except possibly where the new facility will cross the proposed Access Road and the existing Interstate-75 roadways. Unfortunately, at this time the right-of-way and the easement areas have not been secured, and the company has yet to provide a final relocation plan and estimate. Therefore, even though we have nothing upon which to base a beginning or a completion date for this relocation, we are assigning a completion date to this company of July 2017. However, weather in the area may cause further delays.

AT&T – Legacy. Facility located adjacent to the west right-of-way line through the length of the project. The company is expected to relocate their facility to the utility easement areas being acquired at the same time as the right-of-way; consequently, should be relocated to outside of the construction areas, except possibly where the new facility will cross the proposed Access Road. Unfortunately, at this time the right-of-way and the easement areas have not been secured, and the company has yet to provide a final relocation plan and estimate. Therefore, even though the company had previously provided an optimistic clearance date, we have nothing further upon which to base a beginning or a completion date for this relocation. Consequently, we are assigning a completion date to this company of July 2017. However, acquisition of a cut-over date and/or weather in the area may cause further delays.

AT&T – Kentucky is attached to KU – Distribution poles at the crossing at approximate station 5132+00. The company also has buried facility located on the east side of the I-75 facility from approximate station 5132+00 to approximate station 5150+00, serving the rest areas and the adjacent Toyota facility. The company has yet to determine the extent of their relocation; however, it is expected that any necessary relocation will utilize the utility easement areas being acquired at the same time as the right-of-way; consequently, should be relocated to outside of the construction areas, except possibly where the new facility may need to cross the proposed Access Road and/or the existing Interstate-75 roadways. Unfortunately, at this time the right-of-way and the easement areas have not been secured, and the company has yet to provide a final relocation plan and estimate. Therefore, even though we have nothing upon which to base a beginning or a completion date for this relocation, we are assigning a completion date to this company of July 2017. However, weather in the area may cause further delays.

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

SCOTT COUNTY, NHPP 0756 (099)
FD52 105 88514
INTERSTATE 75
NEW INTERCHANGE AT TOYOTA
SIX YEAR PLAN ITEM NUMBER 7-425.00

The Department will consider submission of a bid as the Contractor's agreement to not make any claims for additional compensation due to delays or other conditions created by the operations of the utility companies. Working days will not be charged for those days on which work on the utility companies' is delayed, as provided in the current edition of the KY Standard Specifications for Road and Bridge Construction. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to the project, the KYTC Resident Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and his decision shall be final and binding upon the Contractor. .

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

The sanitary sewer facilities serving the I-75 Rest Areas are the property of the Commonwealth of Kentucky, and the relocation and/or adjustment of those facilities have been included as a part of the Cabinet's project proposal.

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

SCOTT COUNTY, NHPP 0756 (099)
FD52 105 88514
INTERSTATE 75
NEW INTERCHANGE AT TOYOTA
SIX YEAR PLAN ITEM NUMBER 7-425.00

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

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

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

BEFORE YOU DIG

The contractor is instructed to call 1-800-752-6007 to reach KY 811, the one-call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that owners of underground facilities are not required to be members of the KY 811 one-call Before-U-Dig (BUD) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY 811. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area.

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

Scott County
New I-75 Interchange
7-425.00

SPECIAL NOTE FOR AWARD OF CONTRACT

Due to pending Water Quality Certification and Army Corp of Engineers Permit, contrary to section 103.02 of the Standard Specifications for Road and Bridge Construction, the Department may hold and not award the contract for a period not to exceed sixty (60) calendar days from the date of the letting.

Kentucky Transportation Cabinet

Highway District 7

And

_____(2), Construction

Kentucky Pollutant Discharge Elimination System Permit KYR10 Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

New I-75 Interchange at MP 127

Project: PCN ## -

KyTC BMP Plan for Project PCN ## - ####

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 7

2. Resident Engineer: (2)

3. Contractor name: (2)
   Address: (2)

   Phone number: (2)
   Contact: (2)
   Contractors agent responsible for compliance with the KPDES permit requirements (3):

4. Project Control Number (2)

5. Route (Address): I-75 MP 127, Georgetown, KY 40324

6. Latitude/Longitude (project mid-point): 38/14/35, 84/32/43

7. County (project mid-point): SCOTT

8. Project start date (date work will begin): (2)

9. Projected completion date: (2)

KyTC BMP Plan for Project PCN ## - ####

A. Site description:

1. Nature of Construction Activity (from letting project description): CONSTRUCT NEW I-75 INTERCHANGE AND APPROACH ROADWAY FROM CHAMPION WAY TO CHERRY BLOSSOM WAY IN GEORGETOWN.

2. Order of major soil disturbing activities (2) and (3)

3. Projected volume of material to be moved: 859,857 CY

4. Estimate of total project area (acres): 132.42

5. Estimate of area to be disturbed (acres): 111.11

6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information.

7. Data describing existing soil condition (2)

8. Data describing existing discharge water quality (if any) (2)

9. Receiving water name: North Elkhorn Creek

10. TMDLs and Pollutants of Concern in Receiving Waters: (1DEA)

11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.

12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing

and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

B. Sediment and Erosion Control Measures:

1. Plans for highway construction projects will include erosion control sheets that depict Disturbed Drainage Areas (DDAs) and related information. These plan sheets will show the existing project conditions with areas delineated by DDA within the right of way limits, the discharge points and the areas that drain to each discharge point. Project managers and designers will analyze the DDAs and identify Best Management Practices (BMPs) that are site specific. The balance of the BMPs for the project will be listed in the bid documents for selection and use by the contractor on the project with approval by the resident engineer.

   Projects that do not have DDAs annotated on the erosion control sheets will employ the same concepts for development and managing BMP plans.

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as “Do Not Disturb” until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP’s shall be for the first phase (generally Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA’s as the work progresses. <u>All DDA’s will have adequate BMP’s in place before being disturbed.</u>

3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:

   - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.
   - At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants. Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be

inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.

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

control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.

- Permanent Seeding and Protection
- Placing Sod
- Planting trees and/or shrubs where they are included in the project

➢ BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are : N/A

C. Other Control Measures

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

2. Waste Materials

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

3. Hazardous Waste

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

4. Spill Prevention

The following material management practices will be used to reduce the risk of spills or other exposure of materials and substances to the weather and/or runoff.

➢ **Good Housekeeping:**

The following good housekeeping practices will be followed onsite during the construction project.

- An effort will be made to store only enough product required to do the job
- All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used up before disposing of the container
- Manufacturers' recommendations for proper use and disposal will be followed
- The site contractor will inspect daily to ensure proper use and disposal of materials onsite

➢ **Hazardous Products:**

These practices will be used to reduce the risks associated with any and all hazardous materials.

- Products will be kept in original containers unless they are not resealable
- Original labels and material safety data sheets (MSDS) will be reviewed and retained
- Contractor will follow procedures recommended by the manufacturer when handling hazardous materials
- If surplus product must be disposed of, manufacturers' or state/local recommended methods for proper disposal will be followed

The following product-specific practices will be followed onsite:

➢ **Petroleum Products:**

Vehicles and equipment that are fueled and maintained on site will be monitored for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products onsite will be stored in tightly sealed containers, which are clearly labeled and will be protected from exposure to weather.

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum

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

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

- **Fertilizers:**

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

- **Paints:**

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

- **Concrete Truck Washout:**

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

- **Spill Control Practices**

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

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.

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

D. Other State and Local Plans

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

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.

- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.

- Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance.

F. Inspections

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

- All erosion prevention and sediment control measures will be inspected at least once each week and following any rain of one-half inch or more.
- Inspections will be conducted by individuals that have received KyTC Grade Level II training or other qualification as prescribed by the cabinet that includes instruction concerning sediment and erosion control.
- Inspection reports will be written, signed, dated, and kept on file.
- Areas at final grade will be seeded and mulched within 14 days.
- Areas that are not at final grade where construction has ceased for a period of 21 days or longer and soil stock piles shall receive temporary mulch no later than 14 days from the last construction activity in that area.
- All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Sediment basins will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 70 percent of the design capacity and at the end of the job.
- Diversion dikes and berms will be inspected and any breaches promptly repaired. Areas that are eroding or scouring will be repaired and re-seeded / mulched as needed.
- Temporary and permanent seeding and mulching will be inspected for bare spots, washouts, and healthy growth. Bare or eroded areas will be repaired as needed.
- All material storage and equipment servicing areas that involve the management of bulk liquids, fuels, and bulk solids will be inspected weekly for conditions that represent a release or possible release of pollutants to the environment.

G. Non – Storm Water discharges

It is expected that non-storm water discharges may occur from the site during the construction period. Examples of non-storm water discharges include:

- Water from water line flushings.

- Water form cleaning concrete trucks and equipment.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Uncontaminated groundwater and rain water (from dewatering during excavation).

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

H. Groundwater Protection Plan (3)

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

- Contractors statement: (3)

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

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

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

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

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

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

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

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

KyTC BMP Plan for Project PCN ## - ####

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

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

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

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

KyTC BMP Plan for Project PCN ## -

Contractor and Resident Engineer Plan certification

The contractor that is responsible for implementing this BMP plan is identified in the Project Information section of this plan.

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

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, this plan complies with the requirements of 401 KAR 5:037. By this certification, the undersigned state that the individuals signing the plan have reviewed the terms of the plan and will implement its provisions as they pertain to ground water protection.

Resident Engineer and Contractor Certification:

(2) Resident Engineer signature

Signed _____title_____, _____
Typed or printed name[2] signature

(3) Signed _____title_____, _____
Typed or printed name[1] signature

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

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

Sub-Contractor Certification

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

Subcontractor

Name:
Address:
Address:

Phone:

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

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

Signed _____title_____, _____
Typed or printed name[1] signature

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

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
200 FAIR OAKS LANE, 4TH FLOOR
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

July 31, 2014

KYTC
I 75 - Scott Co
763 W New Circle
Lexington KY 40512

Re: KYR10 Coverage Acknowledgment
KPDES No.: KYR10I675
I 75 Interchange
Permit Type: Construction
AI ID: 6423
Scott County, Kentucky

Dear ORA-01422: exact fetch returns more than requested number of rows:

The discharges associated with the Notice of Intent you submitted have been approved for coverage under the "Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Stormwater Discharges Associated with Construction Activities (KYR10)" permit. This coverage becomes effective the date of this correspondence and will remain effective until the general permit expires or the Division of Water revokes coverage. During this period of coverage all discharges shall comply with the conditions of the applicable general permit. A copy of the general permit the operator is now covered by can be found on our website: http://water.ky.gov.

Any questions concerning the general permit and its requirements should be directed to me at (502) 564-3410.

Facility Site: 38.243071, -84.54766

Sincerely,

Shawn Hokanson
Surface Water Permits Branch
Division of Water

KENTUCKY TRANSPORTATION CABINET
COMMUNICATION ALL PROMISES (CAP)

Item Number	County	Route	Project Manager
07-0425.00	SCOTT	I 75	kytc\Joshua.Samples

CAP #	Date of Promise	Requestor	Location of Promise:	CAP Description
				NO CAPS

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 2012* and *Standard Drawings, Edition of 2012 with the 2012 Revision.*

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	102.15 Process Agent.
Revision:	Replace the 1st paragraph with the following: Every corporation doing business with the Department shall submit evidence of compliance with KRS Sections 14A.4-010, 271B.11-010, 271B.11-070, 271B.11-080, 271B.5-010 and 271B.16-220, and file with the Department the name and address of the process agent upon whom process may be served.
Subsection:	105.13 Claims Resolution Process.
Revision:	Delete all references to TC 63-34 and TC 63-44 from the subsection as these forms are no longer available through the forms library and are forms generated within the AASHTO SiteManager software.
Subsection:	108.03 Preconstruction Conference.
Revision:	Replace 8) Staking with the following: 8) Staking (designated by a Professional Engineer or Land Surveyor licensed in the Commonwealth of Kentucky.
Subsection:	109.07.02 Fuel.
Revision:	Revise item Crushed Aggregate Used for Embankment Stabilization to the following: Crushed Aggregate Used for Stabilization of Unsuitable Materials Used for Embankment Stabilization
	Delete the following item from the table. ~~Crushed Sandstone Base (Cement Treated)~~
Subsection:	110.02 Demobilization.
Revision:	Replace the first part of the first sentence of the second paragraph with the following: Perform all work and operations necessary to accomplish final clean-up as specified in the first paragraph of Subsection 105.12;
Subsection:	112.03.12 Project Traffic Coordinator (PTC).
Revision:	Replace the last paragraph of this subsection with the following: Ensure the designated PTC has sufficient skill and experience to properly perform the task assigned and has successfully completed the qualification courses.
Subsection:	112.04.18 Diversions (By-Pass Detours).
Revision:	Insert the following sentence after the 2nd sentence of this subsection. The Department will not measure temporary drainage structures for payment when the contract documents provide the required drainage opening that must be maintained with the diversion. The temporary drainage structures shall be incidental to the construction of the diversion. If the contract documents fail to provide the required drainage opening needed for the diversion, the cost of the temporary drainage structure will be handled as extra work in accordance with section 109.04.
Subsection:	201.03.01 Contractor Staking.
Revision:	Replace the first paragraph with the following: Perform all necessary surveying under the general supervision of a Professional Engineer or Land Surveyor licensed in the Commonwealth of Kentucky.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	201.04.01 Contractor Staking.
Revision:	Replace the last sentence of the paragraph with the following: Complete the general layout of the project under the supervision of a Professional Engineer or Land Surveyor licensed in the Commonwealth of Kentucky.
Subsection:	206.04.01 Embankment-in-Place.
Revision:	Replace the fourth paragraph with the following: The Department will not measure **suitable** excavation included in the original plans that is disposed of for payment and will consider it incidental to Embankment-in-Place.
Subsection:	208.02.01 Cement.
Revision:	Replace paragraph with the following: Select Type I or Type II cement conforming to Section 801. Use the same type cement throughout the work.
Subsection:	208.03.06 Curing and Protection.
Revision:	Replace the fourth paragraph with the following: Do not allow traffic or equipment on the finished surface until the stabilized subgrade has cured for a total of 7-days with an ambient air temperature above 40 degrees Fahrenheit. A curing day consists of a continuous 24-hour period in which the ambient air temperature does not fall below 40 degrees Fahrenheit. Curing days will not be calculated consecutively, but must total seven (7) , 24-hour days with the ambient air temperature remaining at or above 40 degrees Fahrenheit before traffic or equipment will be allowed to traverse the stabilized subgrade. The Department may allow a shortened curing period when the Contractor requests. The Contractor shall give the Department at least 3 day notice of the request for a shortened curing period. The Department will require a minimum of 3 curing days after final compaction. The Contractor shall furnish cores to the treated depth of the roadbed at 500 feet intervals for each lane when a shortened curing time is requested. The Department will test cores using an unconfined compression test. Roadbed cores must achieve a minimum strength requirement of 80 psi.
Subsection:	208.03.06 Curing and Protection.
Revision:	Replace paragraph eight with the following: At no expense to the Department, repair any damage to the subgrade caused by freezing.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	A) Seed Mixtures for Permanent Seeding.
Revision:	Revise **Seed Mix Type I** to the mixture shown below: 50% Kentucky 31 Tall Fescue (Festuca arundinacea) 35% Hard Fescue (Festuca (Festuca longifolia) 10% Ryegrass, Perennial (Lolium perenne) 5% White Dutch Clover (Trifolium repens)
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	A) Seed Mixtures for Permanent Seeding.
Number:	2)
Revision:	Replace the paragraph with the following: Permanent Seeding on Slopes Greater than 3:1 in Highway Districts 4, 5, 6, and 7. Apply seed mix Type II at a minimum application rate of 100 pounds per acre. If adjacent to a golf course replace the crown vetch with Kentucky 31 Tall Fescue.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	A) Seed Mixtures for Permanent Seeding.
Number:	3)
Revision:	Replace the paragraph with the following: Permanent Seeding on Slopes Greater than 3:1 in Highway Districts 1, 2, 3, 8, 9, 10, 11, and 12. Apply seed mix Type III at a minimum application rate of 100 pounds per acre. If adjacent to crop land or golf course, replace the Sericea Lespedeza with Kentucky 31 Fescue.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	B) Procedures for Permanent Seeding.
Revision:	Delete the first sentence of the section.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	B) Procedures for Permanent Seeding.
Revision:	Replace the second and third sentence of the section with the following: Prepare a seedbed and apply an initial fertilizer that contains a minimum of 100 pounds of nitrogen, 100 pounds of phosphate, and 100 pounds of potash per acre. Apply agricultural limestone to the seedbed when the Engineer determines it is needed. When required, place agricultural limestone at a rate of 3 tons per acre.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	D) Top Dressing.
Revision:	Change the title of part to D) Fertilizer.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	D) Fertilizer.
Revision:	Replace the first paragraph with the following: Apply fertilizer at the beginning of the seeding operation and after vegetation is established. Use fertilizer delivered to the project in bags or bulk. Apply initial fertilizer to all areas prior to the seeding or sodding operation at the application rate specified in 212.03.03 B). Apply 20-10-10 fertilizer to the areas after vegetation has been established at a rate of 11.5 pounds per 1,000 square feet. Obtain approval from the Engineer prior to the 2nd fertilizer application. Reapply fertilizer to any area that has a streaked appearance. The reapplication shall be at no additional cost to the Department. Re-establish any vegetation severely damaged or destroyed because of an excessive application of fertilizer at no cost to the Department.
Subsection:	212.03.03 Permanent Seeding and Protection.
Part:	D) Fertilizer.
Revision:	Delete the second paragraph.
Subsection:	212.04.04 Agricultural Limestone.
Revision:	Replace the entire section with the following: The Department will measure the quantity of agricultural limestone in tons.
Subsection:	212.04.05 Fertilizer.
Revision:	Replace the entire section with the following: The Department will measure fertilizer used in the seeding or sodding operations for payment. The Department will measure the quantity by tons.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	212.05 PAYMENT.
Revision:	Delete the following item code:
	Code Pay Item Pay Unit
	05966 Topdressing Fertilizer Ton
Subsection:	212.05 PAYMENT.
Revision:	Add the following pay items:
	Code Pay Item Pay Unit
	05963 Initial Fertilizer Ton
	05964 20-10-10 Fertilizer Ton
	05992 Agricultural Limestone Ton
Subsection:	213.03.02 Progress Requirements.
Revision:	Replace the last sentence of the third paragraph with the following:
	Additionally, the Department will apply a penalty equal to the liquidated damages when all aspects of the work are not coordinated in an acceptable manner within 7 calendar days after written notification.
Subsection:	213.03.05 Temporary Control Measures.
Part:	E) Temporary Seeding and Protection.
Revision:	Delete the second sentence of the first paragraph.
Subsection:	304.02.01 Physical Properties.
Table:	Required Geogrid Properties
Revision:	Replace all references to Test Method "GRI-GG2-87" with ASTM D 7737.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	B) Sampling.
Revision:	Replace the second sentence with the following:
	The Department will determine when to obtain the quality control samples using the random-number feature of the mix design submittal and approval spreadsheet. The Department will randomly determine when to obtain the verification samples required in Subsections 402.03.03 and 402.03.04 using the Asphalt Mixture Sample Random Tonnage Generator.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	D) Testing Responsibilities.
Number:	3) VMA.
Revision:	Add the following paragraph below Number 3) VMA:
	Retain the AV/VMA specimens and one additional corresponding G_{mm} sample for 5 working days for mixture verification testing by the Department. For Specialty Mixtures, retain a mixture sample for 5 working days for mixture verification testing by the Department. When the Department's test results do not verify that the Contractor's quality control test results are within the acceptable tolerances according to Subsection 402.03.03, retain the samples and specimens from the affected sublot(s) for the duration of the project.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	D) Testing Responsibilities.
Number:	4) Density.
Revision:	Replace the second sentence of the Option A paragraph with the following:
	Perform coring by the end of the following work day.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	D) Testing Responsibilities.
Number:	5) Gradation.
Revision:	Delete the second paragraph.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	H) Unsatisfactory Work.
Number:	1) Based on Lab Data.
Revision:	Replace the second paragraph with the following: When the Engineer determines that safety concerns or other considerations prohibit an immediate shutdown, continue work and the Department will make an evaluation of acceptability according to Subsection 402.03.05.
Subsection:	402.03.03 Verification.
Revision:	Replace the first paragraph with the following: **402.03.03 Mixture Verification.** For volumetric properties, the Department will perform a minimum of one verification test for AC, AV, and VMA according to the corresponding procedures as given in Subsection 402.03.02. The Department will randomly determine when to obtain the verification sample using the Asphalt Mixture Sample Random Tonnage Generator. For specialty mixtures, the Department will perform one AC and one gradation determination per lot according to the corresponding procedures as given in Subsection 402.03.02. However, Department personnel will not perform AC determinations according to KM 64-405. The Contractor will obtain a quality control sample at the same time the Department obtains the mixture verification sample and perform testing according to the procedures given in Subsection 402.03.02. If the Contractor's quality control sample is verified by the Department's test results within the tolerances provided below, the Contractor's sample will serve as the quality control sample for the affected sublot. The Department may perform the mixture verification test on the Contractor's equipment or on the Department's equipment.
Subsection:	402.03.03 Verification.
Part:	A) Evaluation of Sublot(s) Verified by Department.
Revision:	Replace the third sentence of the second paragraph with the following: When the paired *t* -test indicates that the Contractor's data and Department's data are possibly not from the same population, the Department will investigate the cause for the difference according to Subsection 402.03.05 and implement corrective measures as the Engineer deems appropriate.
Subsection:	402.03.03 Verification.
Part:	B) Evaluation of Sublots Not Verified by Department.
Revision:	Replace the third sentence of the first paragraph with the following: When differences between test results are not within the tolerances listed below, the Department will resolve the discrepancy according to Subsection 402.03.05.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Part:** **Revision:**	402.03.03 Verification. B) Evaluation of Sublots Not Verified by Department. Replace the third sentence of the second paragraph with the following: When the *F* -test or *t* -test indicates that the Contractor's data and Department's data are possibly not from the same population, the Department will investigate the cause for the difference according to Subsection 402.03.05 and implement corrective measures as the Engineer deems appropriate.
Subsection: **Part:** **Revision:**	402.03.03 Verification. C) Test Data Patterns. Replace the second sentence with the following: When patterns indicate substantial differences between the verified and non-verified sublots, the Department will perform further comparative testing according to subsection 402.03.05.
Subsection: **Revision:**	402.03 CONSTRUCTION. Add the following subsection: **402.03.04 Testing Equipment and Technician Verification.** For mixtures with a minimum quantity of 20,000 tons and for every 20,000 tons thereafter, the Department will obtain an additional verification sample at random using the Asphalt Mixture Sample Random Tonnage Generator in order to verify the integrity of the Contractor's and Department's laboratory testing equipment and technicians. The Department will obtain a mixture sample of at least 150 lb at the asphalt mixing plant according to KM 64-425 and split it according to AASHTO R 47. The Department will retain one split portion of the sample and provide the other portion to the Contractor. At a later time convenient to both parties, the Department and Contractor will simultaneously reheat the sample to the specified compaction temperature and test the mixture for AV and VMA using separate laboratory equipment according to the corresponding procedures given in Subsection 402.03.02. The Department will evaluate the differences in test results between the two laboratories. When the difference between the results for AV or VMA is not within ± 2.0 percent, the Department will investigate and resolve the discrepancy according to Subsection 402.03.05.
Subsection: **Revision:**	402.03.04 Dispute Resolution. Change the subsection number to 402.03.05.
Subsection: **Part:** **Table:** **Revision:**	402.05 PAYMENT. Lot Pay Adjustment Schedule Compaction Option A Base and Binder Mixtures AC Replace the Deviation from JMF(%) that corresponds to a Pay Value of 0.95 to ±0.6.
Subsection: **Revision:**	403.02.10 Material Transfer Vehicle (MTV). Replace the first sentence with the following: In addition to the equipment specified above, provide a MTV with the following minimum characteristics:
Subsection: **Revision:**	412.02.09 Material Transfer Vehicle (MTV). Replace the paragraph with the following: Provide and utilize a MTV with the minimum characteristics outlined in section 403.02.10.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	412.03.07 Placement and Compaction.
Revision:	Replace the first paragraph with the following: Use a MTV when placing SMA mixture in the driving lanes. The MTV is not required on ramps and/or shoulders unless specified in the contract. When the Engineer determines the use of the MTV is not practical for a portion of the project, the Engineer may waive its requirement for that portion of pavement by a letter documenting the waiver.
Subsection:	412.04 MEASUREMENT.
Revision:	Add the following subsection: 412.04.03. Material Transfer Vehicle (MTV). The Department will not measure the MTV for payment and will consider its use incidental to the asphalt mixture.
Subsection:	501.03.19 Surface Tolerances and Testing Surface.
Part:	B) Ride Quality.
Revision:	Add the following to the end of the first paragraph: The Department will specify if the ride quality requirements are Category A or Category B when ride quality is specified in the Contract. Category B ride quality requirements shall apply when the Department fails to classify which ride quality requirement will apply to the Contract.
Subsection:	603.03.06 Cofferdams.
Revision:	Replace the seventh sentence of paragraph one with the following: Submit drawings that are stamped by a Professional Engineer licensed in the Commonwealth of Kentucky.
Subsection:	605.03.04 Tack Welding.
Revision:	Insert the subsection and the following: 605.03.04 Tack Welding. The Department does not allow tack welding.
Subsection:	606.03.17 Special Requirements for Latex Concrete Overlays.
Part:	A) Existing Bridges and New Structures.
Number:	1) Prewetting and Grout-Bond Coat.
Revision:	Add the following sentence to the last paragraph: Do not apply a grout-bond coat on bridge decks prepared by hydrodemolition.
Subsection:	609.03 Construction.
Revision:	Replace Subsection 609.03.01 with the following: 609.03.01 A) Swinging the Spans. Before placing concrete slabs on steel spans or precast concrete release the temporary erection supports under the bridge and swing the span free on its supports. 609.03.01 B) Lift Loops. Cut all lift loops flush with the top of the precast beam once the beam is placed in the final location and prior to placing steel reinforcement. At locations where lift loops are cut, paint the top of the beam with galvanized or epoxy paint.
Subsection:	611.03.02 Precast Unit Construction.
Revision:	Replace the first sentence of the subsection with the following: Construct units according to ASTM C1577, **replacing Table 1 (Design Requirements for Precast Concrete Box Sections Under Earth, Dead and HL-93 Live Load Conditions) with KY Table 1 (Precast Culvert KYHL-93 Design Table)**, and Section 605 with the following exceptions and additions:

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Number:** **Revision:**	613.03.01 Design. 2) Replace "AASHTO Standard Specifications for Highway Bridges" with "AASHTO LRFD Bridge Design Specifications"
Subsection: **Revision:**	615.06.02 Add the following sentence to the end of the subsection. The ends of units shall be normal to walls and centerline except exposed edges shall be beveled ¾ inch.
Subsection: **Revision:**	615.06.03 Placement of Reinforcement in Precast 3-Sided Units. Replace the reference of 6.6 in the section to 615.06.06.
Subsection: **Revision:**	615.06.04 Placement of Reinforcement for Precast Endwalls. Replace the reference of 6.7 in the section to 615.06.07.
Subsection: **Revision:**	615.06.06 Laps, Welds, and Spacing for Precast 3-Sided Units. Replace the subsection with the following: Tension splices in the circumferential reinforcement shall be made by lapping. Laps may not be tack welded together for assembly purposes. For smooth welded wire fabric, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.5.2 and AASHTO 2012 Bridge Design Guide Section 5.11.6.3. For deformed welded wire fabric, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.5.1 and AASHTO 2012 Bridge Design Guide Section 5.11.6.2. The overlap of welded wire fabric shall be measured between the outer most longitudinal wires of each fabric sheet. For deformed billet-steel bars, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.1. For splices other than tension splices, the overlap shall be a minimum of 12" for welded wire fabric or deformed billet-steel bars. The spacing center to center of the circumferential wires in a wire fabric sheet shall be no less than 2 inches and no more than 4 inches. The spacing center to center of the longitudinal wires shall not be more than 8 inches. The spacing center to center of the longitudinal distribution steel for either line of reinforcing in the top slab shall be not more than 16 inches.
Subsection: **Revision:**	615.06.07 Laps, Welds, and Spacing for Precast Endwalls. Replace the subsection with the following: Splices in the reinforcement shall be made by lapping. Laps may not be tack welded together for assembly purposes. For smooth welded wire fabric, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.5.2 and AASHTO 2012 Bridge Design Guide Section 5.11.6.3. For deformed welded wire fabric, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.5.1 and AASHTO 2012 Bridge Design Guide Section 5.11.6.2. For deformed billet-steel bars, the overlap shall meet the requirements of AASHTO 2012 Bridge Design Guide Section 5.11.2.1. The spacing center-to-center of the wire fabric sheet shall not be less than 2 inches or more than 8 inches.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	615.08.01 Type of Test Specimen.
Revision:	Replace the subsection with the following: Start-up slump, air content, unit weight, and temperature tests will be performed each day on the first batch of concrete. Acceptable start-up results are required for production of the first unit. After the first unit has been established, random acceptance testing is performed daily for each 50 yd^3 (or fraction thereof). In addition to the slump, air content, unit weight, and temperature tests, a minimum of one set of cylinders shall be required each time plastic property testing is performed.
Subsection:	615.08.02 Compression Testing.
Revision:	Delete the second sentence.
Subsection:	615.08.04 Acceptability of Core Tests.
Revision:	Delete the entire subsection.
Subsection:	615.12 Inspection.
Revision:	Add the following sentences to the end of the subsection: Units will arrive at jobsite with the "Kentucky Oval" stamped on the unit which is an indication of acceptable inspection at the production facility. Units shall be inspected upon arrival for any evidence of damage resulting from transport to the jobsite.
Subsection:	716.02.02 Paint.
Revision:	Replace sentence with the following: Conform to Section 821.
Subsection:	716.03 CONSTRUCTION.
Revision:	Replace bullet 5) with the following: 5) AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims,
Subsection:	716.03.02 Lighting Standard Installation.
Revision:	Replace the second sentence with the following: Regardless of the station and offset noted, locate all poles/bases behind the guardrail a minimum of four feet from the front face of the guardrail to the front face of the pole base.
Subsection:	716.03.02 Lighting Standard Installation.
Part:	A) Conventional Installation.
Revision:	Replace the third sentence with the following: Orient the transformer base so the door is positioned on the side away from on-coming traffic.
Subsection:	716.03.02 Lighting Standard Installation.
Part:	A) Conventional Installation.
Number:	1) Breakaway Installation and Requirements.
Revision:	Replace the first sentence with the following: For breakaway supports, conform to Section 12 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims.
Subsection:	716.03.02 Lighting Standard Installation.
Part:	B) High Mast Installation
Revision:	Replace the first sentence with the following: Install each high mast pole as noted on plans.
Subsection:	716.03.02 Lighting Standard Installation.
Part:	B) High Mast Installation
Number:	2) Concrete Base Installation
Revision:	Modification of Chart and succeeding paragraphs within this section:

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Drilled Shaft Depth Data							
Level Ground		3:1 Ground Slope		2:1 Ground Slope		1.5:1 Ground Slope (2)	
Soil	Rock	Soil	Rock	Soil	Rock	Soil	Rock
17 ft	7 ft	19 ft	7 ft	20 ft	7 ft	(1)	7 ft

Steel Requirements			
Vertical Bars		Ties or Spiral	
Size	Total	Size	Spacing or Pitch
#10	16	#4	12 inch

(1): Shaft length is 22' for cohesive soil only. For cohesionless soil, contact geotechnical branch for design.
(2): Do not construct high mast drilled shafts on ground slopes steeper than 1.5:1 without the approval of the Division of Traffic.

If rock is encountered during drilling operations and confirmed by the engineer to be of sound quality, the shaft is only required to be further advanced into the rock by the length of rock socket shown in the table. The total length of the shaft need not be longer than that of soil alone. Both longitudinal rebar length and number of ties or spiral length shall be adjusted accordingly.

If a shorter depth is desired for the drilled shaft, the contractor shall provide, for the state's review and approval, a detailed column design with individual site specific soil and rock analysis performed and approved by a Professional Engineer licensed in the Commonwealth of Kentucky.

Spiral reinforcement may be substituted for ties. If spiral reinforcement is used, one and one-half closed coils shall be provided at the ends of each spiral unit. Subsurface conditions consisting of very soft clay or very loose saturated sand could result in soil parameters weaker than those assumed. Engineer shall consult with the geotechnical branch if such conditions are encountered.

The bottom of the drilled hole shall be firm and thoroughly cleaned so no loose or compressible materials are present at the time of the concrete placement. If the drilled hole contains standing water, the concrete shall be placed using a tremie to displace water. Continuous concrete flow will be required to insure full displacement of any water.

The reinforcement and anchor bolts shall be adequately supported in the proper positions so no movement occurs during concrete placement. Welding of anchor bolts to the reinforcing cage is unacceptable, templates shall be used. Exposed portions of the foundation shall be formed to create a smooth finished surface. All forming shall be removed upon completion of foundation construction.

Subsection: 716.03.03 Trenching.
Part: A) Trenching of Conduit for Highmast Ducted Cables.
Revision: Add the following after the first sentence: If depths greater than 24 inches are necessary, obtain the Engineer's approval and maintain the required conduit depths coming into the junction boxes. No payment for additional junction boxes for greater depths will be allowed.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	716.03.03 Trenching.
Part:	B) Trenching of Conduit for Non-Highmast Cables.
Revision:	Add the following after the second sentence: If depths greater than 24 inches are necessary for either situation listed previously, obtain the Engineer's approval and maintain the required conduit depths coming into the junction boxes. No payment for additional junction boxes for greater depths will be allowed.
Subsection:	716.03.10 Junction Boxes.
Revision:	Replace subsection title with the following: Electrical Junction Box.
Subsection:	716.04.07 Pole with Secondary Control Equipment.
Revision:	Replace the paragraph with the following: The Department will measure the quantity as each individual unit furnished and installed. The Department will not measure mounting the cabinet to the pole, backfilling, restoration, any necessary hardware to anchor pole, or electrical inspection fees, and will consider them incidental to this item of work. The Department will also not measure furnishing and installing electrical service conductors, specified conduits, meter base, transformer, service panel, fused cutout, fuses, lighting arrestors, photoelectrical control, circuit breaker, contactor, manual switch, ground rods, and ground wires and will consider them incidental to this item of work.
Subsection:	716.04.08 Lighting Control Equipment.
Revision:	Replace the paragraph with the following: The Department will measure the quantity as each individual unit furnished and installed. The Department will not measure constructing the concrete base, excavation, backfilling, restoration, any necessary anchors, or electrical inspection fees, and will consider them incidental to this item of work. The Department will also not measure furnishing and installing electrical service conductors, specified conduits, meter base, transformer, service panel, fused cutout, fuses, lighting arrestors, photoelectrical control, circuit breakers, contactor, manual switch, ground rods, and ground wires and will consider them incidental to this item of work.
Subsection:	716.04.09 Luminaire.
Revision:	Replace the first sentence with the following: The Department will measure the quantity as each individual unit furnished and installed.
Subsection:	716.04.10 Fused Connector Kits.
Revision:	Replace the first sentence with the following: The Department will measure the quantity as each individual unit furnished and installed.
Subsection:	716.04.13 Junction Box.
Revision:	Replace the subsection title with the following: Electrical Junction Box Type Various.
Subsection:	716.04.13 Junction Box.
Part:	A) Junction Electrical.
Revision:	Rename A) Junction Electrical to the following: A) Electrical Junction Box.
Subsection:	716.04.14 Trenching and Backfilling.
Revision:	Replace the second sentence with the following: The Department will not measure excavation, backfilling, underground utility warning tape (if required), the restoration of disturbed areas to original condition, and will consider them incidental to this item of work.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: 716.04.18 Remove Lighting.
Revision: Replace the paragraph with the following:
The Department will measure the quantity as a lump sum for the removal of lighting equipment. The Department will not measure the disposal of all equipment and materials off the project by the contractor. The Department also will not measure the transportation of the materials and will consider them incidental to this item of work.

Subsection: 716.04.20 Bore and Jack Conduit.
Revision: Replace the paragraph with the following: The Department will measure the quantity in linear feet. This item shall include all work necessary for boring and installing conduit under an existing roadway. Construction methods shall be in accordance with Sections 706.03.02, paragraphs 1, 2, and 4.

Subsection: 716.05 PAYMENT.
Revision: Replace items 04810-04811, 20391NS835 and, 20392NS835 under Code, Pay Item, and Pay Unit with the following:

Code	Pay Item	Pay Unit
04810	Electrical Junction Box	Each
04811	Electrical Junction Box Type B	Each
20391NS835	Electrical Junction Box Type A	Each
20392NS835	Electrical Junction Box Type C	Each

Subsection: 723.02.02 Paint.
Revision: Replace sentence with the following: Conform to Section 821.

Subsection: 723.03 CONSTRUCTION.
Revision: Replace bullet 5) with the following: 5) AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims,

Subsection: 723.03.02 Poles and Bases Installation.
Revision: Replace the first sentence with the following:
Regardless of the station and offset noted, locate all poles/bases behind the guardrail a minimum of four feet from the front face of the guardrail to the front face of the pole base.

Subsection: 723.03.02 Poles and Bases Installation.
Part: A) Steel Strain and Mastarm Poles Installation
Revision: Replace the second paragraph with the following: For concrete base installation, see Section 716.03.02, B), 2), Paragraphs 2-7. Drilled shaft depth shall be based on the soil conditions encountered during drilling and slope condition at the site. Refer to the design chart below:

Subsection: 723.03.02 Poles and Bases Installation.
Part: B) Pedestal or Pedestal Post Installation.
Revision: Replace the fourth sentence of the paragraph with the following: For breakaway supports, conform to Section 12 of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Part:** **Revision:**	723.03.03 Trenching. A) Under Roadway. Add the following after the second sentence: If depths greater than 24 inches are necessary, obtain the Engineer's approval and maintain ether required conduit depths coming into the junction boxes. No payment for additional junction boxes for greater depths will be allowed.
Subsection: **Revision:**	723.03.11 Wiring Installation. Add the following sentence between the fifth and sixth sentences: Provide an extra two feet of loop wire and lead-in past the installed conduit in poles, pedestals, and junction boxes.
Subsection: **Revision:**	723.03.12 Loop Installation. Replace the fourth sentence of the 2nd paragraph with the following: Provide an extra two feet of loop wire and lead-in past the installed conduit in poles, pedestals, and junction boxes.
Subsection: **Revision:**	723.04.02 Junction Box. Replace subsection title with the following: Electrical Junction Box Type Various.
Subsection: **Revision:**	723.04.03 Trenching and Backfilling. Replace the second sentence with the following: The Department will not measure excavation, backfilling, underground utility warning tape (if required), the restoration of disturbed areas to original condition, and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.10 Signal Pedestal. Replace the second sentence with the following: The Department will not measure excavation, concrete, reinforcing steel, specified conduits, fittings, ground rod, ground wire, backfilling, restoring disturbed areas, or other necessary hardware and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.15 Loop Saw Slot and Fill. Replace the second sentence with the following: The Department will not measure sawing, cleaning and filling induction loop saw slot, loop sealant, backer rod, and grout and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.16 Pedestrian Detector. Replace the paragraph with the following: The Department will measure the quantity as each individual unit furnished, installed and connected to pole/pedestal. The Department will not measure installing R10-3e (with arrow) sign, furnishing and installing mounting hardware for sign and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.18 Signal Controller- Type 170. Replace the second sentence with the following: The Department will not measure constructing the concrete base or mounting the cabinet to the pole, connecting the signal and detectors, excavation, backfilling, restoration, any necessary pole mounting hardware, electric service, or electrical inspection fees and will consider them incidental to this item of work. The Department will also not measure furnishing and connecting the induction of loop amplifiers, pedestrian isolators, load switches, model 400 modem card; furnishing and installing electrical service conductors, specified conduits, anchors, meter base, fused cutout, fuses, ground rods, ground wires and will consider them incidental to this item of work.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection:	723.04.20 Install Signal Controller - Type 170.
Revision:	Replace the paragraph with the following: The Department will measure the quantity as each individual unit installed. The Department will not measure constructing the concrete base or mounting the cabinet to the pole, connecting the signal and detectors, and excavation, backfilling, restoration, any necessary pole mounting hardware, electric service, or electrical inspection fees and will consider them incidental to this item of work. The Department will also not measure connecting the induction loop amplifiers, pedestrian, isolators, load switches, model 400 modem card; furnishing and installing electrical service conductors, specified conduits, anchors, meter base, fused cutout, fuses, ground rods, ground wires and will consider them incidental to this item of work.
Subsection:	723.04.22 Remove Signal Equipment.
Revision:	Replace the paragraph with the following: The Department will measure the quantity as a lump sum removal of signal equipment. The Department will not measure the return of control equipment and signal heads to the Department of Highways as directed by the District Traffic Engineer. The Department also will not measure the transportation of materials of the disposal of all other equipment and materials off the project by the contractor and will consider them incidental to this item of work.
Subsection:	723.04.28 Install Pedestrian Detector Audible.
Revision:	Replace the second sentence with the following: The Department will not measure installing sign R10-3e (with arrow) and will consider it incidental to this item of work.
Subsection:	723.04.29 Audible Pedestrian Detector.
Revision:	Replace the second sentence with the following: The Department will not measure furnishing and installing the sign R10-3e (with arrow) and will consider it incidental to this item of work.
Subsection:	723.04.30 Bore and Jack Conduit.
Revision:	Replace the paragraph with the following: The Department will measure the quantity in linear feet. This item shall include all work necessary for boring and installing conduit under an existing roadway. Construction methods shall be in accordance with Sections 706.03.02, paragraphs 1, 2, and 4.
Subsection:	723.04.31 Install Pedestrian Detector.
Revision:	Replace the paragraph with the following: The Department will measure the quantity as each individual unit installed and connected to pole/pedestal. The Department will not measure installing sign R 10-3e (with arrow) and will consider it incidental to this item of work.
Subsection:	723.04.32 Install Mast Arm Pole.
Revision:	Replace the second sentence with the following: The Department will not measure arms, signal mounting brackets, anchor bolts, or any other necessary hardware and will consider them incidental to this item of work.
Subsection:	723.04.33 Pedestal Post.
Revision:	Replace the second sentence with the following: The Department will not measure excavation, concrete, reinforcing steel, anchor bolts, conduit, fittings, ground rod, ground wire, backfilling, restoration, or any other necessary hardware and will consider them incidental to this item of work.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: 723.04.36 Traffic Signal Pole Base.
Revision: Replace the second sentence with the following: The Department will not measure excavation, reinforcing steel, anchor bolts, specified conduits, ground rods, ground wires, backfilling, or restoration and will consider them incidental to this item of work.

Subsection: 723.04.37 Install Signal Pedestal.
Revision: Replace the second sentence with the following: The Department will not measure excavation, concrete, reinforcing steel, anchor bolts, specified conduits, fittings, ground rod, ground wire, backfilling, restoration, or any other necessary hardware and will consider them incidental to this item of work.

Subsection: 723.04.38 Install Pedestal Post.
Revision: Replace the second sentence with the following: The Department will not measure excavation, concrete, reinforcing steel, anchor bolts, specified conduits, fittings, ground rod, ground wire, backfilling, restoration, or any other necessary hardware and will consider them incidental to this item of work.

Subsection: 723.05 PAYMENT.
Revision: Replace items 04810-04811, 20391NS835 and, 20392NS835 under Code, Pay Item, and Pay Unit with the following:

Code	Pay Item	Pay Unit
04810	Electrical Junction Box	Each
04811	Electrical Junction Box Type B	Each
20391NS835	Electrical Junction Box Type A	Each
20392NS835	Electrical Junction Box Type C	Each

Subsection: 804.01.02 Crushed Sand.
Revision: Delete last sentence of the section.

Subsection: 804.01.06 Slag.
Revision: Add subsection and following sentence.
Provide blast furnace slag sand where permitted. The Department will allow steel slag sand only in asphalt surface applications.

Subsection: 804.04 Asphalt Mixtures.
Revision: Replace the subsection with the following:
Provide natural, crushed, conglomerate, or blast furnace slag sand, with the addition of filler as necessary, to meet gradation requirements. The Department will allow any combination of natural, crushed, conglomerate or blast furnace slag sand when the combination is achieved using cold feeds at the plant. The Engineer may allow other fine aggregates.

Subsection: 806.03.01 General Requirements.
Revision: Replace the second sentence of the paragraph with the following:
Additionally, the material must have a minimum solubility of 99.0 percent when tested according to AASHTO T 44 and PG 76-22 must exhibit a minimum recovery of 60 percent, with a J_{NR} (nonrecoverable creep compliance) between 0.1 and 0.5, when tested according to AASHTO TP 70.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Table:** **Revision:**	806.03.01 General Requirements. PG Binder Requirements and Price Adjustment Schedule Replace the Elastic Recovery, % [3] (AASHTO T301) and all corresponding values in the table with the following: Test | Specification | 100% Pay | 90% Pay | 80% Pay | 70% Pay | 50%Pay[1] MSCR recovery, % [3] (AASHTO TP 70) | 60 Min. | ≥58 | 56 | 55 | 54 | <53
Subsection: **Table:** **Superscript:** **Revision:**	806.03.01 General Requirements. PG Binder Requirements and Price Adjustment Schedule (3) Replace [3] with the following: Perform testing at 64°C.
Subsection: **Revision:**	813.04 Gray Iron Castings. Replace the reference to "AASHTO M105" with "ASTM A48".
Subsection: **Number:** **Revision:**	813.09.02 High Strength Steel Bolts, Nuts, and Washers. A) Bolts. Delete first paragraph and "Hardness Number" Table. Replace with the following: A) Bolts. Conform to ASTM A325 (AASHTO M164) or ASTM A490 (AASHTO 253) as applicable.
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Third paragraph, replace the reference to "AWPA C14" with "AWPA U1, Section B, Paragraph 4.1".
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Replace the first sentence of the fourth paragraph with the following: Use any of the species of wood for round or square posts covered under AWPA U1.
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Fourth paragraph, replace the reference to "AWPA C2" with "AWPA U1, Section B, Paragraph 4.1".
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Delete the second sentence of the fourth paragraph.
Subsection: **Revision:**	814.05.02 Composite Plastic. 1) Add the following to the beginning of the first paragraph: Select composite offset blocks conforming to this section and assure blocks are from a manufacturer included on the Department's List of Approved Materials. 2) Delete the last paragraph of the subsection.
Subsection: **Revision:**	816.07.02 Wood Posts and Braces. First paragraph, replace the reference to "AWPA C5" with "AWPA U1, Section B, Paragraph 4.1".
Subsection: **Revision:**	816.07.02 Wood Posts and Braces. Delete the second sentence of the first paragraph.
Subsection: **Revision:**	818.07 Preservative Treatment. First paragraph, replace all references to "AWPA C14" with "AWPA U1, Section A".

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Revision:**	834.14 Lighting Poles. Replace the first sentence with the following: Lighting pole design shall be in accordance with loading and allowable stress requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims, with the exception of the following: The Cabinet will waive the requirement stated in the first sentence of Section 5.14.6.2 – Reinforced Holes and Cutouts for high mast poles (only). The minimum diameter at the base of the pole shall be 22 inches for high mast poles (only).
Subsection **Revision:**	834.14.03 High Mast Poles. Remove the second and fourth sentence from the first paragraph.
Subsection **Revision:**	834.14.03 High Mast Poles. Replace the third paragraph with the following: Provide calculations and drawings that are stamped by a Professional Engineer licensed in the Commonwealth of Kentucky.
Subsection: **Revision:**	834.14.03 High Mast Poles. Replace paragraph six with the following: Provide a pole section that conforms to ASTM A 595 grade A with a minimum yield strength of 55 KSI or ASTM A 572 with a minimum yield strength of 55 KSI. Use tubes that are round or 16 sided with a four inch corner radius, have a constant linear taper of .144 in/ft and contain only one longitudinal seam weld. Circumferential welded tube butt splices and laminated tubes are not permitted. Provide pole sections that are telescopically slip fit assembled in the field to facilitate inspection of interior surface welds and the protective coating. The minimum length of the telescopic slip splices shall be 1.5 times the inside diameter of the exposed end of the female section. Use longitudinal seam welds as commended in Section 5.15 of the AASHTO 2013 Specifications. The thickness of the transverse base shall not be less than 2 inches. Plates shall be integrally welded to the tubes with a telescopic welded joint or a full penetration groove weld with backup bar. The handhole cover shall be removable from the handhole frame. One the frame side opposite the hinge, provide a mechanism on the handhole cover/frame to place the Department's standard padlock as specified in Section 834.25. The handhole frame shall have two stainless studs installed opposite the hinge to secure the handhole cover to the frame which includes providing stainless steel wing nuts and washers. The handhole cover shall be manufactured from 0.25 inch thick galvanized steel (ASTM A 153) and have a neoprene rubber gasket that is permanently secured to the handhole frame to insure weather-tight protection. The hinge shall be manufactured from 7-guage stainless steel to provide adjustability to insure weather-tight fit for the cover. The minimum clear distance between the transverse plate and the bottom opening of the handhole shall not be less than the diameter of the bottom tube of the pole but needs to be at least 15 inches. Provide products that are hot-dip galvanized to the requirements of either ASTM A123 (fabricated products) or ASTM A 153 (hardware items).
Subsection: **Revision:**	834.16 ANCHOR BOLTS. Insert the following sentence at the beginning of the paragraph: The anchor bolt design shall follow the NCHRP Report 494 Section 2.4 and NCHRP 469 Appendix A Specifications.

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: **Revision:**	834.17.01 Conventional. Add the following sentence after the second sentence: Provide a waterproof sticker mounted on the bottom of the housing that is legible from the ground and indicates the wattage of the fixture by providing the first two numbers of the wattage.
Subsection: **Revision:**	834.21.01 Waterproof Enclosures. Replace the last five sentences in the second paragraph with the following sentences: Provide a cabinet door with a louvered air vent, filter-retaining brackets and an easy to clean metal filter. Provide a cabinet door that is keyed with a factory installed standard no. 2 corbin traffic control key. Provide a light fixture with switch and bulb. Use a 120-volt fixture and utilize a L.E.D. bulb (equivalent to 60 watts minimum). Fixture shall be situated at or near the top of the cabinet and illuminate the contents of the cabinet. Provide a 120 VAC GFI duplex receptacle in the enclosure with a separate 20 amp breaker.
Subsection: **Revision:**	835.07 Traffic Poles. Replace the first sentence of the first paragraph with the following: Pole diameter and wall thickness shall be calculated in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims.
Subsection: **Revision:**	835.07 Traffic Poles. *Replace the first sentence of the fourth paragraph with the following: Ensure transverse plates have a thickness ≥ 2 inches. *Add the following sentence to the end of the fourth paragraph: The bottom pole diameter shall not be less than 16.25 inches.
Subsection: **Revision:**	835.07 Traffic Poles. Replace the third sentence of the fifth paragraph with the following: For anchor bolt design, pole forces shall be positioned in such a manner to maximize the force on any individual anchor bolt regardless of the actual anchor bolt orientation with the pole.
Subsection: **Revision:**	835.07 Traffic Poles. Replace the first and second sentence of the sixth paragraph with the following: The pole handhole shall be 25 inches by 6.5 inches. The handhole cover shall be removable from the handhole frame. On the frame side opposite the hinge, provide a mechanism on the handhole cover/frame to place the Department's standard padlock as specified in Section 834.25. The handhole frame shall have two stainless studs installed opposite the hinge to secure the handhole cover to the frame which includes providing stainless steel wing nuts and washers. The handhole cover shall be manufactured from 0.25 inch thick galvanized steel (ASTM 153) and have a neoprene rubber gasket that is permanently secured to the handhole frame to insure weather-tight protection. The hinge shall be manufactured from 7 gauge stainless steel to provide adjustability to insure a weather-tight fit for the cover. The minimum clear distance between the transverse plate and the bottom opening of the handhole shall not be less than the diameter of the bottom tube but needs to be at least 12 inches.

Supplemental Specifications to the Standard Specifications for Road and Bridge Construction, 2012 Edition Effective with the August 22, 2014 Letting

Subsection:	835.07 Traffic Poles.
Revision:	*Replace the first sentence of the last paragraph with the following: Provide calculations and drawings that are stamped by a Professional Engineer licensed in the Commonwealth of Kentucky. *Replace the third sentence of the last paragraph with the following: All tables referenced in 835.07 are found in the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 2013-6th Edition with current interims.
Subsection:	835.07.01 Steel Strain Poles.
Revision:	Replace the second sentence of the second paragraph with the following: The detailed analysis shall be certified by a Professional Engineer licensed in the Commonwealth of Kentucky.
Subsection:	835.07.01 Steel Strain Poles.
Revision:	Replace number 7. after the second paragraph with the following: 7. Fatigue calculations should be shown for all fatigue related connections. Provide the corresponding detail, stress category and example from table 11.9.3.1-1.
Subsection:	835.07.02 Mast Arm Poles.
Revision:	Replace the second sentence of the fourth paragraph with the following: The detailed analysis shall be certified by a Professional Engineer licensed in the Commonwealth of Kentucky.
Subsection:	835.07.02 Mast Arm Poles.
Revision:	Replace number 7) after the fourth paragraph with the following: 7) Fatigue calculations should be shown for all fatigue related connections. Provide the corresponding detail, stress category and example from table 11.9.3.1-1.
Subsection:	835.07.03 Anchor Bolts.
Revision:	Add the following to the end of the paragraph: There shall be two steel templates (one can be used for the headed part of the anchor bolt when designed in this manner) provided per pole. Templates shall be contained within a 26.5 inch diameter. All templates shall be fully galvanized (ASTM A 153).
Subsection:	835.16.05 Optical Units.
Revision:	Replace the 3rd paragraph with the following: The list of certified products can be found on the following website: http://www.intertek.com.
Subsection:	835.19.01 Pedestrian Detector Body.
Revision:	Replace the first sentence with the following: Provide a four holed pole mounted aluminum rectangular housing that is compatible with the pedestrian detector.
Subsection:	843.01.01 Geotextile Fabric.
Table:	TYPE I FABRIC GEOTEXTILES FOR SLOPE PROTECTION AND CHANNEL LINING
Revision:	Add the following to the chart:

Property	Minimum Value[(1)]	Test Method
CBR Puncture (lbs)	494	ASTM D6241
Permittivity (1/s)	0.7	ASTM D4491

Supplemental Specifications to the
Standard Specifications for Road and Bridge Construction, 2012 Edition
Effective with the August 22, 2014 Letting

Subsection: 843.01.01 Geotextile Fabric.
Table: TYPE II FABRIC GEOTEXTILES FOR UNDERDRAINS
Revision: Add the following to the chart:

Property	Minimum Value[1]	Test Method
CBR Puncture (lbs)	210	ASTM D6241
Permittivity (1/s)	0.5	ASTM D4491

Subsection: 843.01.01 Geotextile Fabric.
Table: TYPE III FABRIC GEOTEXTILES FOR SUBGRADE OR EMBANKMENT STABILIZATION
Revision: Add the following to the chart:

Property	Minimum Value[1]	Test Method
CBR Puncture (lbs)	370	ASTM D6241
Permittivity (1/s)	0.05	ASTM D4491

Subsection: 843.01.01 Geotextile Fabric.
Table: TYPE IV FABRIC GEOTEXTILES FOR EMBANKMENT DRAINAGE BLANKETS AND PAVEMENT EDGE DRAINS
Revision: Add the following to the chart:

Property	Minimum Value[1]	Test Method
CBR Puncture (lbs)	309	ASTM D6241
Permittivity (1/s)	0.5	ASTM D4491

Subsection: 843.01.01 Geotextile Fabric.
Table: TYPE V HIGH STRENGTH GEOTEXTILE FABRIC
Revision: Make the following changes to the chart:

Property	Minimum Value[1]	Test Method
CBR Puncture (lbs)	618	ASTM D6241
Grab Strength (lbs)	700	ASTM D4632
Apparent Opening Size	U.S. #40[3]	ASTM D4751

[3] Maximum average roll value.

1I

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.

1I

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

1I

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

11D

SPECIAL NOTE FOR ROCK BLASTING

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. This work consists of fracturing rock and constructing stable final rock cut faces using presplit blasting and production blasting techniques.

2.0 MATERIALS. Deliver, store, and use explosives according to the manufacturer's recommendations and applicable laws. Do not use explosives outside their recommended use date. Verify date of manufacture and provide copies of the technical data sheets (TDS) and material safety data sheets (MSDS) to the Engineer. Explosives and initiating devices include, but are not necessarily limited to, dynamite and other high explosives, slurries, water gels, emulsions, blasting agents, initiating explosives, detonators, blasting caps, and detonating cord.

3.0 CONSTRUCTION. Furnish copies or other proof of all-applicable permits and licenses. Comply with Federal, State, and local regulations on the purchase, transportation, storage, and use of explosive material. Regulations include but are not limited to the following:

1) KRS 351.310 through 351.9901.
2) 805 KAR 4:005 through 4:165
3) Applicable rules and regulations issued by the Office of Mine Safety and Licensing.
4) Safety and health. OSHA, 29 CFR Part 1926, Subpart U.
5) Storage, security, and accountability. Bureau of Alcohol, Tobacco, and Firearms (BATF), 27 CFR Part 181.
6) Shipment. DOT, 49 CFR Parts 171-179, 390-397.

3.1 Blaster-in-Charge. Designate in writing a blaster-in-charge and any proposed alternates for the position. Submit documentation showing the blaster-in-charge, and alternates, have a valid Kentucky blaster's license. Ensure the blaster-in-charge or approved alternate is present at all times during blasting operations.

3.2 **Blasting Plans.** Blasting plans and reports are for quality control and record keeping purposes. Blasting reports are to be signed by the blaster-in-charge or the alternate blaster-in-charge. The general review and acceptance of blasting plans does not relieve the Contractor of the responsibility whatsoever for conformance to regulations or for obtaining the required results. All blasting plans shall be submitted to the Engineer. The Engineer will be responsible for submitting the plan to the Central Office Division of Construction and the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at the following address: 2 Hudson Hollow, Frankfort, Kentucky, 40601.

A) General Blasting Plan. Submit a general blasting plan for acceptance at least 15 working days before drilling operations begin. Include, as a minimum, the following safety and procedural details:

1) Working procedures and safety precautions for storing, transporting, handling, detonating explosives. Include direction on pre and post blast audible procedures, methods of addressing misfires, and methods of addressing inclement weather, including lightning.
2) Proposed product selection for both dry and wet holes. Furnish Manufacturer's TDS and MSDS for all explosives, primers, initiators, and other blasting devices.
3) Proposed initiation and delay methods.
4) Proposed format for providing all the required information for the site specific blasting shot reports.

B) Preblast Meeting. Prior to drilling operations, conduct a preblast meeting to discuss safety and traffic control issues and any site specific conditions that will need to be addressed. Ensure, at a minimum, that the Engineer or lead inspector, Superintendent, blaster-in-charge, and all personnel involved in the blasting operation are present. Site specific conditions include blast techniques; communication procedures; contingency plans and equipment for dealing with errant blast material. The conditions of the General Blasting plan will be discussed at this meeting. Record all revisions and additions made to the blasting plan and obtain written concurrence by the blaster-in-charge. Provide a copy of the signed blast plan to the Engineer along with the sign in sheet from the preblast meeting.

3.3 Preblast Condition Survey and Vibration Monitoring and Control. Before blasting, arrange for a preblast condition survey of nearby buildings, structures, or utilities, within 500 feet of the blast or that could be at risk from blasting damage. Provide the Engineer a listing of all properties surveyed and any owners denying entry or failing to respond. Notify the Engineer and occupants of buildings at risk at least 24 hours before blasting.

Limit ground vibrations and airblast to levels that will not exceed limits of 805 KAR 4:005 through 4:165. More restrictive levels may be specified in the Contract.

Size all blast designs based on vibration, distance to nearest building or utility, blast site geometry, atmospheric conditions and other factors. Ground vibrations are to be controlled according to the blasting standards and scaled distance formulas in 805 KAR 4:020 or by the use of seismographs as allowed in 805 KAR 4:030. The Department will require seismographs at the nearest allowable location to the protected site when blasting occurs within 500 feet of buildings, structures, or utilities.

3.4 Blasting. Drill and blast at the designated slope lines according to the blasting plan. Perform presplitting to obtain smooth faces in the rock and shale formations. Perform the presplitting before blasting and excavating the interior portion of the specified cross section at any location. The Department may allow blasting for fall benches and haul roads prior to presplitting when blasting is a sufficient distance from the final slope and results are satisfactory to the Engineer. Use the types of explosives and blasting accessories necessary to obtain the required results.

Free blast holes of obstructions for their entire depth. Place charges without caving the blast hole walls. Stem the upper portion of all blast holes with dry sand or other granular material passing the 3/8-inch sieve. Dry drill cuttings are acceptable for stemming when blasts are more than 800 feet from the nearest dwelling.

Stop traffic during blasting operations when blasting near any road and ensure traffic does not pass through the Danger Zone. The blaster-in-charge will define the Danger Zone prior to each blast. Ensure traffic is stopped outside the Danger Zone, and in no case within 800 feet of the blast location.

Following a blast, stop work in the entire blast area, and check for misfires before allowing worker to return to excavate the rock.

Remove or stabilize all cut face rock that is loose, hanging, or potentially dangerous. Leave minor irregularities or surface variations in place if they do not create a hazard. Drill the next lift only after the cleanup work and stabilization work is complete.

When blasting operations cause fracturing of the final rock face, repair or stabilize it in an approved manner at no cost to the Department.

Halt blasting operations in areas where any of the following occur:

1) Slopes are unstable;
2) Slopes exceed tolerances or overhangs are created;
3) Backslope damage occurs;
4) Safety of the public is jeopardized;
5) Property or natural features are endangered;
6) Fly rock is generated; or
7) Excessive ground or airblast vibrations occur in an area where damage to buildings, structures, or utilities is possible.
8) The Engineer determines that materials have become unsuitable for blasting

Blasting operations may continue at a reasonable distance from the problem area or in areas where the problems do not exist. Make the necessary modifications to the blasting operations and perform a test blast to demonstrate resolution of the problem.

A) Drill Logs. Maintain a layout drawing designating hole numbers with corresponding drill logs and provide a copy of this information to the blaster prior to loading the hole. Ensure the individual hole logs completed by the driller(s) show their name; date drilled; total depth drilled; and depths and descriptions of significant conditions encountered during drilling that may affect loading such as water, voids, changes in rock type.

B) Presplitting. Conduct presplitting operations in conformance with Subsection 204.03.04 of the Standard Specifications for Road and Bridge Construction.

3.5 Shot Report. Maintain all shot reports on site for review by the Department. Within one day after a blast, complete a shot report according to the record keeping requirements of 805 KAR 4:050. Include all results from airblast and seismograph monitoring.

3.6 Unacceptable Blasting. When unacceptable blasting occurs, the Department will halt all blasting operations. Blasting will not resume until the Department completes its investigation and all concerns are addressed. A blast is unacceptable when it results in fragmentation beyond the final rock face, fly rock, excessive vibration or airblast, overbreak, damage to the final rock face or overhang. Assume the cost for all resulting damages to private and public property and hold the Department harmless.

11D

When an errant blast or fly rock causes damage to or blocks a road or conveyance adjacent to the roadway, remove all debris from the roadway as quickly as practicable and perform any necessary repairs. Additionally, when specified in the Contract, the Department will apply a penalty.

Report all blasting accidents to the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at 502-564-2340.

4.0 MEASUREMENT AND PAYMENT. The Department will not measure this work for payment and will consider all items contained in this note to be incidental to either Roadway Excavation or Embankment-in-Place, as applicable. However, if the Engineer directs in writing slope changes, then the Department will pay for the second presplitting operation as Extra Work.

The Department will measure for payment material lying outside the typical section due to seams, broken formations, or earth pockets, including any earth overburden removed with this material, only when the work is performed under authorized adjustments.

The Department will not measure for payment any extra material excavated because of the drill holes being offset outside the designated slope lines.

The Department will not measure for payment any material necessary to be removed due to the inefficient or faulty blasting practices.

June 15, 2012

11F

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs. Section references herein are to the Department's 2008 Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS.

2.1 Turf Reinforcement Mat (TRM). Use a Turf Reinforcement Mat defined as permanent rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh and/or other elements, processed into a three-dimensional matrix of sufficient thickness and from the Department's List of Approved Materials. Mats must be 100% UV stabilized materials. For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting exclusively. Ensure product labels clearly show the manufacturer or supplier name, style name, and roll number. Ensure labeling, shipment and storage follows ASTM D-4873. The Department will require manufacturer to provide TRMs that are machine constructed web of mechanically or melt bonded nondegradable fibers entangled to form a three dimensional matrix. The Department will require all long term performance property values in table below to be based on non degradable portion of the matting alone. Approved methods include polymer welding, thermal or polymer fusion, or placement of fibers between two high strength biaxially oriented nets mechanically bound by parallel stitching with polyolefin thread. Ensure that mats designated in the plans as Type 4 mats, are not to be manufactured from discontinuous or loosely held together by stitching or glued netting or composites. Type 4 mats shall be composed of geosynthetic matrix that exhibits a very high interlock and reinforcement capacities with both soil and root systems and with high tensile modulus. The Department will require manufacturer to use materials chemically and biologically inert to the natural soil environments conditions. Ensure the blanket is smolder resistant without the use of chemical additives. When stored, maintain the protective wrapping and elevate the mats off the ground to protect them from damage. The Department will not specify these materials for use in heavily acidic coal seam areas or other areas with soil problems that would severally limit vegetation growth.

A) Dimensions. Ensure TRMs are furnished in strips with a minimum width of 4 feet and length of 50 feet.
B) Weight. Ensure that all mat types have a minimum mass per unit area of 7 ounces per square yard according to ASTM D 6566.
C) Performance Testing: The Department will require AASHTO's NTPEP index testing. The Department will also require the manufacturer to perform internal MARV testing at a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory for tensile strength, tensile elongation, mass per unit area, and thickness once every 24,000 yds of production or whatever rate is required to ensure 97.7% confidence under ASTM D4439& 4354. The Department will require Full scale testing for slope and channel applications shear stress shall be done under ASTM D 6459, ASTM D 6460-07 procedures.

2.2 Classifications

The basis for selection of the type of mat required will be based on the long term shear stress level of the mat of the channel in question or the degree of slope to protect and will be designated in the contract. The Type 4 mats are to be used at structural backfills protecting critical

structures, utility cuts, areas where vehicles may be expected to traverse the mat, channels with large heavy drift, and where higher factors of safety, very steep slopes and/or durability concerns are needed as determined by project team and designer and will be specified in the plans by designer.

Turf Reinforcement Matting					
Properties[1]	Type 1	Type 2	Type 3	Type 4	Test Method
Minimum tensile Strength lbs/ft	125	150	175	3000 by 1500	ASTM D6818[2]
UV stability (minimum % tensile retention)	80	80	80	90	ASTM D4355[3] (1000-hr exposure)
Minimum thickness (inches)	0.25	0.25	0.25	0.40	ASTM D6525
Slopes applications	2H:1V or flatter	1.5H:1V or flatter	1H:1V or flatter	1 H: 1V or greater	
Shear stress lbs/ft^2 Channel applications	6.0[4]	8.0[4]	10.0[4]	12.0[4]	ASTM D6459 ASTM D6460-07

[1] For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting alone.
[2]Minimum Average Roll Values for tensile strength of sample material machine direction.
[3]Tensile Strength percentage retained after stated 1000 hr duration of exposure under ASTM D4355 testing. Based on nondegradable components exclusively.
[4]Maximum permissible shear design values based on short-term (0.5 hr) vegetated data obtained by full scale flume testing ASTM D6459, D6460-07. Based on nondegradable components exclusively. Testing will be done at Independent Hydraulics Facility such as Colorado State University hydraulics laboratory, Utah State University hydraulics laboratory, Texas Transportation Institute (TTI) hydraulics and erosion control laboratory.

2.3 Quality Assurance Sampling, Testing, and Acceptance

A) Provide TRM listed on the Department's List of Approved Materials. Prior to inclusion on the LAM, the manufacturer of TRM must meet the physical and performance criteria as outlined in the specification and submit a Letter Certifying compliance of the product under the above ASTM testing procedures and including a copy of report from Full Scale Independent Hydraulics Facility that Fully Vegetated Shear Stress meets shear stress requirements tested under D6459 and D6460-07.

B) Contractors will provide a Letter of Certification from Manufacturer stating the product name, manufacturer, and that the product MARV product unit testing results meets Department criteria. Provide Letters once per project and for each product.

C) Acceptance shall be in accordance with ASTM D-4759 based on testing performed by a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory using Procedure A of ASTM D-4354.

Current mats meeting the above criteria are shown on the Department's List of Approved Materials.

2.4 Fasteners. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils as directed by Engineer or Manufacturer's Representative. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. When requested by the Engineer, provide a Manufacturer's Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from the Manufacturer approving the installation. When there is a conflict between the Department's criteria and the Manufacturer's criteria, construct using the more restrictive. The Engineer and Manufacturer's Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer's recommendations and the following as minimum installation technique:

3.1 Site Preparation. Grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, roots, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil.

3.2 Installation. Install mats according to Standard Drawing Sepias "Turf Mat Channel Installation" and "Turf Mat Slope Installation." Install mats at the specified elevation and alignment. Anchor the mats with staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils as directed by the Engineer or Manufacturer's Representative. The mat should be in direct contact with the soil surface.

4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed, providing a Manufacturer's Representative, topsoil, or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat. Seeding and protection will be an incidental item.

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

Code	Pay Item	Pay Unit
23274EN11F	Turf Reinforcement Mat 1	Square Yard
23275EN11F	Turf Reinforcement Mat 2	Square Yard
23276EN11F	Turf Reinforcement Mat 3	Square Yard
23277EN11F	Turf Reinforcement Mat 4	Square Yard

SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

1.0 DESCRIPTION. Install barcode label on sign as specified in the Contract. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS. The Department will provide the Contractor with a 2 inch x 1 inch foil barcode label for each permanent sign. A unique number will be assigned to each barcode label.

The Contractor shall contact the Operations and Pavement Management Branch in the Division of Maintenance at (502) 564-4556 to obtain the barcode labels.

3.0 CONSTRUCTION. Apply foil barcode label in the lower right quadrant of the sign back. Signs where the bottom edge is not parallel to the ground, the lowest corner of the sign shall serve as the location to place the barcode label. The barcode label shall be placed no less than one-inch and no more than three inches from any edge of the sign. The barcode must be placed so that the sign post does not cover the barcode label.

Barcodes shall be applied in an indoor setting with a minimum air temperature of 50°F or higher. Prior to application of the barcode label, the back of the sign must be clean and free of dust, oil, etc. If the sign is not clean, an alcohol swab shall be used to clean the area. The area must be allowed to dry prior to placement of the barcode label.

Data for each sign shall include the barcode number, MUTCD reference number, sheeting manufacturer, sheeting type, manufacture date, color of primary reflective surface, installation date, latitude and longitude using the North American Datum of 1983 (NAD83) or the State Plane Coordinates using an x and y ordinate of the installed location.

Data should be provided electronically on the TC 71-229 Sign Details Information and TC 71-230 Sign Assembly Information forms. The Contractor may choose to present the data in a different format provided that the information submitted to the Department is equivalent to the information required on the Department TC forms. The forms must be submitted in electronic format regardless of which type of form is used. The Department will not accept PDF or handwritten forms. These completed forms must be submitted to the Department prior to final inspection of the signs. The Department will not issue formal acceptance for the project until the TC 71-229 and TC-230 electronic forms are completed for all signs and sign assemblies on the project.

4.0 MEASUREMENT. The Department will measure all work required for the installation of the barcode label and all work associated with completion and submission of the sign inventory data (TC 71-229 and TC 71-230).

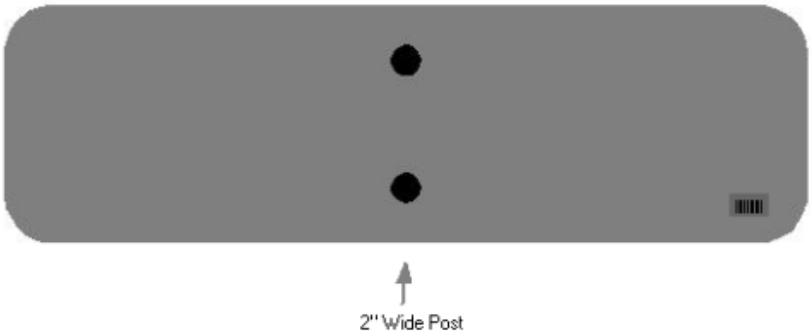
The installation of the permanent sign will be measured in accordance to Section 715.

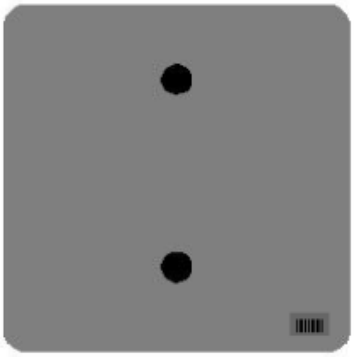
5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
24631EC	Barcode Sign Inventory	Each

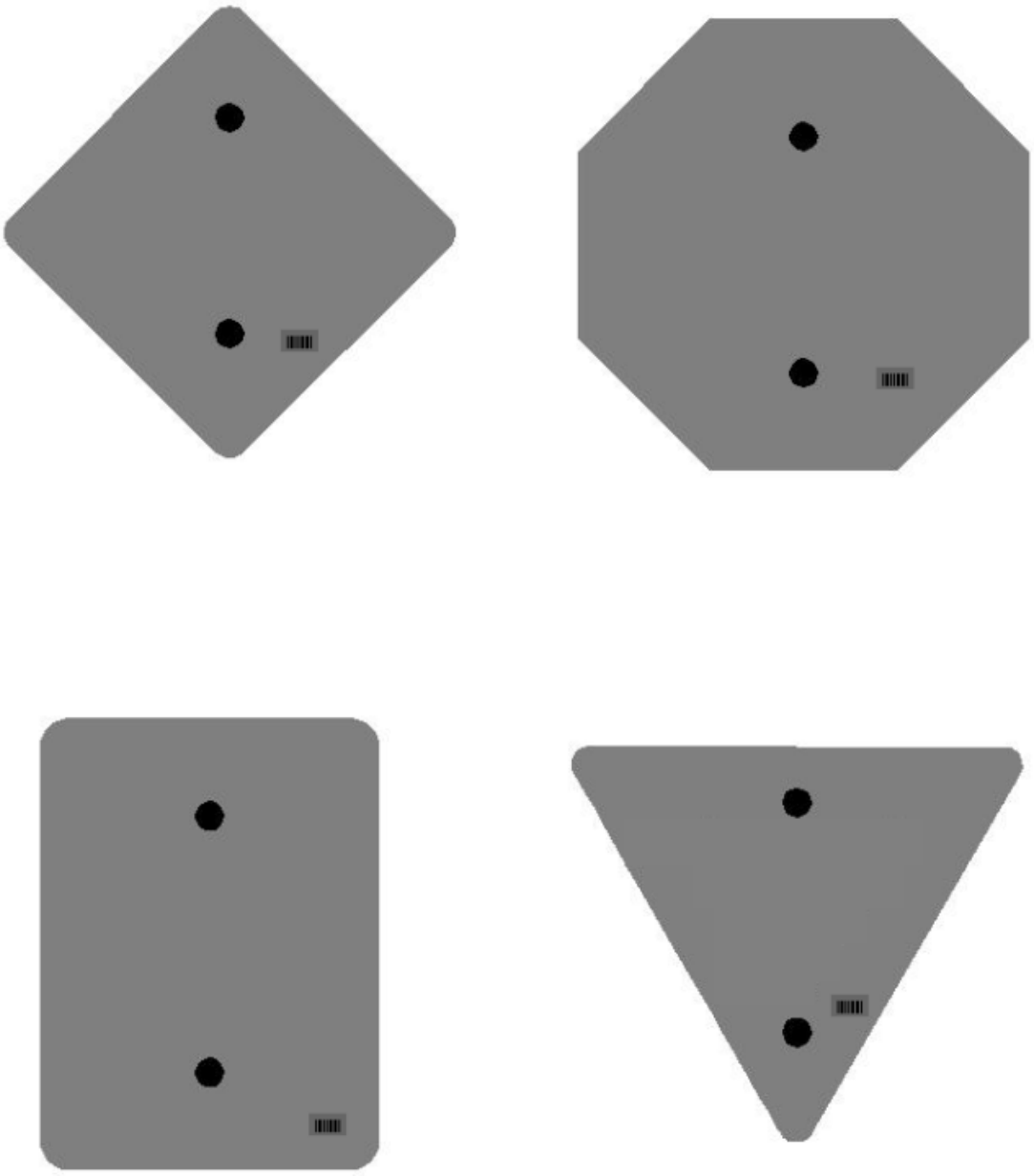
The Department will not make payment for this item until all barcodes are installed and sign inventory is complete on every permanent sign installed on the project. The Department will make payment for installation of the permanent sign in accordance to Section 715. The Department will consider payment as full compensation for all work required under this special note.

One Sign Post

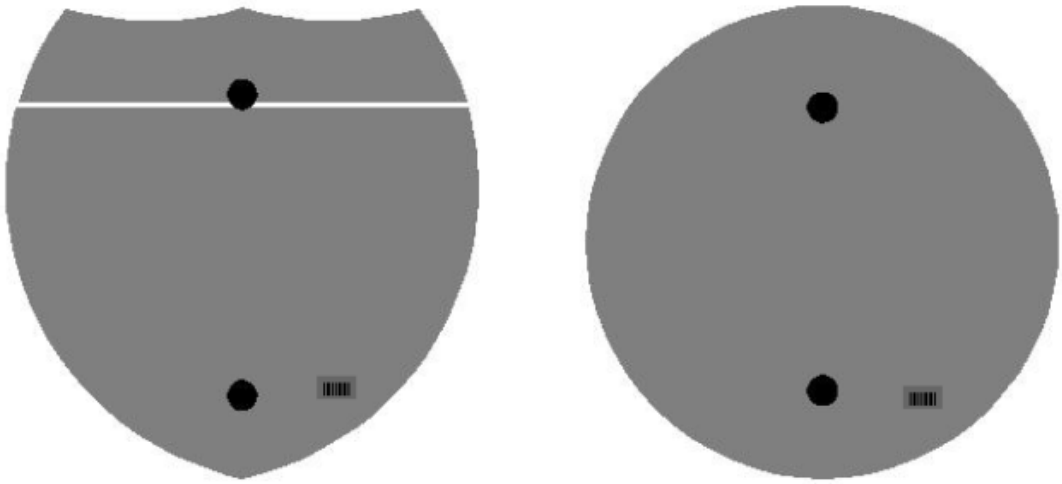


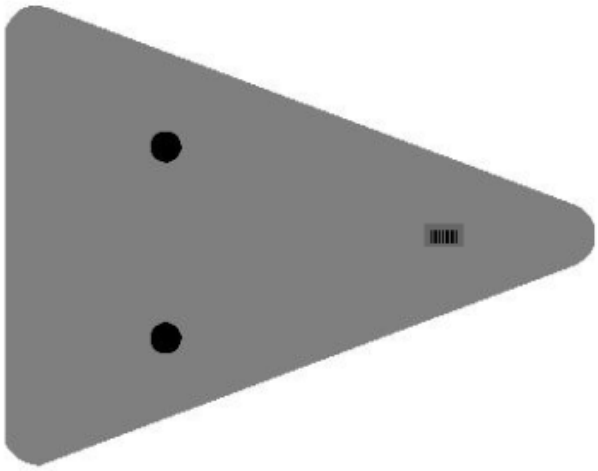


One Sign Post

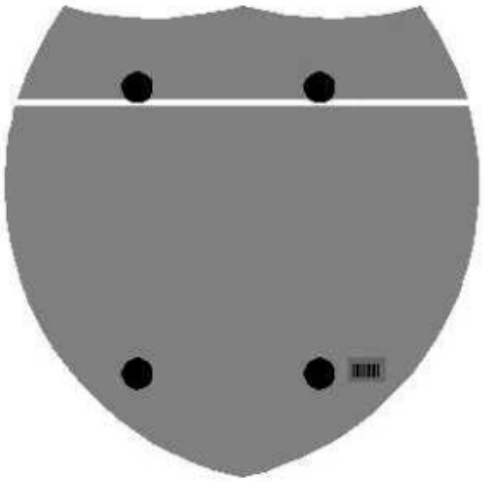


One Sign Post

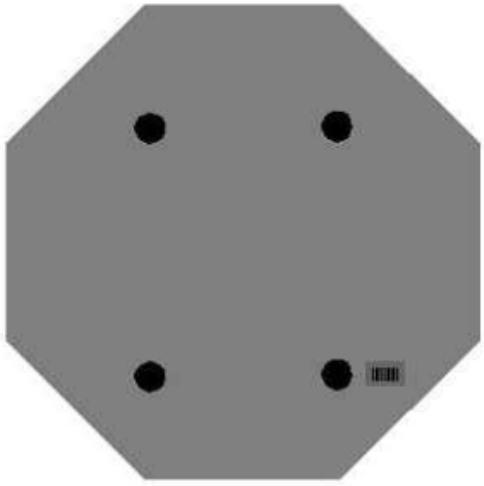




Double Sign Post

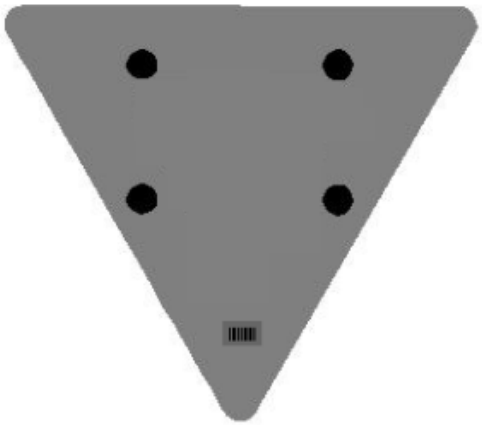


Interstate
Shield



48" Stop

2 Post Signs



SPECIAL PROVISION FOR EMBANKMENT AT BRIDGE END BENT STRUCTURES

This Special Provision will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with granular or cohesive pile core and place structure granular backfill, as the Plans require. Construct the embankment according to the requirements of this Special Provision, the Plans, Standard Drawing RGX 100 and 105, and the 2012 Standard Specifications.

2.0 MATERIALS.

2.1 Granular Embankment. Conform to Subsection 805.10. When Granular Embankment materials are erodible or unstable according to Subsection 805.03.04, use the Special Construction Methods found in 3.2 of the Special Provision.

2.2 Rock Embankment. Provide durable rock from roadway excavation that consists principally of Unweathered Limestone, Durable Shale (SDI equal to or greater than 95 according to KM 64-513), or Durable Sandstone.

2.3 Granular Pile Core. Select a gradation of durable rock to facilitate pile driving that conforms to Subsection 805.11. If granular pile core material hinders pile driving operations, take appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

2.4 Cohesive Pile Core. Conform to Section 206 of the Standard Specifications and use soil with at least 50 percent passing a No. 4 sieve having a minimum Plasticity Index (PI) of 10. In addition, keep the cohesive pile core free of boulders, larger than 6 inches in any dimension, or any other obstructions, which would interfere with drilling operations. If cohesive pile core material interferes with drilling operations, take appropriate means necessary to maintain excavation stability, at no expense to the Department.

2.5 Structure Granular Backfill. Conform to Subsection 805.11

2.6 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843 as required in the plans.

3.0 CONSTRUCTION.

3.1 General. Construct roadway embankments at end bents according to Section 206 and in accordance with the Special Provision, the Plans, and Standard Drawings for the full embankment section. In some instances, granular or rock embankment will be required for embankment construction for stability purposes, but this special provision does not prevent the use of soil when appropriate. Refer to the plans for specific details regarding material requirements for embankment construction.

Place and compact granular or cohesive pile core, soil, granular or rock embankment, and structure granular backfill according to the applicable density requirements for the project. When constructing granular or rock embankments, use granular pile core for driven pile foundations and use cohesive pile core for pre-drilled pile or drilled shaft foundations. Place geotextile fabric, Type IV between cohesive pile core and structure

granular backfill and granular or rock embankment.

When granular or rock embankment is required for embankment construction, conform to the general requirements of Subsection 206.03.02 B). In addition, place the material in no greater than 2-foot lifts and compact with a vibrating smooth wheel roller capable of producing a minimum centrifugal force of 15 tons. Apply these requirements to the full width of the embankment for a distance of half the embankment height or 50 feet, whichever is greater, as shown on Standard Drawing RGX-105.

When using granular pile core, install 8-inch perforated underdrain pipe at or near the elevation of the original ground in the approximate locations depicted on the standard drawing, and as the Engineer directs, to ensure positive drainage of the embankment. Wrap the perforated pipe with a fabric of a type recommended by the pipe manufacturer.

After constructing the embankment, excavate for the end bent cap, drive piling or install shafts, place the mortar bed, construct the end bent, and complete the embankment to finish grade according to the construction sequence shown on the Plans or Standard Drawings and as specified hereinafter.

Certain projects may require widening of existing embankments and the removal of substructures. Construct embankment according to the plans. Substructure removal shall be completed according to the plans and Section 203. Excavation may be required at the existing embankment in order to place the structure granular backfill as shown in the Standard Drawings.

After piles are driven or shafts installed (see design drawings), slope the bottom of the excavation towards the ends of the trench as noted on the plans for drainage. Using a separate pour, place concrete mortar, or any class concrete, to provide a base for forming and placing the cap. Place side forms for the end bent after the mortar has set sufficiently to support workmen and forms without being disturbed.

Install 4-inch perforated pipe in accordance with the plans and Standard Drawings. In the event slope protection extends above the elevation of the perforated pipe, extend the pipe through the slope protection.

After placing the end bent cap and removing adjacent forms, fill the excavation with structure granular backfill material to the level of the berm prior to placing beams for the bridge. For soil embankments, place Type IV geotextile fabric between embankment material and structure granular backfill. After completing the end bent backwall, or after completing the span end wall, place the structure granular backfill to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill at no expense to the Department. Do not place backfill before removing adjacent form work. Place structure granular backfill material in trench ditches at the ends of the excavation. Place Geotextile Fabric, Type IV over the surface of structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means the Engineer approves. Thoroughly compact the backfill under the overhanging portions of the structure to ensure that the backfill is in intimate contact with the sides of the structure.

Do not apply seeding, sodding, or other vegetation to the exposed granular embankment.

3.2 Special Construction Methods. Erodible or unstable materials may erode even when protected by riprap or channel lining; use the special construction method described below when using these materials.

Use fine aggregates or friable sandstone granular embankment at “dry land” structures only. Do not use them at stream crossings or locations subject to flood waters.

For erodible or unstable materials having 50 percent or more passing the No. 4 sieve, protect with geotextile fabric. Extend the fabric from the original ground to the top of slope over the entire area of the embankment slopes on each side of, and in front of, the

end bent. Cover the fabric with at least 12 inches of non-erodible material.

For erodible or unstable materials having less than 50 percent passing a No. 4 sieve, cover with at least 12 inches of non-erodible material.

Where erodible or unstable granular embankment will be protected by riprap or channel lining, place geotextile fabric between the embankment and the specified slope protection.

4.0 MEASUREMENT.

4.1 Granular Embankment. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment any Granular Embankment that is not called for in the plans.

The Department will not measure for payment any special construction caused by using erodible or unstable materials and will consider it incidental to the Granular Embankment regardless of whether the erodible or unstable material was specified or permitted.

4.2 Rock Embankment. The Department will not measure for payment any rock embankment and will consider it incidental to roadway excavation or embankment in place, as applicable. Rock embankments will be constructed using granular embankment on projects where there is no available rock present within the excavation limits of the project.

4.3 Granular Pile Core. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment furnishing and placing 8-inch perforated underdrain pipe and will consider it incidental to the Granular pile core. The Department will not measure for payment any granular pile core that is necessary because the contractor elects to use granular or rock embankment when it is not specified in the plans.

4.4 Cohesive Pile Core. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204.

4.5 Structure Granular Backfill. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure any additional material required for backfill outside the limits shown on the Plans and Standard Drawings for payment and will consider it incidental to the work.

The Department will not measure structure excavation at the end bent or an existing embankment for payment and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the 4-inch perforated underdrain pipe and will consider it incidental to the Structure Granular Backfill.

4.6 Geotextile Fabric. The Department will measure the quantities as specified in Section 214. The Department will not measure the quantity of fabric used for separating granular or rock embankment and cohesive pile core and will consider it incidental to cohesive pile core.

4.7 End Bent. The Department will measure the quantities according to the

Contract. The Department will not measure furnishing and placing the 2-inch mortar or concrete bed for payment and will consider it incidental to the end bent construction.

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

Code	Pay Item	Pay Unit
02223	Granular Embankment	Cubic Yards
20209EP69	Granular Pile Core	Cubic Yards
20210EP69	Cohesive Pile Core	Cubic Yards
02231	Structure Granular Backfill	Cubic Yards
02596, 02599	Geotextile Fabric, Type	See Section 214

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

June 15, 2012

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 (between forty and seventy); 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 (between forty and seventy). 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, disability or age (between forty and seventy), except that such notice or advertisement may indicate a preference, limitation, or specification based on religion, or national origin when religion, or national origin 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 (between forty and seventy), 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: 12-3-92

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 (6) provides:

No present or former public servant shall, within six (6) months of 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 the state in matters in which he was directly involved during 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, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved 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.

KRS 11A.040 (8) states:

A former public servant shall not represent a person in a matter before a state agency in which the former public servant was directly involved, 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, Room 136, Capitol Building, 700 Capitol Avenue, Frankfort, Kentucky 40601; telephone (502) 564-7954.

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

TRAINING SPECIAL PROVISIONS

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled ``Specific Equal Employment Opportunity Responsibilities," (Attachment 1), and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program training shall be provided as follows:

> The contractor shall provide on-the-job training aimed at developing full journeymen in the type of trade or job classification involved.

The number of trainees to be trained under these special provisions and in this contract is shown in “Special Notes Applicable to Project” in the bid proposal.

In the event that a contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction the contractor shall submit to the Kentucky Transportation Cabinet, Department of Highways for its approval, an acceptable training program on forms provided by the Cabinet indicating the number of trainees to be trained in each selected classification. Failure to provide the Cabinet with the proper documentation evidencing an acceptable training program prior to commencing construction shall cause the Cabinet to suspend the operations of the contractor with (if applicable) working days being charged as usual against the contract time or (if applicable), no additional contract time being granted for the suspension period. The Cabinet will not be liable for the payment of any work performed during the suspension period due to the failure of the contractor to provide an acceptable training program. Said suspension period shall be terminated when an acceptable training program is received by the Cabinet. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case. The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Kentucky Transportation Cabinet, Department of Highways and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed for each hour of training given an employee on this contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program. It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

1-1-93

General Decision Number: KY140100 10/24/2014 KY100

Superseded General Decision Number: KY20130100

State: Kentucky

Construction Type: Highway

Counties: Anderson, Bath, Bourbon, Boyd, Boyle, Bracken, Breckinridge, Bullitt, Carroll, Carter, Clark, Elliott, Fayette, Fleming, Franklin, Gallatin, Grant, Grayson, Greenup, Hardin, Harrison, Henry, Jefferson, Jessamine, Larue, Lewis, Madison, Marion, Mason, Meade, Mercer, Montgomery, Nelson, Nicholas, Oldham, Owen, Robertson, Rowan, Scott, Shelby, Spencer, Trimble, Washington and Woodford Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Modification Number	Publication Date
0	01/03/2014
1	02/14/2014
2	04/18/2014
3	05/09/2014
4	05/23/2014
5	06/06/2014
6	06/27/2014
7	07/04/2014
8	07/18/2014
9	07/25/2014
10	08/22/2014
11	10/24/2014

BRIN0004-003 06/01/2011

BRECKENRIDGE COUNTY

	Rates	Fringes
BRICKLAYER	$ 24.11	10.07

---

* BRKY0001-005 06/01/2014

BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, & TRIMBLE COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 25.37	10.50

BRKY0002-006 06/01/2011

BRACKEN, GALLATIN, GRANT, MASON & ROBERTSON COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 26.57	10.26

* BRKY0007-004 06/01/2014

BOYD, CARTER, ELLIOT, FLEMING, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 30.57	17.94

BRKY0017-004 06/01/2009

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN, HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS, OWEN, SCOTT, WASHINGTON & WOODFORD COUNTIES:

	Rates	Fringes
BRICKLAYER	$ 24.11	9.97

CARP0064-001 04/01/2014

	Rates	Fringes
CARPENTER	$ 27.50	14.96
Diver	$ 41.63	14.96
PILEDRIVERMAN	$ 27.75	14.96

ELEC0212-008 06/02/2014

BRACKEN, GALLATIN and GRANT COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 26.74	16.45

ELEC0212-014 07/01/2013

BRACKEN, GALLATIN & GRANT COUNTIES:

	Rates	Fringes
Sound & Communication Technician	$ 22.50	9.51

ELEC0317-012 05/28/2014

BOYD, CARTER, ELLIOT & ROWAN COUNTIES:

	Rates	Fringes
ELECTRICIAN		
Cable Splicer	$ 32.68	18.13
Electrician	$ 32.62	21.45

ELEC0369-007 05/29/2013

ANDERSON, BATH, BOURBON, BOYLE, BRECKINRIDGE, BULLITT, CARROLL, CLARK, FAYETTE, FRAONKLIN, GRAYSON, HARDIN, HARRISON, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER, MONTGOMERY, NELSON, NICHOLAS, OLDHAM, OWEN, ROBERTSON, SCOTT, SHELBY, SPENCER, TRIMBLE, WASHINGTON, & WOODFORD COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 29.48	14.37

ELEC0575-002 06/02/2014

FLEMING, GREENUP, LEWIS & MASON COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 31.70	14.21

ENGI0181-018 07/01/2014

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 28.85	14.15
GROUP 2	$ 26.24	14.15
GROUP 3	$ 26.65	14.15
GROUP 4	$ 25.95	14.15

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor;

Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Conrete Pump; Skid Steer Machine with all Attachments; Switchman or Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points; & Whirley Oiler

GROUP 3 - All Off Road Material Handling Equipment, including Articulating Dump Trucks; Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steerman; Tamping Machine; Tractor (Under 50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where the length of the boom in combination with the length of the piling leads equals or exceeds 150 ft. - $1.00 over Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID 10%
ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

IRON0044-009 06/01/2013

BRACKEN, GALLATIN, GRANT, HARRISON, ROBERTSON,
BOURBON (Northern third, including Townships of Jackson, Millersburg, Ruddel Mills & Shawhan);
CARROLL (Eastern third, including the Township of Ghent);
FLEMING (Western part, excluding Townships of Beechburg, Colfax, Elizaville, Flemingsburg, Flemingsburg Junction, Foxport, Grange City, Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton, Pecksridge, Plummers Landing, Plummers Mill, Poplar Plains, Ringos Mills, Tilton & Wallingford);
MASON (Western two-thirds, including Townships of Dover, Lewisburg, Mays Lick, Maysville, Minerva, Moranburg, Murphysville, Ripley, Sardis, Shannon, South Ripley & Washington);
NICHOLAS (Townships of Barefoot, Barterville, Carlisle, Ellisville, Headquarters, Henryville, Morningglory, Myers & Oakland Mills);
OWEN (Townships of Beechwood, Bromley, Fairbanks, Holbrook, Jonesville, Long Ridge, Lusby's Mill, New, New Columbus, New Liberty, Owenton, Poplar Grove, Rockdale, Sanders, Teresita & Wheatley);
SCOTT (Northern two-thirds, including Townships of Biddle, Davis, Delaplain, Elmville, Longlick, Muddy Ford, Oxford, Rogers Gap, Sadieville, Skinnersburg & Stonewall)

	Rates	Fringes

IRONWORKER
Fence Erector.....$ 22.50 18.40
Structural.....$ 24.80 18.40

IRON0070-006 06/01/2014

ANDERSON, BOYLE, BRECKINRIDGE, BULLITT, FAYETTE, FRANKLIN, GRAYSON, HARDIN, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE, WASHINGTON & WOODFORD
BOURBON (Southern two-thirds, including Townships of Austerlity, Centerville, Clintonville, Elizabeth, Hutchison, Littlerock, North Middletown & Paris);
CARROLL (Western two-thirds, including Townships of Carrollton, Easterday, English, Locust, Louis, Prestonville & Worthville);
CLARK (Western two-thirds, including Townships of Becknerville, Flanagan, Ford, Pine Grove, Winchester & Wyandotte);
OWEN (Eastern eighth, including Townships of Glenmary, Gratz, Monterey, Perry Park & Tacketts Mill);
SCOTT (Southern third, including Townships of Georgetown, Great Crossing, Newtown, Stampling Ground & Woodlake);

	Rates	Fringes
IRONWORKER	$ 26.97	19.75

IRON0372-006 06/01/2013

BRACKEN, GALLATIN, GRANT, HARRISON and ROBERTSON
BOURBON (Northern third, including Townships of Jackson, Millersburg, Ruddel Mills & Shawhan);
CARROLL (Eastern third, including the Township of Ghent);
FLEMING (Western part, Excluding Townships of Beechburg, Colfax, Elizaville, Flemingsburg, Flemingsburg Junction, Foxport, Grange City, Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton, Pecksridge, Plummers Landing, Plummers Mill, Poplar Plains,
Ringos Mills, Tilton & Wallingford);
MASON (Western two-thirds, including Townships of Dover, Lewisburg, Mays Lick, Maysville, Minerva, Moranburg, Murphysville, Ripley, Sardis, Shannon, South Ripley & Washington);
NICHOLAS (Townships of Barefoot, Barterville, Carlisle, Ellisville, Headquarters, Henryville, Morningglory, Myers & Oakland Mills);
OWEN (Townships of Beechwood, Bromley, Fairbanks, Holbrook, Jonesville, Long Ridge, Lusby's Mill, New, New Columbus, New Liberty, Owenton, Poplar Grove, Rockdale, Sanders, Teresita & Wheatley);
SCOTT (Northern two-thirds, including Townships of Biddle, Davis,Delaplain, Elmville, Longlick, Muddy Ford, Oxford, Rogers Gap, Sadieville, Skinnersburg & Stonewall) COUNTIES

	Rates	Fringes
IRONWORKER, REINFORCING	$ 26.47	19.30

IRON0769-007 12/01/2012

BATH, BOYD, CARTER, ELLIOTT, GREENUP, LEWIS, MONTGOMERY & ROWAN
CLARK (Eastern third, including townships of Bloomingdale,
Hunt, Indian Fields, Kiddville, Loglick, Rightangele & Thomson);
FLEMING (Townships of Beechburg, Colfax, Elizaville,
Flemingsburg, Flemingsburg Junction, Foxport, Grange City,
Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton,
Pecksridge, Plummers Landing, Plummers Mill, Poplar Plains,
Ringos Mills, Tilton & Wallingford);
MASON (Eastern third, including Townships of Helena, Marshall,
Orangeburg, Plumville & Springdale);
NICHOLAS (Eastern eighth, including the Township of Moorefield
Sprout)

	Rates	Fringes
IRONWORKER	$ 32.54	20.18

LABO0189-003 07/01/2014

BATH, BOURBON, BOYD, BOYLE, BRACKEN, CARTER, CLARK, ELLIOTT,
FAYETTE, FLEMING, FRANKLIN, GALLATIN, GRANT, GREENUP, HARRISON,
JESSAMINE, LEWIS, MADISON, MASON, MERCER, MONTGOMERY, NICHOLAS,
OWEN, ROBERTSON, ROWAN, SCOTT, & WOOLFORD COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 21.80	11.96
GROUP 2	$ 22.05	11.96
GROUP 3	$ 22.10	11.96
GROUP 4	$ 22.70	11.96

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger;

Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

---

LABO0189-008 07/01/2014

ANDERSON, BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 22.71	11.05
GROUP 2	$ 22.96	11.05
GROUP 3	$ 23.01	11.05
GROUP 4	$ 23.61	11.05

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

---

LABO0189-009 07/01/2014

BRECKINRIDGE & GRAYSON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 22.66	11.10
GROUP 2	$ 22.91	11.10
GROUP 3	$ 22.96	11.10
GROUP 4	$ 23.56	11.10

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste

- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

---

PAIN0012-005 06/11/2005

BATH, BOURBON, BOYLE, CLARK, FAYETTE, FLEMING, FRANKLIN, HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS, ROBERTSON, SCOTT & WOODFORD COUNTIES:

	Rates	Fringes
PAINTER		
Bridge/Equipment Tender and/or Containment Builder	$ 18.90	5.90
Brush & Roller	$ 21.30	5.90
Elevated Tanks; Steeplejack Work; Bridge & Lead Abatement	$ 22.30	5.90
Sandblasting & Waterblasting	$ 22.05	5.90
Spray	$ 21.80	5.90

PAIN0012-017 05/01/2014

BRACKEN, GALLATIN, GRANT, MASON & OWEN COUNTIES:

	Rates	Fringes
PAINTER (Heavy & Highway Bridges - Guardrails - Lightpoles - Striping)		
Bridge Equipment Tender and Containment Builder	$ 20.73	8.71
Brush & Roller	$ 23.39	8.71
Elevated Tanks; Steeplejack Work; Bridge & Lead Abatement	$ 24.39	8.71
Sandblasting & Water Blasting	$ 24.14	8.71
Spray	$ 23.89	8.71

PAIN0118-004 06/01/2014

ANDERSON, BRECKINRIDGE, BULLITT, CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES:

	Rates	Fringes
PAINTER		
Brush & Roller	$ 18.50	12.02
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning	$ 19.00	12.02

PAIN1072-003 12/01/2013

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS and ROWAN COUNTIES

	Rates	Fringes
Painters:		
Bridges; Locks; Dams; Tension Towers & Energized Substations	$ 31.03	15.10
Power Generating Facilities	$ 27.79	15.10

PLUM0248-003 06/01/2014

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
Plumber and Steamfitter	$ 33.00	18.95

PLUM0392-007 06/01/2014

BRACKEN, CARROLL (Eastern Half), GALLATIN, GRANT, MASON, OWEN & ROBERTSON COUNTIES:

	Rates	Fringes
Plumbers and Pipefitters	$ 29.80	17.79

PLUM0502-003 08/01/2013

BRECKINRIDGE, BULLITT, CARROLL (Western Half), FRANKLIN (Western three-fourths), GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES

	Rates	Fringes
PLUMBER	$ 32.00	17.17

SUKY2010-160 10/08/2001

	Rates	Fringes
Truck drivers:		
GROUP 1	$ 16.57	7.34
GROUP 2	$ 16.68	7.34
GROUP 3	$ 16.86	7.34
GROUP 4	$ 16.96	7.34

TRUCK DRIVER CLASSIFICATIONS

GROUP 1 - Mobile Batch Truck Tender

GROUP 2 - Greaser; Tire Changer; & Mechanic Tender

GROUP 3 - Single Axle Dump; Flatbed; Semi-trailer or Pole Trailer when used to pull building materials and equipment;

Tandem Axle Dump; Distributor; Mixer; & Truck Mechanic

GROUP 4 - Euclid & Other Heavy Earthmoving Equipment & Lowboy; Articulator Cat; 5-Axle Vehicle; Winch & A-Frame when used in transporting materials; Ross Carrier; Forklift when used to transport building materials; & Pavement Breaker

---

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

==========

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 union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows 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. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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.

==========

END OF GENERAL DECISION

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

These rates are listed pursuant to the Kentucky Determination No. CR-14-III- HWY dated July 14, 2014.

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 after an employee works eight (8) hours a day or forty (40) hours a week, whichever gives the employee the greater wages. At least time and one-half the base rate is required for all overtime. A laborer, workman or mechanic and an employer may enter into a written agreement or a collective bargaining agreement to work more than eight (8) hours a calendar day but not more than ten (10) hours a calendar day for the straight time hourly rate. Wage violations or questions should be directed to the designated Engineer or the undersigned.

Diana Castle Radcliffe, P.E.
Director, Division of Construction Procurement
Frankfort, Kentucky 40622

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
10.8%	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 Scott County.

PART IV

INSURANCE

INSURANCE

The Contractor shall procure and maintain the following insurance in addition to the insurance required by law:

1) Commercial General Liability-Occurrence form – not less than $2,000,000 General aggregate, $2,000,000 Products & Completed Aggregate, $1,000,000 Personal & Advertising, $1,000,000 each occurrence.

2) Automobile Liability- $1,000,000 per accident

3) Employers Liability:

   a) $100,000 Each Accident Bodily Injury
   b) $500,000 Policy limit Bodily Injury by Disease
   c) $100,000 Each Employee Bodily Injury by Disease

4) The insurance required above must be evidenced by a Certificate of Insurance and this Certificate of Insurance must contain one of the following statements:
   a) "policy contains no deductible clauses."
   b) "policy contains _____ (amount) deductible property damage clause but company will pay claim and collect the deductible from the insured."

5) KENTUCKY WORKMEN'S COMPENSATION INSURANCE. The contractor shall furnish evidence of coverage of all his employees or give evidence of self-insurance by submitting a copy of a certificate issued by the Workmen's Compensation Board.

The cost of insurance is incidental to all contract items. All subcontractors must meet the same minimum insurance requirements.

PART V

BID ITEMS

141079

PROPOSAL BID ITEMS

Report Date 11/20/14

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	73,775.00	TON		$	
0020	00013		LIME STABILIZED ROADBED	159,583.00	SQYD		$	
0030	00014		LIME	2,826.00	TON		$	
0040	00018		DRAINAGE BLANKET-TYPE II-ASPH	31,952.00	TON		$	
0050	00071		CRUSHED AGGREGATE SIZE NO 57	8,871.00	TON		$	
0060	00100		ASPHALT SEAL AGGREGATE	276.00	TON		$	
0070	00103		ASPHALT SEAL COAT	33.00	TON		$	
0080	00217		CL4 ASPH BASE 1.00D PG64-22	68,084.00	TON		$	
0090	00219		CL4 ASPH BASE 1.00D PG76-22	32,554.00	TON		$	
0100	00301		CL2 ASPH SURF 0.38D PG64-22	832.00	TON		$	
0110	00342		CL4 ASPH SURF 0.38A PG76-22	10,315.00	TON		$	
0120	00358		ASPHALT CURING SEAL	461.00	TON		$	
0130	02070		JPC PAVEMENT-12 IN	3,042.00	SQYD		$	
0140	02077		JPC PAVEMENT-12 IN SHLD	1,007.00	SQYD		$	
0150	02084		JPC PAVEMENT-8 IN	578.00	SQYD		$	
0160	02702		SAND FOR BLOTTER	399.00	TON		$	
0170	22861EN		HIGH STRENGTH GEOTEXTILE FABRIC	19,285.00	SQYD		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0840	00069		CRUSHED AGGREGATE SIZE NO 3	4,807.00	TON		$	
0850	00078		CRUSHED AGGREGATE SIZE NO 2	4,946.00	TON		$	
0860	00080		CRUSHED AGGREGATE SIZE NO 23	4,807.00	TON		$	
0870	01000		PERFORATED PIPE-4 IN	35,011.00	LF		$	
0880	01001		PERFORATED PIPE-6 IN	7,970.00	LF		$	
0890	01010		NON-PERFORATED PIPE-4 IN	2,970.00	LF		$	
0900	01011		NON-PERFORATED PIPE-6 IN	68.00	LF		$	
0910	01020		PERF PIPE HEADWALL TY 1-4 IN	9.00	EACH		$	
0920	01024		PERF PIPE HEADWALL TY 2-4 IN	8.00	EACH		$	
0930	01028		PERF PIPE HEADWALL TY 3-4 IN	69.00	EACH		$	
0940	01032		PERF PIPE HEADWALL TY 4-4 IN	53.00	EACH		$	
0950	01065		STEEL ENCASEMENT PIPE-8 IN	240.00	LF		$	
0960	01310		REMOVE PIPE	80.00	LF		$	
0970	01691		FLUME INLET TYPE 2	2.00	EACH		$	
0980	01811		STANDARD CURB AND GUTTER MOD	26,228.00	LF		$	
0990	01830		STANDARD INTEGRAL CURB	321.00	LF		$	
1000	01840		LIP INTEGRAL CURB	415.00	LF		$	
1010	01895		VALLEY GUTTER	125.00	LF		$	
1020	01897		ASPHALT WEDGE CURB	293.00	LF		$	
1030	01915		STANDARD BARRIER MEDIAN TYPE 1	2,271.00	SQYD		$	
1040	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	78.00	EACH		$	
1050	01986		DELINEATOR FOR BARRIER WALL-B/Y	9.00	EACH		$	
1060	02001		CURB TO BARRIER WALL TRANS	2.00	EACH		$	
1070	02003		RELOCATE TEMP CONC BARRIER	26,000.00	LF		$	
1080	02014		BARRICADE-TYPE III	8.00	EACH		$	

PROPOSAL BID ITEMS

141079

Report Date 11/20/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1090	02091		REMOVE PAVEMENT	1,243.00	SQYD		$	
1100	02159		TEMP DITCH	24,700.00	LF		$	
1110	02160		CLEAN TEMP DITCH	24,700.00	LF		$	
1120	02203		STRUCTURE EXCAV-UNCLASSIFIED	403.00	CUYD		$	
1130	02230		EMBANKMENT IN PLACE	522,186.00	CUYD		$	
1140	02242		WATER	10.00	MGAL		$	
1150	02261		FENCE-WOVEN WIRE	17,844.00	LF		$	
1160	02274		FENCE-6 FT CHAIN LINK	355.00	LF		$	
1170	02351		GUARDRAIL-STEEL W BEAM-S FACE	6,995.00	LF		$	
1180	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	5.00	EACH		$	
1190	02367		GUARDRAIL END TREATMENT TYPE 1	9.00	EACH		$	
1200	02369		GUARDRAIL END TREATMENT TYPE 2A	10.00	EACH		$	
1210	02381		REMOVE GUARDRAIL	1,228.00	LF		$	
1220	02429		RIGHT-OF-WAY MONUMENT TYPE 1	63.00	EACH		$	
1230	02432		WITNESS POST	3.00	EACH		$	
1240	02471		FILL AND CAP SINKHOLE	1.00	EACH		$	
1250	02483		CHANNEL LINING CLASS II	1,076.00	TON		$	
1260	02484		CHANNEL LINING CLASS III	311.00	TON		$	
1270	02545		CLEARING AND GRUBBING 111 ACRES	1.00	LS		$	
1280	02562		TEMPORARY SIGNS	492.00	SQFT		$	
1290	02585		EDGE KEY	466.00	LF		$	
1300	02599		FABRIC-GEOTEXTILE TYPE IV	19,000.00	SQYD		$	
1310	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	36,650.00	SQYD	$2.00	$	$73,300.00
1320	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
1330	02671		PORTABLE CHANGEABLE MESSAGE SIGN	7.00	EACH		$	
1340	02696		SHOULDER RUMBLE STRIPS-SAWED	36,175.00	LF		$	
1350	02701		TEMP SILT FENCE	24,700.00	LF		$	
1360	02703		SILT TRAP TYPE A	111.00	EACH		$	
1370	02704		SILT TRAP TYPE B	111.00	EACH		$	
1380	02705		SILT TRAP TYPE C	111.00	EACH		$	
1390	02706		CLEAN SILT TRAP TYPE A	666.00	EACH		$	
1400	02707		CLEAN SILT TRAP TYPE B	666.00	EACH		$	
1410	02708		CLEAN SILT TRAP TYPE C	666.00	EACH		$	
1420	02709		CLEAN TEMP SILT FENCE	49,400.00	LF		$	
1430	02726		STAKING	1.00	LS		$	
1440	02731		REMOVE STRUCTURE BARN	1.00	LS		$	
1450	02731		REMOVE STRUCTURE SHED	1.00	LS		$	
1460	02898		RELOCATE CRASH CUSHION	4.00	EACH		$	
1470	02900		INSTALL TEMP CRASH CUSHION	2.00	EACH		$	
1480	03171		CONCRETE BARRIER WALL TYPE 9T	13,000.00	LF		$	
1490	03287		SIDEWALK RAMP TYPE 1	18.00	EACH		$	
1500	03382		PVC PIPE-3 IN	3,100.00	LF		$	
1510	04797		CONDUIT-3 IN	7,500.00	LF		$	
1520	04940		REMOVE LIGHTING	1.00	LS		$	
1530	04950		REMOVE SIGNAL EQUIPMENT	1.00	EACH		$	
1540	05026		EASTERN WHITE PINE	100.00	EACH		$	
1550	05950		EROSION CONTROL BLANKET	10,157.00	SQYD		$	

PROPOSAL BID ITEMS

141079

Report Date 11/20/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1560	05952		TEMP MULCH	540,000.00	SQYD		$	
1570	05953		TEMP SEEDING AND PROTECTION	44,000.00	SQYD		$	
1580	05963		INITIAL FERTILIZER	16.00	TON		$	
1590	05964		20-10-10 FERTILIZER	25.00	TON		$	
1600	05985		SEEDING AND PROTECTION	440,000.00	SQYD		$	
1610	05989		SPECIAL SEEDING CROWN VETCH	72,000.00	SQYD		$	
1620	05990		SODDING	25,250.00	SQYD		$	
1630	05992		AGRICULTURAL LIMESTONE	274.00	TON		$	
1640	06510		PAVE STRIPING-TEMP PAINT-4 IN	41,000.00	LF		$	
1650	06514		PAVE STRIPING-PERM PAINT-4 IN	53,050.00	LF		$	
1660	06515		PAVE STRIPING-PERM PAINT-6 IN	39,090.00	LF		$	
1670	06517		PAVE STRIPING-PERM PAINT-12 IN	4,260.00	LF		$	
1680	06550		PAVE STRIPING-TEMP REM TAPE-W	36,800.00	LF		$	
1690	06551		PAVE STRIPING-TEMP REM TAPE-Y	18,000.00	LF		$	
1700	06567		PAVE MARKING-THERMO STOP BAR-12IN	605.00	LF		$	
1710	06568		PAVE MARKING-THERMO STOP BAR-24IN	100.00	LF		$	
1720	06572		PAVE MARKING-DOTTED LANE EXTEN	4,680.00	LF		$	
1730	06573		PAVE MARKING-THERMO STR ARROW	11.00	EACH		$	
1740	06574		PAVE MARKING-THERMO CURV ARROW	62.00	EACH		$	
1750	06575		PAVE MARKING-THERMO COMB ARROW	4.00	EACH		$	
1760	06576		PAVE MARKING-THERMO ONLY	6.00	EACH		$	
1770	06592		PAVEMENT MARKER TYPE V-B W/R	110.00	EACH		$	
1780	06593		PAVEMENT MARKER TYPE V-B Y/R	35.00	EACH		$	
1790	06602NC		PAVE MARKING-PAINT SYMBOL	10.00	EACH		$	
1800	08003		FOUNDATION PREPARATION	1.00	LS		$	
1810	08902		CRASH CUSHION TY VI CLASS B TL3	2.00	EACH		$	
1820	10020NS		FUEL ADJUSTMENT	447,698.00	DOLL	$1.00	$	$447,698.00
1830	10030NS		ASPHALT ADJUSTMENT	437,035.00	DOLL	$1.00	$	$437,035.00
1840	20209EP69		GRANULAR PILE CORE	1,835.00	CUYD		$	
1850	20411ED		LAW ENFORCEMENT OFFICER	1,000.00	HOUR		$	
1860	20587ES601		CONCRETE CLASS B	115.00	SQYD		$	
1870	21289ED		LONGITUDINAL EDGE KEY	12,619.00	LF		$	
1880	21590EN		SOUND BARRIER WALL	22,680.00	SQFT		$	
1890	22520EN		PAVE MARKING-THERMO YIELD BAR-36 IN	160.00	LF		$	
1900	22880ED		BARRIER WALL TRANSITION	2.00	LF		$	
1910	23131ER701		PIPELINE VIDEO INSPECTION	11,050.00	LF		$	
1920	23158ES505		DETECTABLE WARNINGS	540.00	SQFT		$	
1930	23274EN11F		TURF REINFORCEMENT MAT 1	13,639.00	SQYD		$	
1940	23457EC		AIR RELEASE VALVE-3/4 IN	2.00	EACH		$	
1950	23610NC		CORED HOLE DRAINAGE BOX CON	44.00	EACH		$	
1960	23668EC		CONN FORCE MAIN 3 IN TO FORCE MAIN 3 IN	2.00	EACH		$	
1970	23877EC		CONC MEDIAN BARRIER WALL TY 14C	6,671.00	LF		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1980	00440		ENTRANCE PIPE-15 IN	49.00	LF		$	
1990	00461		CULVERT PIPE-15 IN	538.00	LF		$	

PROPOSAL BID ITEMS

141079

Report Date 11/20/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2000	00462		CULVERT PIPE-18 IN	1,416.00	LF		$	
2010	00464		CULVERT PIPE-24 IN	535.00	LF		$	
2020	00466		CULVERT PIPE-30 IN	530.00	LF		$	
2030	00468		CULVERT PIPE-36 IN	239.00	LF		$	
2040	00470		CULVERT PIPE-48 IN	235.00	LF		$	
2050	00471		CULVERT PIPE-54 IN	197.00	LF		$	
2060	00492		CULVERT PIPE-24 IN EQUIV	192.00	LF		$	
2070	00521		STORM SEWER PIPE-15 IN	1,609.00	LF		$	
2080	00522		STORM SEWER PIPE-18 IN	3,279.00	LF		$	
2090	00524		STORM SEWER PIPE-24 IN	584.00	LF		$	
2100	00526		STORM SEWER PIPE-30 IN	691.00	LF		$	
2110	00528		STORM SEWER PIPE-36 IN	206.00	LF		$	
2120	00529		STORM SEWER PIPE-42 IN	106.00	LF		$	
2130	00530		STORM SEWER PIPE-48 IN	291.00	LF		$	
2140	01202		PIPE CULVERT HEADWALL-15 IN	11.00	EACH		$	
2150	01204		PIPE CULVERT HEADWALL-18 IN	23.00	EACH		$	
2160	01208		PIPE CULVERT HEADWALL-24 IN	8.00	EACH		$	
2170	01209		PIPE CULVERT HEADWALL-24 IN EQUIV	1.00	EACH		$	
2180	01210		PIPE CULVERT HEADWALL-30 IN	6.00	EACH		$	
2190	01212		PIPE CULVERT HEADWALL-36 IN	3.00	EACH		$	
2200	01214		PIPE CULVERT HEADWALL-42 IN	2.00	EACH		$	
2210	01216		PIPE CULVERT HEADWALL-48 IN	4.00	EACH		$	
2220	01432		SLOPED BOX OUTLET TYPE 1-15 IN	1.00	EACH		$	
2230	01433		SLOPED BOX OUTLET TYPE 1-18 IN	4.00	EACH		$	
2240	01434		SLOPED BOX OUTLET TYPE 1-24 IN	2.00	EACH		$	
2250	01450		S & F BOX INLET-OUTLET-18 IN	2.00	EACH		$	
2260	01451		S & F BOX INLET-OUTLET-24 IN	1.00	EACH		$	
2270	01452		S & F BOX INLET-OUTLET-30 IN	1.00	EACH		$	
2280	01453		S & F BOX INLET-OUTLET-36 IN	2.00	EACH		$	
2290	01456		CURB BOX INLET TYPE A	49.00	EACH		$	
2300	01480		CURB BOX INLET TYPE B	2.00	EACH		$	
2310	01490		DROP BOX INLET TYPE 1	9.00	EACH		$	
2320	01511		DROP BOX INLET TYPE 5D	1.00	EACH		$	
2330	01538		DROP BOX INLET TYPE 7	1.00	EACH		$	
2340	01541		DROP BOX INLET TYPE 10	1.00	EACH		$	
2350	01544		DROP BOX INLET TYPE 11	2.00	EACH		$	
2360	01614		CONC MED BARR BOX INLET TY 14A2	1.00	EACH		$	
2370	01615		CONC MED BARR BOX INLET TY 14B2	13.00	EACH		$	
2380	01616		CONC MED BARR BOX INLET TY 14B1	2.00	EACH		$	
2390	01650		JUNCTION BOX	1.00	EACH		$	
2400	08100		CONCRETE-CLASS A	2.67	CUYD		$	
2410	22572NN		METAL END SECTION TY 3-24 IN-EQUIV	1.00	EACH		$	
2420	24026EC		PIPE CULVERT HEADWALL-54 IN	2.00	EACH		$	

Section: 0004 - BRIDGE-27181

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2430	02200		ROADWAY EXCAVATION	95.00	CUYD		$	
2440	02223		GRANULAR EMBANKMENT	691.00	CUYD		$	

141079

PROPOSAL BID ITEMS

Report Date 11/20/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2450	02231		STRUCTURE GRANULAR BACKFILL	759.00	CUYD		$	
2460	02998		MASONRY COATING	2,617.00	SQYD		$	
2470	03299		ARMORED EDGE FOR CONCRETE	208.00	LF		$	
2480	08001		STRUCTURE EXCAVATION-COMMON	359.00	CUYD		$	
2490	08002		STRUCTURE EXCAV-SOLID ROCK	58.00	CUYD		$	
2500	08018		RETAINING WALL	7,084.00	SQFT		$	
2510	08033		TEST PILES	64.00	LF		$	
2520	08052		PILES-STEEL HP14X117	807.00	LF		$	
2530	08095		PILE POINTS-14 IN	28.00	EACH		$	
2540	08100		CONCRETE-CLASS A	333.00	CUYD		$	
2550	08104		CONCRETE-CLASS AA	1,113.00	CUYD		$	
2560	08150		STEEL REINFORCEMENT	54,595.00	LB		$	
2570	08151		STEEL REINFORCEMENT-EPOXY COATED	332,750.00	LB		$	
2580	23026ED		ARCHITECTURAL TREATMENT	176.00	SQYD		$	
2590	23538EC		PEDESTRIAN RAIL	251.00	LF		$	
2600	24582EN		PRECAST PC I BEAM-HN 7249	2,480.00	LF		$	

Section: 0005 - BRIDGE-27180

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2610	02998		MASONRY COATING	1,826.00	SQYD		$	
2620	08001		STRUCTURE EXCAVATION-COMMON	803.00	CUYD		$	
2630	08002		STRUCTURE EXCAV-SOLID ROCK	101.00	CUYD		$	
2640	08100		CONCRETE-CLASS A	515.00	CUYD		$	
2650	08104		CONCRETE-CLASS AA	2,502.00	CUYD		$	
2660	08150		STEEL REINFORCEMENT	75,313.00	LB		$	
2670	08151		STEEL REINFORCEMENT-EPOXY COATED	490,732.00	LB		$	
2680	23026ED		ARCHITECTURAL TREATMENT AESTHETIC TREATMENT	282.00	SQYD		$	

Section: 0006 - BRIDGE-27179

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2690	02223		GRANULAR EMBANKMENT	48.00	CUYD		$	
2700	02403		REMOVE CONCRETE MASONRY	17.00	CUYD		$	
2710	08001		STRUCTURE EXCAVATION-COMMON	95.00	CUYD		$	
2720	08100		CONCRETE-CLASS A	46.00	CUYD		$	
2730	08150		STEEL REINFORCEMENT	4,262.00	LB		$	

Section: 0007 - BRIDGE-27178

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2740	02223		GRANULAR EMBANKMENT	21.00	CUYD		$	
2750	02403		REMOVE CONCRETE MASONRY	38.00	CUYD		$	
2760	08001		STRUCTURE EXCAVATION-COMMON	110.00	CUYD		$	
2770	08100		CONCRETE-CLASS A	99.00	CUYD		$	
2780	08150		STEEL REINFORCEMENT	12,721.00	LB		$	

141079

PROPOSAL BID ITEMS

Report Date 11/20/14

Section: 0008 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2790	04904		BARRIER MOUNTING BRACKET	7.00	EACH		$	
2800	06400		GMSS GALV STEEL TYPE A	10,911.00	LB		$	
2810	06401		FLEXIBLE DELINEATOR POST-M/W	267.00	EACH		$	
2820	06404		FLEXIBLE DELINEATOR POST-M/Y	111.00	EACH		$	
2830	06405		SBM ALUMINUM PANEL SIGNS	5,039.00	SQFT		$	
2840	06406		SBM ALUM SHEET SIGNS .080 IN	742.00	SQFT		$	
2850	06407		SBM ALUM SHEET SIGNS .125 IN	1,044.00	SQFT		$	
2860	06410		STEEL POST TYPE 1	3,350.00	LF		$	
2870	06412		STEEL POST MILE MARKERS	2.00	EACH		$	
2880	06422		OSS ALUMINUM 60 FT TRUSS	1.00	EACH		$	
2890	06424		OSS ALUMINUM 65 FT TRUSS	1.00	EACH		$	
2900	06426		OSS ALUMINUM 70 FT TRUSS	1.00	EACH		$	
2910	06441		GMSS GALV STEEL TYPE C	16,493.00	LB		$	
2920	06448		SIGN BRIDGE ATTACHMENT BRACKET	2.00	EACH		$	
2930	06451		REMOVE SIGN SUPPORT BEAM	10.00	EACH		$	
2940	06490		CLASS A CONCRETE FOR SIGNS	165.00	CUYD		$	
2950	06491		STEEL REINFORCEMENT FOR SIGNS	9,793.00	LB		$	
2960	20418ED		REMOVE & RELOCATE SIGNS	5.00	EACH		$	
2970	20419ND		ROADWAY CROSS SECTION	26.00	EACH		$	
2980	20912ND		BARRIER WALL POST	7.00	EACH		$	
2990	21373ND		REMOVE SIGN	5.00	EACH		$	
3000	21596ND		GMSS TYPE D	10.00	EACH		$	

Section: 0009 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
3010	04793		CONDUIT-1 1/4 IN	1,170.00	LF		$	
3020	04795		CONDUIT-2 IN	655.00	LF		$	
3030	04811		ELECTRICAL JUNCTION BOX TYPE B	19.00	EACH		$	
3040	04820		TRENCHING AND BACKFILLING	1,915.00	LF		$	
3050	04830		LOOP WIRE	4,140.00	LF		$	
3060	04844		CABLE-NO. 14/5C	3,975.00	LF		$	
3070	04850		CABLE-NO. 14/1 PAIR	9,550.00	LF		$	
3080	04885		MESSENGER-10800 LB	1,525.00	LF		$	
3090	04895		LOOP SAW SLOT AND FILL	2,485.00	LF		$	
3100	04931		INSTALL CONTROLLER TYPE 170	3.00	EACH		$	
3110	04932		INSTALL STEEL STRAIN POLE	12.00	EACH		$	
3120	20093NS835		INSTALL PEDESTRIAN HEAD-LED	2.00	EACH		$	
3130	20188NS835		INSTALL LED SIGNAL-3 SECTION	23.00	EACH		$	
3140	20266ES835		INSTALL LED SIGNAL- 4 SECTION	2.00	EACH		$	
3150	21743NN		INSTALL PEDESTRIAN DETECTOR	2.00	EACH		$	
3160	23157EN		TRAFFIC SIGNAL POLE BASE	63.00	CUYD		$	
3170	23982EC		INSTALL ANTENNA	3.00	EACH		$	

141079

PROPOSAL BID ITEMS

Report Date 11/20/14

Section: 0010 - LIGHTING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0180	04701		POLE 40 FT MTG HT	22.00	EACH		$	
0190	04710		POLE 80 FT MTG HT HIGH MAST	3.00	EACH		$	
0200	04712		POLE 100 FT MTG HT HIGH MAST	16.00	EACH		$	
0210	04723		BRACKET 10 FT	22.00	EACH		$	
0220	04740		POLE BASE	48.00	EACH		$	
0230	04741		POLE BASE IN MEDIAN WALL	13.00	EACH		$	
0240	04750		TRANSFORMER BASE	48.00	EACH		$	
0250	04761		LIGHTING CONTROL EQUIPMENT	5.00	EACH		$	
0260	04780		FUSED CONNECTOR KIT	122.00	EACH		$	
0270	04791		CONDUIT-3/4 IN	360.00	LF		$	
0280	04793		CONDUIT-1 1/4 IN	5,875.00	LF		$	
0290	04795		CONDUIT-2 IN	4,150.00	LF		$	
0300	04797		CONDUIT-3 IN	1,755.00	LF		$	
0310	04800		MARKER	29.00	EACH		$	
0320	04820		TRENCHING AND BACKFILLING	20,350.00	LF		$	
0330	04832		WIRE-NO. 12	8,235.00	LF		$	
0340	04833		WIRE-NO. 8	11,950.00	LF		$	
0350	04834		WIRE-NO. 6	4,520.00	LF		$	
0360	04835		WIRE-NO. 4	13,825.00	LF		$	
0370	04860		CABLE-NO. 8/3C DUCTED	13,155.00	LF		$	
0380	04861		CABLE-NO. 6/3C DUCTED	17,975.00	LF		$	
0390	04940		REMOVE LIGHTING	1.00	LS		$	
0400	04950		REMOVE SIGNAL EQUIPMENT	1.00	EACH		$	
0410	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	6.00	EACH		$	
0420	20392NS835		ELECTRICAL JUNCTION BOX TYPE C	18.00	EACH		$	
0430	20410ED		MAINTAIN LIGHTING	1.00	LS		$	
0440	21543EN		BORE AND JACK CONDUIT	760.00	LF		$	
0450	21563NN		SPLICE BOX	3.00	EACH		$	
0460	23161EN		POLE BASE-HIGH MAST	175.00	CUYD		$	
0470	23778EC		WIRE-NO. 10	2,000.00	LF		$	
0480	24589ED		LED LUMINAIRE	61.00	EACH		$	
0490	24710EC		POLE 33 FT MTG HT W/12 IN ARM	11.00	EACH		$	
0500	24739EC		POLE 40 FT MTG HT W/12 IN ARM	28.00	EACH		$	
0510	24749EC		HIGH MAST LED LUMINAIRE	110.00	EACH		$	
0520	24750EC		LED TUNNEL LUMINAIRE	66.00	EACH		$	
0530	24752ED		LIGHTING DIMMING CONTROL	1.00	LS		$	

Section: 0011 - INTELLIGENT TRANSPORTATION SYSTEMS

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0540	03381		PVC PIPE-2 IN	1,200.00	LF		$	
0550	04795		CONDUIT-2 IN	100.00	LF		$	
0560	04820		TRENCHING AND BACKFILLING	1,200.00	LF		$	
0570	04835		WIRE-NO. 4	2,500.00	LF		$	
0580	04899		ELECTRICAL SERVICE	1.00	EACH		$	
0590	06490		CLASS A CONCRETE FOR SIGNS	38.30	CUYD		$	
0600	06491		STEEL REINFORCEMENT FOR SIGNS	2,779.00	LB		$	

PROPOSAL BID ITEMS

141079

Report Date 11/20/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0610	20257NC		SITE PREPARATION	1.00	LS		$	
0620	20392NS835		ELECTRICAL JUNCTION BOX TYPE C	1.00	EACH		$	
0630	20419ND		ROADWAY CROSS SECTION	1.00	EACH		$	
0640	21065ND		MODEL 334 ENCLOSURE	1.00	EACH		$	
0650	21069ND		SURGE DEVICE 120 VOLT	1.00	EACH		$	
0660	21071ND		DATA SURGE DEVICE	4.00	EACH		$	
0670	21076ND		FIBER TERMINATION RACK	3.00	EACH		$	
0680	21077ED		FIBER OPTIC CABLE	500.00	LF		$	
0690	21079ND		TRANSFORMER 480/120	1.00	EACH		$	
0700	21117ND		VARIABLE MESSAGE SIGN-DYNAMIC	1.00	EACH		$	
0710	21458ND		FIBER TRANSCEIVER SIGN	4.00	EACH		$	
0720	21489ND		RACK MOUNTED UPS	2.00	EACH		$	
0730	22403NN		WEB CAMERA ASSEMBLY	1.00	EACH		$	
0740	23150NN		COMMUNICATION CABLE	20.00	LF		$	
0750	23161EN		POLE BASE-HIGH MAST	9.77	CUYD		$	
0760	23941EC		VIDEO SURVEILLANCE CONTROLLER	1.00	EACH		$	
0770	23944EC		ADVANCED GROUNDING SYSTEM	3.00	EACH		$	
0780	24751ED		REMOVE STORE & REINSTALL TRUSS	1.00	EACH		$	
0790	24751ED		REMOVE STORE & REINSTALL CAMERA SYSTEM	1.00	EACH		$	
0800	24753ED		CAMERA POLE LOWERING DEVICE ITS	1.00	EACH		$	

Section: 0012 - TRAINEES

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0810	02742		TRAINEE PAYMENT REIMBURSEMENT CEMENT MASON	1,200.00	HOUR		$	

Section: 0013 - DEMOBILIZATION & MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0820	02568		MOBILIZATION	1.00	LS		$	
0830	02569		DEMOBILIZATION	1.00	LS		$	