CALL NO. 110

CONTRACT ID. 141294

CHRISTIAN COUNTY

FED/STATE PROJECT NUMBER STP 8907 (003)

DESCRIPTION KY 115 AND KY 911 INTERSECTION

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 12/15/2015

LETTING DATE: November 21,2014

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME November 21,2014. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 2%

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

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PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 02

CONTRACT ID - 141294

STP 8907 (003)

COUNTY - CHRISTIAN

PCN - DE024011514W1
STP 8907 (003)

KY 115 & KY 911 INTERSECTION (MP 1.100) RECONSTRUCT THE KY 115 / KY 119 INTERSECTION IN OAK GROVE (MP 1.350), A DISTANCE OF 0.10 MILES.GRADE & DRAIN WITH ASPHALT SURFACE SYP NO. 02-00156.00.

GEOGRAPHIC COORDINATES LATITUDE 36:39:31.00 LONGITUDE 87:24:46.00

COMPLETION DATE(S):

COMPLETED BY 12/15/2015 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

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.

FUEL AND ASPHALT PAY ADJUSTMENT

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

OPTION A

Be advised that the Department will accept compaction of asphalt mixtures furnished for driving lanes and ramps, at 1 inch (25mm) or greater, on 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.

Jeff Wolfe - Director
Phone (502) 564-3020
FAX (502) 564-7759

RECOMMENDATION FOR PICKUP OF ITEMS TO BE INSTALLED ON TRAFFIC SIGNALS/LIGHTING

Item Number: **2-156**
County: **CHRISTIAN**
Description: **KY 115 @ KY 911/ HUGH HUNTER RD.**

Cabinets	Master code	Description of Item
1	T-01-0020	Base Mounted 332 Cabinet
1	T-01-0100	170 Controller
6	T-01-0600	Loop Detector, Model 222
12	T-01-0700	Load Switches

Signals		
12	T-02-0009	Siemens 3 Section Signal
8	T-02-0090	Pedestrian signal housing
8	T-02-0099	Audible pedestrian detector
4	T-02-0300	LED Module 12" red arrow
8	T-02-0310	LED Module 12" yellow arrow
8	T-02-0330	LED Module 12" red ball
8	T-02-0340	LED Module 12" yellow ball
8	T-02-0350	LED Module 12" green ball
8	T-02-0365	LED Countdown Pedestrian Module

Special items			
1	T-02-0520	Antenna 10 db yagi	
1	T-03-0240	Jumper 60' N-N RG-213	
1	T-06-0800	Surge Protector for Radio	
8	T-06-0710	Ped Detector Pole Mount FSA Box	
8	T-06-0730	Ped Button w/o Plunger	
8	T-17-0015	9 X 15 Countdown Ped Sign DBL Sided	

Poles		
4	T-04-0030	Steel Strain Pole 32 foot

Electrical Contractor Name _____
Electrical Contractor Supervisor _____ Contact number for Supervisor _____
Project Engineer _____ Contact number for Project Engineer _____
Project Engineer attests that the mentioned contractor is the actual electrical contractor on this project
Signature of Project Engineer or Designee _____

Right-of-Way Certification Form

Revised 2/22/11

☑ Federal Funded ☐ State Funded

☑ Original ☐ 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: August 20, 2014

Project Name: Pembroke/Oak Grove Rd
Letting Date: 26 SEP 2014
Project #: 024 0115 001-002
County: Christian
Item #: 02-156.00
Federal #: TCSP KY03(1)

Description of Project: Intersection reconstruction of KY 115 at KY 911 in Oak Grove including approach alignment and turn lanes.

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: Jennifer K. Cox (Printed Name) _____ 8/20/14 (Signature) _____ Right-of-Way Supervisor

Approved: DM Lay (Printed Name) _____ (Signature) _____ Acting 21 August 2014 KYTC, Director of ROW &Utilities

No Signature Required as per FHWA - KYTC 2013 Stewardship Agreement

Approved: (Printed Name) _____ (Signature) _____ FHWA, ROW Officer (when applicable)

Right-of-Way Certification Form

Revised 2/22/11

Date: August 20, 2014

Project Name: Pembroke-Oak Grove Road
Project #: 024 0115 001-002
Item #: 02-156.00
Letting Date: _____

County: Christian
Federal #: TCSP KY03(1)

This project has 21 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.

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

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

____ 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

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

UTILITY NOTES TO BE INCLUDED IN THE PROPOSAL
SPECIAL NOTES FOR UTILITY CLEARANCE
IMPACT ON CONSTRUCTION

Christian County
FD52 024 75524 01U
Intersection of KY 115 @ KY 911
Item No. 2-156.00

The following is a list of utility companies involved on this project, the contractor is advised to use caution and call **BUD** prior to beginning work.

The City of Oak Grove has made the relocation of the water facilities part of the roadway contract.

Hopkinsville Water Environment Authority has made the relocation of the sanitary sewer part of the roadway contract.

There are no other known utility impacts on this project.

PROTECTION OF UTILITIES

The location of utilities provided in the contract documents has been furnished by the facility owners and/or by reviewing record drawings and may not be accurate. It will be the roadway contractor's responsibility to locate utilities before excavating by calling the various utility owners and by examining any supplemental information supplied by the Cabinet. If necessary, the roadway contractor shall determine the exact location and elevation of utilities by hand digging to expose utilities before excavating in the area of a utility. The cost of repair and any other associated costs for any damage to utilities caused by the roadway contractor's operations shall be borne by the roadway contractor.

The contractor is advised to contact the **BUD one-call system at 1-800-752-6007** at least two working days prior to excavating. Contractor should be aware that owners of underground facilities are not required to be members of the BUD one-call system. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the project area.

City of Oak Grove
Reconstruction of the KY 115 & KY 911 Intersection (Item No. 2-156.00)
(FD52 024 75525 01U)

TECHNICAL SPECIFICATIONS

Table of Contents

Section 01 100

SUMMARY OF WORK
(Waterline Relocation Work)

1.0 WORK COVERED BY CONTRACT DOCUMENTS

The work to be performed involves the installation of new and relocated treated water pipelines and appurtenances near the reconstructed intersection of KY Highway 115 and KY Highway 911, all within the City of Oak Grove service area in Christian County, Kentucky, as described by these Technical Specifications and the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002.

2.0 CONTRACTOR'S DUTIES

2.1 Construction and Related Activities

The Contractor shall provide and pay for all labor, materials, equipment, machinery, tools, superintendence, insurance, bonds, shipping, sampling and testing, utilities, and other costs required for a complete and functioning water line installation.

2.2 Taxes

The Contractor shall pay all required sales taxes, payroll taxes, consumer and use taxes, and other taxes relating to the work of the project.

2.3 Permits

The contractor shall secure and pay for all legally required permits, licenses and fees associated with the construction.

2.4 Notices

The Contractor shall provide all required notices, including notices to utility owners of intent to excavate in the vicinity of their utilities, notices to property owners of intent to enter their property for construction purposes, notices regarding the interruption of any utility service, as well as other notices required by the plans and contract documents.

2.5 Laws

Contractor shall fully comply with all applicable laws, ordinances, rules, regulations, orders and other legal requirements, and shall bear the cost of such compliance.

2.6 Character of Workmen

Contractor shall employ workman and foremen with sufficient knowledge of and experience in the type of work proposed to assure satisfactory performance. Workman shall maintain a professional demeanor and appearance at all times on the project. Any workman on the project who performs work in an incompetent manner, or acts in a disorderly or intemperate manner shall be removed from the project, and may not be employed on any portion of the project unless approved by the Owner.

2.7 Notice of Discrepancies

Note that whenever there is a lap between the Transportation Cabinet's Specifications and the Oak Grove specifications then the more stringent of the two shall apply. If discrepancies or ambiguities are found in the plans, specifications, contract documents or in any communication to the contractor, the contractor shall immediately notify the Engineer in writing. Do not proceed with the affected work until clarification is received.

2.8 Inspection

Provide at all times, access to the work for inspection by representatives of the City of Oak Grove, the Utility Engineer, and regulatory authorities having jurisdiction over the project.

3.0 CONTRACTOR'S USE OF PREMISES

Christian County is the site of all work on this Project.

a. RIGHTS-OF-WAY AND EASEMENTS: The Contractor has legal authority to construct these facilities on property owned by either the City of Oak Grove or Kentucky Transportation Cabinet, within easements on private property, and on existing public rights-of-way and will provide any other required permanent and construction easements for the pipeline. Access to the site of the work is the responsibility of the Contractor. Contractor shall confine his operations to right-of-ways, easements and property obtained by the Owner for construction of the project, or to areas secured by the Contractor for his use. Contractor shall take precautions to minimize disruption to existing properties.

b. LOCATION OF TEMPORARY FACILITIES: Material Storage Buildings, Material and Equipment Storage Yards, and parking areas for all project workers shall be provided by the Contractor, and located in areas approved by the County. Stored materials, regardless of their location shall be protected by the Contractor from damage, theft or degradation at all times.

c. DAMAGE TO EXISTING PROPERTY: The Contractor will be held responsible for any damage to existing structures, work, materials, or equipment because of his operations and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of, and at no additional cost to the City of Oak Grove. Stored materials, regardless of their location shall be protected by the Contractor from damage, theft or degradation at all times.

The Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.

4.0 EXISTING FACILITIES

4.1 Existing Utilities

The existing water distribution system will be in continuous operation during the construction of the Project. Contractor shall avoid disturbing existing water facilities, and any other utilities or structures encountered in the work, except as necessary for construction operations. Contractor shall give at least 48 hours prior notice to the City of Oak Grove, or to any utility or other entity, of any necessary disruptions to service, or work affecting active lines. The Contractor shall be responsible for any necessary damage repair resulting from his installation work

Contractor shall cooperate with City of Oak Grove personnel in continuing operation of existing facilities.

4.2 Existing Connecting Streets, Roads And Highways

Any damage to a public facility and/or any access road into the project site by construction traffic generated by this project shall be the responsibility of the Contractor. All streets and roads shall be kept open to normal traffic and in a reasonable state of repair. The Contractor shall arrange with the appropriate authority to perform repairs himself or to have the said authority perform them. Any damages to public roads shall be considered a matter of the Contractor's or his suppliers public liability, and needed repairs shall be made as required by the public entity having authority over the road.

Contractor shall provide adequate barricades, warning signs, flagmen, lights, etc., for construction operations hazardous to traffic and public safety.

5.0 PARTIAL OWNER OCCUPANCY

The City of Oak Grove may, at his discretion, place into service any or all portions of the completed work prior to final completion of all work on the project. Placing a portion of the work in service before final completion does not relieve the contractor of his obligation to complete all work associated with that portion of the line (i.e. clean-up, surface restoration, etc.), to perform maintenance for the required period, or to provide warranty for that portion of the work. If a portion of the work that is placed in service prior to final project completion and acceptance is, in the opinion of the Engineer, complete and ready for acceptance, the Contractor may request that the warranty period for that portion of the work begin at the time it is placed in service, providing that such request is made in writing within seven days of the date of being placed in service. If the request is not made within the required time, the warranty period for that portion of the work will begin upon final acceptance of the Project.

6.0 TEMPORARY FACILITIES

a. PARKING: The Contractor shall provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with this Contract, as required to avoid any need for such personnel to park personal vehicles in locations where they may interfere with public traffic, City of Oak Grove's operations, or construction activities. Securing the use of property for parking areas as necessary for the Contractor's operations shall be the full responsibility of the Contractor.

b. SANITARY FACILITIES: The Contractor shall provide and maintain sanitary facilities for the use of his employees or any other persons on the job site, as may be required to comply with the regulations of state and local departments of health.

7.0 TEMPORARY UTILITIES & SERVICES

a. WATER: Water for any purpose other than filling the completed waterline will be paid for by the Contractor.

b. POWER: Power for lighting, temporary office facilities, operation of the Contractor's plant or equipment, or for any other use by the Contractor shall be provided by the Contractor at his sole cost and expense. The contractor will be responsible for all necessary arrangements with the utility company.

c. HEAT: All heat necessary for the protection or completion of the work, operation of the Contractor's plant or equipment, or for any other use by the Contractor shall be provided by the Contractor at his sole cost and expense.

d. TELEPHONE SERVICE: The Contractor shall make all necessary arrangements with the telephone utility, and pay all charges therefore, for telephones in his offices at the site, if desired.

e. SANITARY SEWER: The Contractor may make use of portable toilet facilities at his sole cost and expense.

END OF SECTION 01-100

Section 01 200

SUBMITTALS
(Waterline Relocation Work)

1.0 PROGRESS MEETINGS

The Contractor shall provide, upon request, a representative to attend regular City Council meetings to report on project progress and to respond to questions from the Council and the public. The Contractor shall attend other project related meetings from time to time as designated by the Engineer.

2.0 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

2.1 General

Submit six copies of all required shop drawings to the City of Oak Grove's Engineer (McGhee Engineering Inc.) for approval. Do not proceed with work involving any material, supply or method subject to review until approved submittals are received. Allow two weeks for Engineer's review.

2.2 Submittal Requirements

Submittals shall fully describe the item, material, or construction method proposed, and shall be free of extraneous materials. Submittals shall be adequate to fully document compliance with all requirements of the specifications. Any proposed deviation from the specifications, and the reason therefor shall be noted on the submittal.

By submitting a particular item, material or method, the Contractor states his intention to use that item, material or method exclusively in the work. Once approved, the Contractor may not change items, materials or methods without resubmitting shop drawings. The Engineer reserves the right to reject a re-submittal solely on the basis of maintaining continuity in the work.

Engineer's review of the submittal does not relieve the Contractor of his responsibility to fully comply with all requirements of the Contract Documents.

Shop drawings returned for correction or rejected shall be revised and resubmitted until final approval is granted. No claim will be allowed for damages or time extension because of delays in the work resulting from rejection of submittals not conforming to the specifications.

2.3 Items Requiring Review

Shop drawing submittal and review are required for, but not limited to, the following items (except where such items are supplied by the owner):

a. PVC/Ductile iron pipe, fittings, meters and hydrants.
b. Pipe Certifications and Test Results.
c. All valves (gate, air release, etc.)
d. Hydrants
e. Water Meters & Related Items
f. Aggregates used as bedding or backfill (source and gradation).
g. Concrete mix designs.
h. Reinforcing steel details and placement.
i. Precast concrete items.
j. Access hatch and covers.
k. Tracer wire.
l. Tracer wire splice kit material.
m. Pipeline markers.
n. Casing Pipe.
o. Casing End Seals & Spacers

3.0 OPERATING AND MAINTENANCE MANUALS

Furnish four copies of manuals of instruction for operation and maintenance of the following items:

a. Valves
b. Flushing Hydrants
c. Water meters.

Manuals shall include, as applicable, a parts list, exploded or sectional views, recommended maintenance program, internal piping and wiring details, operating procedures, complete description of the item including manufacturer (including address and telephone number), model number, style, options, etc., and name, address and telephone number of a local supplier or parts distributor.

4.0 CLOSEOUT

Before final payment on the project, deliver to the Engineer the following items.

1. Notarized release of liens from all subcontractors, equipment and material suppliers.
2. Written warranties and guarantees.
3. Disinfection testing results as outlined in Section 02-400.
4. As-built drawings. (Marked-up set of construction drawings showing actual line location and any deviations from the plans. These drawings will be separate from those notes and measurements made by the resident inspector.)

END OF SECTION 01-200

Section 02 100

WATER MAIN GENERAL REQUIREMENTS
(Waterline Relocation Work)

1.0 GENERAL

1.1 Scope of Work

The water mains and appurtenances required on this contract shall be furnished in full compliance as described by the these Specifications, and the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002. Copies of the Manual available at City Hall.

Work to be performed under the unit price items, described subsequently herein, shall include for each item all excavation (including rock excavation, if any) the removal of existing pavements, curb and gutter, sidewalks, driveways, brush and timber, structures and piping to be relocated or abandoned; also sheeting, diking, well pointing, bailing, dewatering; the furnishing, placing and removal of bulkheads, the restoration of any utilities, parkways, trees, shrubbery, culverts, fences and other items disturbed by construction operations; backfilling and removal of excess excavated materials; and testing.

The cost of all such work and the cost of other work necessary for the complete water line installation shall be included in the unit price pay items provided.

1.2 Standards

Where materials and methods are indicated in the Specifications as being in conformance with a standard specification (i.e. AWWA, ASTM, etc.) it shall refer in all cases to the latest edition of the specification or standard, and shall include all interim revisions. Listing of a standard specification without further reference shall indicate that the particular material or method shall conform to the referenced specification.

2.0 WORK INCIDENTAL TO CONSTRUCTION

Work to be performed under this heading includes all the work designated as "incidental to construction" and other work required by the plans, specifications or contract documents in order to fully complete the work on the project, but not provided with a specific pay item in the bid form. The contractor shall perform such work, and the contractor shall include all charges for the work in the bid items provided. No claim for additional compensation based upon required work not being described in a bid item will be considered.

2.1 Public and Private Utilities

Where **any** utilities (including those of the City of Oak Grove), such as water, sewer, telephone, power, oil or gas transmission, or any other, either public or private are encountered, the contractor shall provide adequate protection for them and will be held responsible for any damage to such utility from his operations. When it is apparent that construction operations may damage the integrity of any utility conduit or pole, or the support of any structure, the contractor shall notify the utility owner of this possibility and shall take such steps as may be required to provide temporary bracing or support of the affected conduit, pole or structure.

The cost of any bracing or support of conduits, poles or structures encountered in the work shall be included in the bid item for water main construction.

When, in order to carry out the work, a pole, conduit or structure is required to be removed or relocated, the contractor shall be responsible for making all arrangements with the utility owner for such removal or relocation. All costs for such relocation or removal shall be born by the contractor unless it could not be reasonably foreseen that such work would be required.

All damage to utilities resulting from the contractors operations shall be repaired at the contractor's expense. Where it is the policy of the utility to perform their own repairs to damaged utilities, the contractor shall cooperate fully with the utility and bear the costs of such repairs.

2.2 Existing Water, Sewer and Drain Facilities

In some instances, existing water, sewer or drains may be encountered along the line of work. In all such cases, the contractor shall perform his operations in such manner that the service will not be interrupted, and shall, at his expense, make temporary provisions to maintain such services.

Where it is necessary to cut, remove and/or replace existing storm sewers and drain tiles, the Contractor shall make specific arrangements to maintain the flow of water and shall not place permanent bulkheads in any conduit. Temporary earth dams may be used to confine and/or channel the flow and shall be removed upon completion of the crossing.

The Contractor shall receive no extra compensation for replacement of drains encountered or for relaying same at a new grade or line. Where existing water mains are encountered in the work they shall be maintained in operation to the extent that water service is not interrupted.

2.3 Existing Gas, Electric and Other Facilities

Where existing gas mains are encountered, the Contractor shall arrange with the Gas Utility for any necessary location and relaying.

The Contractor will give adequate notice to the Gas Utility to allow their location of gas lines ahead of the proposed construction with paint or stakes. The Contractor will be required to expose the gas mains prior to dynamiting and excavation, where crossing pipeline installations. Track drill operations will be ceased short of the gas main and will resume on the other side of the main. The material under the gas line will be removed with hand drills and/or jack hammers. The Contractor shall contact the Gas Utility for restrictions on blasting in the vicinity of the gas line, comply therewith.

Before backfilling a trench in which a gas main has been exposed, the Contractor shall notify the Gas Utility to inspect the exposed main and perform any protective measures deemed necessary.

The forgoing provisions pertaining to gas lines shall apply to all natural gas, petroleum and other pipelines.

Where existing underground electric or telephone facilities are encountered, the Contractor shall take the necessary measures to work around the facilities or arrange with the Electric Company or Telephone Company for any necessary relaying. Repairs made necessary by damage to any facilities by the Contractor shall be charged to the Contractor.

2.4 Dewatering

The Contractor shall perform all pumping, well pointing, ditching and any other necessary procedure to keep the excavation clear of groundwater, storm water, or sewage during the progress of the work and until the completed work is safe from injury.

The Contractor shall maintain dewatering operations such that no groundwater, storm water, or sewage will be allowed to build up over any concrete and/or masonry at manholes or structures for a period of 6 hours.

All water pumped or drained from the work shall be disposed of in a satisfactory manner without damage to adjacent property or to other work under construction. The contractor shall not dispose of storm or surface water through sanitary sewerage facilities.

It shall be the Contractor's responsibility to take all necessary precautions to protect all construction against flooding and/or flotation from hydrostatic uplift.

All dewatering procedures and maintenance thereof shall be considered an incidental part of pipe laying and construction operations and no separate payment will be allowed therefor.

Dewatering operations for structure construction shall be such that the groundwater or surface water is not being pulled over, around, or through the freshly placed concrete or masonry. The use of multiple pumps in the trench may be required. When required to protect the freshly placed concrete and/or masonry, timber or plywood forms will be positioned around in the concrete or masonry so that the dewatering operations will not cause a separation of cement and aggregate. The cost of these dewatering and/or protection procedures shall be merged into the appropriate bid items.

2.5 Barricades And Warning Signs

The Contractor shall furnish, erect, and maintain such barricades, fences, lights, and danger signals and take other precaution measures that will insure the protection of persons, property and the work.

2.6 Maintenance and Access of Traffic

Portions of the work are located in developed areas requiring the access for fire and other departments to be provided for at least one free lane be available for all traffic. Contractors are to arrange operations in these areas to meet these requirements and secure approval of operating procedures from the Christian County Road Department or the Kentucky Department of Highways as appropriate.

Where water mains are constructed under paved roadway surfaces, within public right-of-ways, the Contractor will restore the asphalt or crushed stone pavement and/or shoulders between shoulder lines. It shall be the responsibility of the Contractor, upon completion of the installation, to regrade the street to the template that existed prior to construction. This regrading shall be satisfactory to Christian County Highway Department or the Kentucky Department of Highways.

The Contractor shall further be responsible for the maintenance of disturbed streets until re-paving operations have been completed.

The Contractor shall restore all curbs, gutters, sidewalks, ramps and private driveways or parking lots. This work shall be considered as incidental to the construction of the proposed water main and, therefore, no additional compensation will be allowed for the restoration of these items.

The Contractor shall also be required to restore, at his own expense, all pavements disturbed by his operations where the water main was not constructed under the pavements. He shall further be required to replace at his own expense all pavements disturbed in the correction of water main deficiency discovered after restorations have been completed.

3.0 MATERIAL AND EQUIPMENT

Materials, products and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and handling. Provide suitable temporary weather tight storage facilities as may be required for materials or equipment which will be damaged by storage in the open. Protect from damage all materials delivered at the site. Do not use damaged material on the work.

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the respective manufacturers unless directed otherwise by the provisions of these Specifications.

4.0 SPECIAL CONDITIONS

The Contractor's attention is called to the special conditions (i.e. road crossings, construction in road right-of-way, etc.) indicated on the Plans. The Plans and Specifications reflect the type of construction that is anticipated in the various locations requiring special attention, but it shall be the responsibility of the Contractor to contact the various agencies including the State Highway Department, the Gas Company, Telephone Company, Corps of Engineers, and other utilities and/or entities involved when working in

areas where they will be concerned, and for coordinating construction with their requirements in such a way to avoid conflicts, damage or interruptions in service.

(a) The Contractor shall perform his work in such a manner that normal service on existing water lines and service to customers is maintained to the maximum extent possible. Such service shall be disrupted only at times and in such a manner as approved by the Utility's Engineer.

(b) The Contractor shall submit a work schedule to the City of Oak Grove for approval prior to beginning work. The schedule shall establish the planned sequence of line installation, service switch-over if required and property restoration for the project.

(c) The Contractor shall maintain access to businesses and residences to the maximum extent possible.

(d) Easement Restrictions - The Contractor shall exercise due care in staying within the easements obtained for the proposed construction, and will be held strictly accountable for violations thereof. Any additional access to or use of private property must be arranged by the Contractor, at his expense, by negotiation with the property owner involved.

The Contractor's attention is also called to the special conditions associated with the proximity of the City of Oak Grove's existing water distribution system in relation to improvements indicated on the Plans. The proposed improvements will be constructed adjacent to and/or may encounter existing water lines which must remain in service until the successful testing and completion of the proposed improvements. The Contractor is reminded of paragraph 2.1 of Section 02-100, and the Contractor is urged to use the most appropriate construction measures to produce a suitable finished product while maintaining the integrity of the existing infrastructure.

5.0 TESTING

The Specifications for materials designate the testing applicable for materials incorporated in the work. Testing shall be done by the manufacturer in accordance with the applicable ASTM specification. Manufacturer shall furnish the Engineer with three (3) certified copies for the test results.

The City of Oak Grove may, at his option, elect to have an independent testing laboratory test materials to be furnished for incorporation in the work. Such testing, when done, shall be in accordance with provisions of the Specifications for Materials.

Acceptance testing for installed water line will be limited to visual testing, disinfection testing and pressure testing unless directed otherwise by the City of Oak Grove's Engineer.

6.0 SUBMITTALS

Submittals for this work include, but are not limited to, those items listed in Section 01-200. Provide at least six copies of each submittal, and allow two weeks for the City of Oak Grove Engineer's review. Such submittals are to be approved by the Engineer prior to incorporation of any materials into the work.

7.0 WARRANTY

The work to be performed under this Contract shall be guaranteed against defects in materials or workmanship for a period of one year following the date of formal acceptance of the project. In the event defects in materials or workmanship should appear, the Contractor shall promptly make the necessary correction. When the defects are not of an emergency nature, The Contractor will be notified and will be given a period of two weeks in which to make the necessary corrections. Should the defect be of an emergency nature, which in the opinion of the City of Oak Grove requires immediate correction, the Contractor will be notified and requested to make the necessary repair immediately. Should this be impractical, or if the Contractor should fail to respond to the request for corrective action within the specified period, the City of Oak Grove may proceed to have the defects corrected and shall bill the Contractor for all charges in connection therewith including labor, materials, and equipment rental. Such charges may be deducted from amounts due the Contractor if any of the Contractor's money has been

withheld. In the event the Contractor fails, refused, or neglects to pay the City of Oak Grove, the Surety shall be liable for such charges.

8.0 MAINTENANCE OBLIGATION

The Contractor shall be fully responsible for maintenance of any and all portions of the work, which he performs under this Contract for a period of 30 days. This maintenance obligation shall begin upon formal acceptance of the project and is intended to place a limit upon the Contractor's responsibility for normal maintenance required for the routine operation of the system. This 30-day obligation shall not be construed as relieving the Contractor of the responsibility for maintenance or repair work resulting from defective materials or workmanship during the warranty period.

9.0 PROJECT CLOSEOUT

The premises and the job site shall be maintained in a reasonably neat and orderly condition and kept free from an accumulation of waste materials and rubbish during the entire construction period. Remove crates, cartons and other flammable waste materials or trash from the work areas at the end of each working day.

When the Contractor requests a final inspection, the City of Oak Grove and/or its representatives will inspect the work for completeness in accordance with the Contract Documents. The contractor shall promptly correct any deficiencies.

Final acceptance cannot be made until the Contractor furnishes to the City of Oak Grove a notarized certification in a form suitable to the City of Oak Grove that all labor and material costs for the work have been paid by the Contractor and that there are no liens against the work.

END OF SECTION 02-100

Section 02 200

WATER MAIN MATERIALS
(Waterline Relocation Work)

1.0 GENERAL

All materials to be incorporated in the project shall be first quality, new and undamaged material conforming to all applicable portions of these Specifications and the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002.

2.0 CONCRETE

2.1 Cement- Cement shall be Portland cement of a brand approved by the Engineer and shall conform to "Standard Specifications for Portland Cement", Type 1, ASTM Designation C150, latest revision. Cement shall be furnished in undamaged 94 pound, one cubic foot sacks, and shall show no evidence of lumping.

2.2 Concrete Fine Aggregate- Fine aggregate shall be clean, hard uncoated natural sand conforming to ASTM Designation C33, latest revision, "Standard Specifications for Concrete Aggregate".

2.3 Concrete Coarse Aggregate- Coarse aggregate shall consist of clean, hard, dense particles of stone or gravel conforming to ASTM Designation C33, latest revision, "Standard Specifications for Concrete Aggregate". Aggregate shall be well graded between 1-1/2" and #4 sieve sizes.

2.4 Water- Water used in mixing concrete shall be clean and free from organic matter, pollutants and other foreign materials.

2.5 Ready Mix Concrete- Ready-mix concrete shall be secured only from a source approved by the Engineer, and shall conform to ASTM Designation C94, latest revision, "Specifications for Ready-Mix Concrete". Before any concrete is delivered to the job site, the supplier must furnish a statement of the proportions of cement, fine aggregate and coarse aggregate to be used for each mix ordered, and must receive the Engineer's approval of such proportions.

2.6 Class "A" Concrete- Class "A" concrete shall have a minimum compressive strength of 4000 pounds per square inch in 28 days and shall contain not less than 6 sacks of cement per cubic yard. Class A concrete shall be air-entrained.

2.7 Class "B" Concrete- Class "B" concrete shall have a minimum compressive strength of 2000 pounds per square inch in 28 days and shall contain no less than 4 sacks of cement per cubic yard.

2.8 Metal Reinforcing- Reinforcing bars shall be intermediate grade steel conforming to ASTM Designation A615, latest revision "Standard Specifications for Billet Steel Bars for Concrete Reinforcement". Bars shall be deformed with a cross sectional area at all points equal to that of plain bars of equal nominal size.

3.0 CRUSHED STONE

Crushed stone for pipe bedding and/or backfill shall meet the quality requirements of ASTM D692 and the grading requirements referenced on the plans.

4.0 WATER PIPE

4.1 PVC Water Pipe

PVC pipe for water shall be manufactured in accordance with ASTM D2241 and have NSF approval. The pipe shall be Class 200 polyvinyl chloride plastic (PVC 1120) SDR-21. The following tests shall be run for each machine on each size and type of pipe being produced, as specified below:

Flattening Test: Once per shift in accordance with ASTM D2412. Upon completion of the test, the specimen shall not be split, cracked or broken.

Acetone Test (Extrusion Quality Test): Once per shift in accordance with ASTM D2152. There shall be not flaking, peeling, cracking, or visible deterioration on the inside or outside surface after completion of the tests.

Quick Burst Test: Once per 24 hours in accordance with ASTM 5199.

SDR	Pressure Rating	Minimum Bursting Pressure, PSI
21	200	800

Impact Tests: 6" and smaller, once each 2 hours in accordance with ASTM D2444.

Wall Thickness and Outside Dimensions Test: Once per hour in accordance with ASTM D2122.

Bell Dimensions Test: Once per hour in accordance with ASTM D3139.

If any specimen fails to meet any of the above mentioned tests, all pipe of that sized and type manufactured between the test period must be scrapped and a full set of tests rerun.

Furnish a certificate from the pipe manufacturer stating that he is fully competent to manufacture PVC pipe of uniform texture and strength and in full compliance with these specifications and further stating that the company has manufactured such pipe for a continuous period of at least ten years. In addition the manufacturer's equipment and quality control facilities must be adequate to ensure that each extrusion of pipe is uniform in texture, dimensions, and strength. Also furnish a certificate from the manufacturer certifying that the pipe furnished for this project meets the requirements of these Specifications.

All pipe shall be manufactured in the United States of America. All pipe for any one project shall be made by the same manufacturer.

The pipe shall be furnished in laying lengths of 20'. The Contractor's methods of storing and handling the pipe shall be approved by the Engineer. Pipe shall be fully supported as recommended by the manufacturer. Stringing pipe along the proposed route in excess of one day's work will not be allowed.

Certain information shall be marked on each piece of pipe. At the least, this shall consist of:

Nominal Size
Type of material
SDR or class
Manufacturer
NSF Seal of Approval

Pipe that fails to comply with the requirements set forth in these Specifications shall be rejected.

4.2 AWWA C900 PVC Water Pipe

AWWA C900 PVC pipe shall be manufactured from compounds conforming to PVC cell classification of 12454 as defined in ASTM D-1784. The pipe shall meet the requirements of the AWWA C-900-07 standard specification for polyvinyl chloride water distribution pipe. The integral bell joint system shall meet the requirements of ASTM D-3139 and utilize an elastomeric seal conforming to ASTM F-477. AWWA C-900 Pressure Pipe shall carry the NSF Standard 61, the Underwriters Laboratories Inc Standard 1285, and the Factory Mutual Research Water Distribution Pipe for Underground Fire Protection Service marks of acceptance.

The pipe shall be polyvinyl chloride plastic (PVC) DR-18. The following tests shall be run for each machine on each size and type of pipe being produced, as specified below:

Hydrostatic Proof Testing: Each standard and random length of C900 shall be tested to four times the pressure class of the pipe for a minimum of five seconds. The integral bell shall be tested with the pipe.

Quick Burst Test: Once per 24 hours in accordance with ASTM 5199.

DR	Pressure Rating	Minimum Bursting Pressure, PSI
18	235	755

Falling Weight Impact Tests: C900 pipe shall withstand an impact energy of 100 ft-lbs, per the requirements of UL 1285.

If any specimen fails to meet any of the above mentioned tests, all pipe of that sized and type manufactured between the test period must be scrapped and a full set of tests rerun.

Furnish a certificate from the pipe manufacturer stating that he is fully competent to manufacture AWWA C900 PVC pipe of uniform texture and strength and in full compliance with these specifications and further stating that the company has manufactured such pipe for a continuous period of at least ten years. In addition the manufacturer's equipment and quality control facilities must be adequate to ensure that each extrusion of pipe is uniform in texture, dimensions, and strength. Also furnish a certificate from the manufacturer certifying that the pipe furnished for this project meets the requirements of these Specifications.

All pipe shall be manufactured in the United States of America. All pipe for any one project shall be made by the same manufacturer.

The pipe shall be furnished in laying lengths of 20'. The Contractor's methods of storing and handling the pipe shall be approved by the Engineer. Pipe shall be fully supported as recommended by the manufacturer. Stringing pipe along the proposed route in excess of one day's work will not be allowed.

Certain information shall be marked on each piece of pipe. At the least, this shall consist of:

Nominal Size
Type of material
DR or class
Manufacturer
NSF Seal of Approval

Pipe that fails to comply with the requirements set forth in these Specifications shall be rejected.

4.3 Ductile Iron Water Pipe

Ductile iron pipe shall meet the requirements of ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51 and shall be NSF approved. All ductile iron pipe shall have a minimum pressure rating as specified on the Drawings. All ductile iron pipe shall be cement lined with an asphalt coating on the exterior of the line. In standard buried installation, ductile iron pipe shall be supplied with push-on type joints with SBR rubber, or other gasket material suitable for continuous service in a buried potable water pipeline. Pipe which will be exposed (e.g. above grade, or in vaults or buildings) shall have flanged joints. Pipe size, pressure class, NSF seal, and manufacturer’s name shall be clearly marked on the exterior of each pipe joint.

All ductile iron pipe shall have Underwriter’s Laboratories, Inc. approval and shall be approved by the National Sanitation Foundation for potable water use. All ductile iron pipe and fittings shall be manufactured in the United States. All pipe for any one project shall be made by the same manufacturer.

Restrained joint pipe and fittings shall meet all other requirements for ductile iron pipe and fittings set forth above, plus having a positive means of restraining the pipeline joint against separation due to internal pressure. All areas specifically designated for restrained ductile iron pipe (i.e. bends, steep slopes or bores) shall be done utilizing regular ductile iron pipe equipped with restraining gaskets. The gaskets shall be equivalent to the American Fast-Grip restrained joint gaskets product.

5.0 FITTINGS

All fittings shall be cast gray iron or ductile iron, cement lined, bituminous coated, manufactured in accordance with AWWA/ANSI Standards A21.10 and A21.11, latest revision, unless otherwise indicated or directed. Minimum pressure rating shall be 250 psi. Unless indicated otherwise on the Drawings, mechanical joint fittings shall be used.

6.0 RESILIENT SEAT GATE VALVES

Gate valves shall be iron body, resilient rubber seat type valves with non-rising stems. Three inch and smaller valves may be bronze body. Resilient seat gate valves shall have a bronze stem nut cast integrally with the cast iron valve disc. The valve shall be capable of being installed and operated in either direction and shall be furnished with mechanical joint ends. Valves shall be suitable for installation in an approximately vertical position in buried pipe lines. Stem seal shall consist of O-ring seals. All valves shall open to the left (counter-clockwise), and shall be provided with 2" square operating nut. All underground gate valves which have nuts deeper than 30' below the valve box top shall have extended stems with nuts located within one foot of the valve box cap. Gate valves 12 inches and larger may be required to be bevel gear design based on the depth of the water line.

Valves shall be for working pressures up to 250 psi and shall be equal to latest specifications of AWWA C-509 in all respects. Valves shall be equal to American Flow 2500, Mueller A-2360, or approved equal. All components shall be manufactured in the United States of America.

7.0 PRESSURE REDUCING VALVES

Meters that require an Individual pressure reducing valves (only where specified by the Owner) shall be brass body, direct operating valves with screwed connections, suitable for reducing a varying upstream pressure to an adjustable, constant downstream pressure. Pressure reducing valves shall be designed for potable water use, and shall be equal to Wilkins 600 LU SC, Honeywell DS05-CI055 (one-side union) or approved equal.

8.0 TAPPING SLEEVES AND VALVES

Tapping sleeves shall consist of a mechanical joint tapping sleeve equal to Mueller H-615 (for non-PVC tapped pipe) or Ford FAST Model (for PVC tapped pipe). Tapping valves shall conform to all applicable specifications for resilient seat gate valves. For PVC taps, the sleeve shall be equal to Ford Model FAST x.x-xA-MJ with the Carbon Steel MJ Flange outlet so as to eliminate the need for a tapping valve, allowing for a standard MJ gate valve with this particular sleeve.

9.0 AIR RELEASE VALVE

Automatic air release valves shall be designed to allow a quantity of air to escape out of the orifice when air accumulates at high points in the water line. Valves shall be tested for service to pressures of 300 psi and shall be made of cast iron housings. Valves shall be A.R.I. or approved equal.

10.0 VALVE BOX FRAMES AND COVERS

Valves box frames and covers shall be made of heavy cast iron and shall meet the requirements of ASTM A-48, class 30, and shall be two-piece, 5 1/4" diameter barrel, screw type construction plus drop covers.

All casting shall be made accurately to the required dimensions and shall be sound, smooth, clear and free of blemished or other defects. Defective castings which have been plugged or otherwise treated to

remedy defects shall be rejected. Contract surfaces of frames and covers are to be machined so that they rest securely in the frames with no rocking. The cover shall be in contact with the frame for the entire perimeter. The valve box frames and covers shall be manufactured by Tyler or Serempore Industries, Model 562-S. The Cover shall be marked "Water".

11.0 SERVICE CLAMPS AND CORPORATION STOPS

For typical residential applications, service clamps shall be used for all taps made to the water line, and the service clamps and accessories shall be lead free. Service clamps shall be all bronze construction with neoprene gasket, equal to Ford S70 Series for IPS size pie and Ford FS202 for DIP, AC or Cast. Corporation stops shall include a quick nut assembly, the corporation stop shall be Ford F1000-3G-NL Grip Joint or approved equal and the pack joint coupling shall be Ford C44-33-G-NL or approved equal.

The Ford “G” grip connections shall be utilized for all water service tubing couplings, valves, tees, etc.

12.0 CASING PIPE

Where noted on the Drawings or required by these Specifications, roadway crossings shall be made utilizing carrier pipe within a casing pipe. Sizes of carrier pipe and casing pipe shall be as noted on the Drawings.

Casing joints shall be of fully welded, leak proof construction. The steel casing pipe shall have a minimum yield strength of 35,000 psi and shall have the minimum wall thickness of 0.25 inches for 12" nominal diameter and smaller pipe. Casing pipe larger than 12" shall have a wall thickness corresponding to ASTM standards for Standard Weight steel pipe. **Steel casing pipe shall be coal tar protected according to AWWA Standard C203-91 and C209-20.** Pipe shall be welded according to AWWA Standard C206-91 unless otherwise specified.

13.0 PIPELINE DETECTION WIRE

Pipeline detection wire shall be No. 12 solid copper insulated wire. The wire shall be attached to the top of the installed pipe with duct tape prior to backfilling, and the detection wire shall be spliced to seal out moisture. The splicing kit shall be or equal to 3M direct Bury Splice Kit (DBY). Completed sections of detection wire periodically shall be checked for continuity by the Contractor. The Contractor is ultimately responsible for the continuity of the wire sections, and shall take measures during construction to insure a working final product. If, upon completion of the continuity test, a section of wire fails, the Contractor shall make corrective measures and the test will be repeated until satisfactory results are obtained.

Precast concrete valve rings, with an embedded copper locator pin, will serve as a wire terminal point for testing and locating.

14.0 WATER SERVICE TUBING

Residential service line pipe shall be Endot Endopure Blue CTS Tubing or Type K copper tubing meeting ASTM B88, with each equal to the existing applications used by the Owner. The Ford “G” grip connections shall be utilized for all water service tubing couplings, valves, tees, etc. Detection wire as described above shall be attached to all far side service tubing connections. The wire shall begin at the meter box and terminate at the corporation stop with a water tight wire cap.

Service lines, where applicable, from the water meter to the customer reconnection point shall be ¾-inch Schedule 40 PVC pipe with solvent weld joints (glued), suitable for a minimum of 200 psi working pressure.

15.0 HYDRANT

Large Fire Hydrants, where specified, shall be 6" nominal diameter with 5 1/4" NST outlet equal to Mueller A-423. Bury depth shall be a nominal 36 inches. All components shall be manufactured in the United States of America.

Small Temporary Flushing Hydrants for 3-inch and smaller waterlines, where specified, shall be 2" nominal diameter with 2 1/2" NST outlet equal to M&H Hydrant Style 33 or approved equal.

16.0 WATER METERS AND SETTERS

New water meters, where specified, shall be 5/8" x 3/4" for residential applications equal to the Owner's current use (Badger Meters with Orion Radio Read components). The meter setter shall include a dual check valve, ball valve, and grip nut. The setter shall be Ford VBHH-72-7W-41-33G-NL or equal. In cases where a tandem setter is required the setter shall be Ford TVBHH-72-7W-41-33G-NL or equal. All meter setters shall be "copper tube size", and all setters and other specified components shall be lead free. Brass nipples shall be supplied on the outlet side of the yoke, and they shall be long enough to extend out of the meter box to the customer side for connection.

17.0 CASING END SEALS & SPACERS

Casing end seals shall be heavy-duty rubber seals (Model ESW) as manufactured by CCI Pipeline Systems or approved equal. Casing Spacers shall be of heavy-duty two-piece stainless steel as manufactured by CCI Pipeline Systems (Model CSS-center restrained) or approved equal.

18.0 VALVE MARKERS

Plastic blue valve markers shall be TriView marker as manufactured by Rhino with owner's name and phone number imprinted on the marker. The 54 inch TriView markers shall be anchored by a 6 foot, 1.2 lb (2" dia. max.) steel U-channel. The U-channel shall be driven into the ground 2 feet with 48 inches left above ground to allow for the TriView marker to be installed over the top and fastened (bolted) at the base.

19.0 METER BOXES

Meter boxes shall be rectangular in shape (10"x15") x 18" in depth with heavy duty plastic lid and cast iron reader lid equal to the existing applications used by the City of Oak Grove. Meter boxes shall be HDPE 18" Flare Box as manufactured by Oldcastle/Carson with black and/or white interior equal to Model #1520-18. The Lids shall be Plastic, Flush with Cast Iron Reader Door, matching up with the Carson #1520-18 meter box. With the use of radio-read meters, the lids will require a 1-3/4" hole predrilled to allow for the particular automated meter reading system installed (coordinate with the Owner).

20.0 PRECAST VALVE BOXES & OTHER ITEMS

Precast concrete valve rings shall be 24-inches in diameter and 4-inches thick. Each ring shall be equipped with an embedded copper locator test pin, which will serve as a detection wire terminal point for locating nonmetallic pipelines.

Precast concrete items shall meet all requirements of ASTM C478. All concrete used in precast items shall have a compressive strength of at least 4,500 psi at 28 days.

21.0 VALVE INSERTION (If applicable)

Valve Insertion (4"-16") shall meet general specifications of AWWA C-509-09 Resilient Wedge Material and AWWA M44 Water Supply Practices. The valve and gate body shall be ductile iron (ASTM.A536-65-45-12) with EPDM gate rubber and stainless steel valve stem. Fasteners shall be of a cathodic protected material or stainless steel, and the coating shall be corrosion-protection E-coating casting. The design of the valve shall include a pressure rating of 250 PSI with a 360 degree rubber seal around the wedge. The valve turns shall match that of a normal resilient seat gate valve. Valve Insertions shall be equal to Advanced Valve Technologies EZ Valve II Insertion.

END OF SECTION 02-200

Section 02-300

WATER MAIN CONSTRUCTION
(Waterline Relocation Work)

1.0 PRELIMINARY WORK

1.1 Location of Lines

The roads along which lines are to be laid, and the general location of the proposed lines is indicated on the plans. The Contractor shall install the proposed lines and appurtenances in the locations indicated on the plans, except where field conditions are encountered which warrant relocation. Any field relocation of the pipelines and appurtenances shall be approved by the Engineer's Representative at the time of construction. In no event shall any improvements be installed outside of properties, easements or right-of-way secured by the Owner for the Project.

1.2 Locations and Protection of Underground Utilities

Prior to trenching, excavating, or disturbing the ground surface in any manner, the Contractor shall determine, insofar as possible, the actual location of all underground utilities in the vicinity of the proposed construction and shall clearly mark their locations so that they may be avoided by equipment operators. Where such utility lines appear to lie in the path of construction, they shall be uncovered in advance to determine the exact location and depth, and to avoid damage due to Contractor's operations. Existing facilities shall be protected during construction, or removed and replaced in equal condition as necessary.

Should any existing utility line or service be damaged during, or as a result of the Contractor's operations, the Contractor shall take such emergency measures as may be necessary to minimize damage and shall immediately notify the utility involved. The Contractor shall then repair the damage to the satisfaction of the utility or shall pay the utility for making the repairs. In all cases, the restoration or repair shall be such that the repaired item will be in as good or better condition as before the damage occurred.

1.3 Removal of Obstructions

The Contractor shall be responsible for the removal, safeguarding and replacement of fences, walls, structures, culverts, street signs, billboards, shrubs, mailboxes, or other obstructions which must be moved to facilitate construction. Such obstructions must be restored to at least their original condition.

1.4 Clearing and Grubbing

The contractor shall be responsible for cutting, removing and disposing of all trees, brush, stumps, roots, and weeds within the construction area. Disposal shall be by means of chippers, landfills, or other approved methods not in conflict with State of local ordinances.

Avoid cutting or damage to trees not in the construction area. The Contractor will be responsible for the replacement of trees, shrubs, etc. unnecessarily damaged or removed.

1.5 Crops and Livestock

Any agricultural crop or product, or any livestock that is injured, damaged, lost or destroyed by the construction operations shall be the responsibility of the Contractor. The Contractor shall take precautions to avoid or minimize such damage, and shall compensate the owner of the crop or livestock for any loss that may result from construction operations.

2.0 EXCAVATION

2.1 General

The Contractor shall perform all required excavation and backfilling incidental to the installation of the water line, valves, services, and other appurtenances under this contract. Excavation shall be carried to the depths indicated on the Drawings or as necessary to permit the proper installation of pipe, bedding, structures or appurtenances. Care shall be taken to provide a firm, undisturbed, uniform surface in the bottoms of trenches and excavations. Where the excavation exceeds the required depth, the Contractor shall bring the excavation to proper grade through the use of an approved incompressible backfill material (generally crushed stone or fill concrete, depending upon the nature of the item to be placed thereon). In the event that unstable soil conditions are encountered at the bottom of the excavation, the Engineer may direct the Contractor to continue the excavation to firm soil, or to provide a suitable special foundation.

The Contractor shall take such precautions as may be necessary to avoid endangering personnel, pavement, adjacent utilities or structures, etc. through cave-ins, slides, settlement or other soil disturbance resulting from his operations.

The Contractor shall be responsible for storage of excavated materials, disposal of surplus excavated material, trench dewatering and other and other operations incidental to excavation and backfilling operations.

2.2 Trenching and Excavation Safety

The Contractor shall be responsible for safe trenching and excavating operations. The Contractor's responsibilities in this regard include complying with all OSHA requirements regarding trench and excavation safety, providing a person knowledgeable in excavation operations and safety (a Competent Person as defined by OSHA) to supervise all trenching and excavation activities, providing all required equipment and supplies to safely complete the work, continuously monitor soil conditions and make adjustments in the trenching and excavation methods (e.g. lay back trench sides, provide shoring, etc.) where necessary to provide for safe working conditions, guarding or barricading open trenches and excavations, and other considerations to insure safety. Providing for the safety of the workers and others in the vicinity of the construction operations takes precedence over all other considerations. Any damage to property, injury or loss of life resulting from trench or excavation failure shall be the sole responsibility of the Contractor.

2.3 Classification of Excavation

Excavation shall be unclassified and the cost of excavation shall be merged into the price per foot for the water main. No distinction will be made between rock and soil excavation, and no claim for additional payment will be considered if based upon the type or character of material encountered.

2.4 Pavement Removal

Where existing paved streets, roads, parking lots, drives or sidewalks must be disturbed during construction of the project, the Contractor shall take the necessary steps to minimize damage. Permanent type pavement shall be sawed in a straight line before removal, and care shall be taken during excavation to avoid damage to adjacent pavement. Where trucks or other heavy equipment must cross curbs or sidewalks, such areas shall be suitably protected.

2.5 Trench Excavation

Trenches shall be excavated in a neat and workmanlike manner, maintaining proper alignment except where necessary to make deviations to miss obstructions. Trenching for the installation of water distribution piping shall be such that the pipe will have a minimum cover of thirty (30) inches. The bottom of the trench must be shaped by hand and bell holes must be dug so that the full length of pipe is resting on sound trench bottom. Blocking shall not be used. In some cases, more than 30 inches of cover will be necessary to cross under existing utilities, obstructions, etc., or where the completed grade will be below

the grade at the time of construction. This additional depth, when required, shall be merged into the unit bid price for water main construction.

Trenches shall be opened far enough in advance of pipe laying to reveal obstructions, but in general shall not include more than 300 feet of continuous open trench at any time. The Contractor will be required to follow up trenching operations promptly with pipe laying, backfill and clean-up, and in the event of failure to do so, may be prohibited from opening additional trench until such work is completed.

The Contractor shall plan his operations so as to cause a minimum of inconvenience to property owners and to traffic. No road, street or alley may be closed unless absolutely necessary, and then only if the following conditions are met:

1. Permit is secured from appropriate State, County or Municipal authorities having jurisdiction.

2. Fire, police and other emergency services providers are notified before the road is closed.

3. Suitable detours are provided and clearly marked.

No driveway shall be cut or blocked without first notifying the occupants of the property. Every effort shall be made to schedule the blocking of drives to suit the occupant's convenience, and in no case shall a driveway be blocked overnight.

The Contractor shall furnish and maintain barricades, signs, flashing lights, and other warning devices as necessary for the protection of public safety. Flagmen shall be provided as required on heavily traveled streets to help avoid traffic jams or accidents.

Trench width shall be held to a minimum consistent with proper working space for the assembly of pipe. Maximum trench width up to a point one foot above the top of pipe shall be limited to the outside diameter of the pipe plus 16". Boulders, large stones, shale and rock shall be removed to provide clearance of 6" below and on each side of the pipe.

Trench walls shall be kept as nearly vertical as possible with due consideration to soil conditions encountered and when necessary, sheeting or bracing shall be provided to protect life and property.

Where unsuitable soil conditions are encountered at the trench bottom, the Contractor shall remove the additional material as may be directed by the Engineer and replace the excavated material with approved backfill.

The Contractor shall excavate by hand wherever necessary to protect existing structures or utilities from damage or to prevent overdepth excavation in the trench subgrade.

Excavated material shall be stored safely away from the edge of the trench and in such a way as to avoid encroachment of private property.

2.6 Excavation for Structures

Excavation for air release valve installations, metering pits or other appurtenances shall be only as large as may be required for the structure or appurtenance, and for working room around it. In soil, excavation shall generally extend to the outer limits of the structure plus working space at the bottom, and shall slope outward as such an angle as may be required to insure stability of the excavated face. In rock, excavation shall be carried to a point at least 12 inches outside the structure, or as required to achieve proper placement of the backfill. No rock shall be placed or left within 12 inches of the finished structure.

Care shall be taken as the excavation approaches the desired grade to avoid overdepth excavation and provide a firm and undisturbed soil surface on which footings, slabs or foundations are to be placed. Should the Contractor excavate below the desired grade level, the excavation shall be brought to grade by the use of fill concrete at the expense of the Contractor. The use of tamped earth refill beneath foundations, footings or slabs will not be acceptable.

Where structures rest partially or completely upon rock, the rock shall be excavated to a point 6 inches below the bottom elevation of the proposed structure, and crushed stone refill shall be used to bring the excavation back to grade.

Should the material found at the desired subgrade appear to be unstable or otherwise unsuitable for support of the structure, the condition shall be immediately called to the attention of the Engineer. The Engineer may direct that the unsuitable material be removed and replaced with concrete, or that the foundation design be modified to accommodate the conditions encountered. In any event, work in the area affected by the unstable subgrade shall not proceed until the matter is resolved by the Engineer.

2.7 Rock Excavation

Where rock excavation is encountered in trenches, the excavation shall be carried to a depth of at least 6 inches below the bottom of the proposed pipe. The rock shall also be removed to a width of at least 6 inches beyond the pipe on each side so that no rock is left within 6 inches of the outside wall of the pipe. Where rock is excavated in the bottom of the trench, the trench shall be brought back to grade by the use of crushed stone which shall be compacted to form a stable base for the pipe laying operation. If approved in advance by the Engineer, clean excavated soil that is free from rocks may be used in lieu of crushed stone as bedding.

The Contractor shall exercise all necessary precautions in blasting operations. Suitable blasting mats shall be provided and utilized as required. Blasting shall be done only by experienced personnel with all required training and certifications. Careless shooting, resulting in the ejection of stones or other debris during blasting shall be corrected immediately by the Contractor. The Contractor shall be responsible for any personal injury or property damage that results his from blasting.

No blasting shall be done unless the Contractor shall have taken out the necessary insurance to fully protect the Owner from all possible damages resulting from the blasting operations. The blasting shall be done in accordance with all recognized safety precautions and in accordance with regulations of authorities having jurisdiction. In addition, the Contractor shall exercise the necessary care to safeguard the stores of blasting materials on the jobsite.

Where rock is encountered in the immediate vicinity of gas mains, telephone cables, building footings, gasoline tanks, or other hazardous areas, the Contractor shall remove the rock in a manner that will insure protection of these structures. Care shall be taken in the blasting operations to see that the pipe or other structures previously installed are not damaged by blasting. In general, blasting shall not be done within 25 feet of an existing pipeline or structure.

2.8 Disposal of Surplus Excavated Material

Excavated material that is unsuitable or unnecessary for backfilling shall be disposed of by the Contractor. Disposal may be by landfill, or other legal means. Where material is disposed of on private property, the Contractor is responsible for obtaining permission in writing from the property owner and for restoration of the disposal site to the property owner's satisfaction.

2.9 Subsurface Obstructions

In excavating, backfilling and laying pipe, do not remove, disturb or damage other pipe, conduit or structures without the approval of the Engineer. If necessary, the Contractor shall sling, shore up and maintain such structures in operation, and within a reasonable time shall repair any damage done thereto. Repairs to these facilities shall be made to the satisfaction of the Engineer.

The Contractor shall give sufficient notice to the interested utility of his intention to remove or disturb any other pipe, conduit, etc., and shall abide by their regulations governing such work. In the event that subsurface items are damaged in the prosecution of the work, the Contractor shall immediately notify the proper authorities and shall be responsible for any loss to persons or property caused by the damage.

When pipes or conduits providing service to adjoining buildings are broken during the progress of the work overnight or for needlessly long periods during the day, will not be tolerated, and the Owner reserves the

right to make repairs at the Contractor's expense without prior notification. Should it become necessary to move the position of a pipe, conduit, or structure, it shall be done by the Contractor in strict accordance with instructions given by the Engineer or the utility involved.

The Owner or Engineer will not be liable for any claim made by the Contractor based on underground obstructions being different than that indicated on the Plans. Where ordered by the Engineer, the Contractor shall uncover subsurface obstructions in advance of construction so that the method of avoiding same may be determined before pipe laying reaches the obstructions.

The Contractor shall be governed by instructions of the Kentucky Transportation Cabinet and/or County Road Department regarding the laying of pipe along and/or within State/County Roadways.

2.10 Special Conditions

Special care must be exercised in excavation under or near State Highways, railroads, or other areas as designated on the Drawings in order to avoid or minimize delays or injuries resulting therefrom. Where it is necessary to cross beneath state highways, railroads, or other designated areas, the Contractor shall make such installations as shown on the Drawings and/or as directed by the Department of Highways or the Railroad.

The Contractor's attention is also called to the special conditions associated with the proximity of the Owner's existing water distribution system in relation to improvements indicated on the Plans. Some of the proposed improvements will be constructed adjacent to and/or may encounter existing water lines that must remain in service until the successful testing and completion of the proposed improvements. The Contractor is reminded of paragraph 2.1 of Section 02-100, and the Contractor is urged to use the most appropriate construction measures to produce a suitable finished product while maintaining the integrity of the existing infrastructure.

3.0 INSTALLATION OF WATER LINE AND APPURTENANCES

(All work shall be in full compliance with the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 02-640 "Valves, Hydrants and Blowoffs," Section 02-713 "Water Lines" and Section 02-718 "Service Assemblies")

3.1 General

The Contractor shall use only experienced men in the final assembly of pipe in the trench,, and all pipe shall be laid in accordance with these Specifications and the recommended practice of the pipe manufacturer. Trench bottoms shall be carefully prepared and shall be free of water.

Care shall be exercised to insure that pipe of the proper strength or classification meeting the specifications in every respect is provided at the site of pipe laying operations. Recommended tools, equipment, lubricant and other accessories needed for proper assembly or installation of the pipe shall be provided at the site of work. Any damaged or defective pipe discovered during the pipe laying operations shall be discarded and removed from the site of the pipe laying operations.

The Contractor shall exercise care in the storage and handling of pipe, both on the storage yard and at the site of laying operations. Suitable clamps, slings, or other lifting devices shall be provided for handling large-diameter pipe and fittings.

Pipe may be assembled at grade and lowered into the trench provided that no more than 10 joints are lowered at one time, and the pipe is inspected after it is lowered into the trench to assure that no decoupling of joints occurs.

Bell holes for bell and spigot and mechanical joint pipe shall be dug in the trench to allow entire length of pipe barrel to be bedded and to allow proper jointing of pipe. Alignment of pipe shall be as true as possible in order to avoid air pockets. When work is suspended either for the night or for any other reason, open ends of the pipe shall be securely plugged to prevent the entrance of foreign materials.

Dead ends of the pipe and unused branches of crosses, tees, valves, etc., shall be closed with plugs suitable to the type of pipe in use.

Cutting of pipe shall be done in a neat, workmanlike manner without damage to pipe, coatings and linings and so that a smooth end remains at right angles to the axis of the pipe.

3.2 Removal of Water

The Contractor shall be responsible for handling run-off, ground water, and sewage in such a way as to maintain trenches and excavations in a dry condition until the work is completed. Pumps, piping, well points, labor, fuel, and other facilities necessary to control, intercept, remove and/or dispose of water shall be provided by the Contractor at his own expense. Water removed from trenches or holes shall be discharged to natural drains in such a way as to avoid danger or damage to adjacent property owners or sewers. No Pipe shall be laid with water in the bells.

Where the Contractor fails, refuses, or neglects to control water in trenches or other excavations, and corrective work is deemed by the Engineer to be necessary as a consequence thereof, such work shall be at the Contractor's expense.

3.3 Polyvinyl Chloride Pipe (Class 200 PVC)

Installation of polyvinyl chloride pipe shall conform to ASTM 2321 and AWWA C900, latest revision. Pipe shall be bedded in clean, uniform soil or compacted granular material and compacted granular material to a point 8" over pipe. Blocking shall not be used to bring the pipe to grade. Whenever it is necessary to cut a joint of pipe in order to fit the trench conditions, the cutting may be made with either hand or mechanical saws or plastic pipe cutters. The cut shall be square and perpendicular to the pipe axis. The cut end shall be beveled as specified by the pipe manufacturer. Assemble all joints by fully seating spigot into bell.

3.4 Ductile Iron Pipe

Installation of ductile iron pipe shall conform to AWWA C150 & C151, latest revision. Pipe shall be bedded and backfilled in conformance with the details shown on the Plans. Blocking shall not be used to bring the pipe to grade. The trench shall be backfilled as indicated on the Drawings so as to achieve a Class III laying condition. Whenever it is necessary to cut a joint of pipe in order to fit the trench conditions, the cutting shall be made in a suitable pipe fabrication shop with mechanical saws. The cut shall be square and perpendicular to the pipe axis. The cut end shall be beveled as specified by the pipe manufacturer. Assemble all joints by fully seating spigot into bell, using an approved gasket lubricant.

Restrained joint ductile iron pipe shall be installed in full conformance with the pipe manufacturer's recommendations. Backfill to 12 inches above restrained joint pipe shall be with granular material (crushed limestone aggregate) to assure maximum friction between the pipe wall and backfill. Should soil conditions be encountered that would require restrained joint pipe to be encased in polyethylene for corrosion protection, an increased length of restrained joint pipe may be required. The Contractor shall ascertain the need for polyethylene encasement from the Engineer sufficiently in advance to allow for installation of the appropriate length of restrained joint pipe.

3.5 Installation of Fittings

Fittings in pipe lines shall be firmly secured to prevent the fitting from being blown off the line when under pressure. When connections are made between the new work and existing mains, the connections shall be made using specials and fittings to suit the actual conditions.

All tees, caps, plugs, bends or other fittings subjected to unbalanced forces tending to pull the joints apart shall be protected with concrete thrust blocks. Thrust blocks shall be provided in accordance with details shown on Drawings, and must bear against an undisturbed trench face. Thrust blocks must be used unless written permission is obtained from the engineer to use special locked-joint fittings, anchoring fittings, or pipe clamps with tie rods.

Fittings shall be placed in locations indicated on Drawings or designated by Engineer and shall be installed in accordance with provisions of these Specifications. Joints shall be as designated under Section 2, Materials.

Before being placed in trench, all fittings shall be subjected to inspection by Engineer; and any defective, unsound or damaged fittings shall be rejected and Contractor shall remove at once from work area.

3.6 Installation of Valves, Valve Boxes

Valves shall be placed in the locations indicated on the Plans or at locations designated by the Engineer. All Valves shall be set vertically. Before being placed in the trench, all valves shall be carefully examined by the Contractor and engineer to see that they are in good working order.

Over each valve shall be placed a valve box. All valves which, when properly set, have operating nuts deeper than 24" below the top of the valve box shall have extension stems with operating nuts located within one foot of the valve box cap.

The valve box shall not come in contact with valve at any point. Backfill around boxes shall be tamped to maintain centered and plumbed alignment of box. The finished valve box installation shall allow a standard valve wrench to be seated on the operating nut and removed easily without contacting the valve box.

Box shall be installed with top set flush with finished surface in paved areas and 1 inch above natural ground level in unpaved areas.

4.0 BACKFILL

4.1 General

Backfilling shall be carried out as expeditiously as possible, but shall not be undertaken until the Engineer's representative has been given the opportunity to observe the work. The Contractor must carry out all backfilling operations with due regard to: the protection of pipes, structures and appurtenances; the use of prescribed backfill materials; and procedures to obtain the desired degree of compaction. No equipment may be used which will result in damage to or misalignment of the pipe.

4.2 Acceptable Backfill Material

All backfill material shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, or other material that in the opinion of the Engineer is unsuitable. From eight inches above the top of the pipe to within six inches of finished grade in unpaved areas, backfill may contain stones up to six inches in their greatest dimension, unless otherwise specified. Backfill containing rock must contain enough soil to fill voids between rocks.

When backfill material is not specified on Project Plans or elsewhere in these Specifications, Contractor may backfill with the excavated material provided material consists of loam, clay, sand, gravel, or other materials than, in opinion of Engineer, are suitable for backfilling.

Backfilling shall not be done in freezing weather and it shall not be made with frozen material. No fill shall be made where material already in trench is frozen. Backfill shall not be made with material which, in Engineer's opinion, is too wet.

Where crushed stone backfill is required the crushed stone shall be No. 57 size as designated by Kentucky Department of Transportation Standards for crushed stone used in road surfacing.

4.3 Backfilling Under Pipe in Rock

Where trench is excavated in rock or shale, a 6" space below pipe shall be backfilled with approved bedding material (#9 or #11 pipe bedding, or uniform soil meeting the approval of the Engineer) to form a cushion for pipe and appurtenances.

4.5 Backfilling Over Pipe

Backfill over pipe may be placed by means of front end loaders, bulldozers or other suitable mechanical equipment provided that the pipe is not damaged or misaligned.

4.6 In Areas Subject to Vehicular Traffic

Where excavation is made through pavement, curbs, driveways, sidewalks, road shoulders, or other areas subject to vehicular traffic or supporting permanent structures, or where such areas, items or structures are undercut by excavation, entire backfill shall be crushed stone (No. 57). Crushed stone shall be carefully placed to achieve maximum density.

Where excavation is made through permanent pavements, backfill shall be placed as described above to subgrade elevation only. Remainder of backfill shall be crushed stone placed as directed to finished pavement grade to serve as temporary pavement.

The last 6 inches of backfill shall be compacted dense grade aggregate to stabilize trench cut.

From time that backfilling is complete until time permanent pavement surface is replaced or, in absence of pavement replacement, until job is accepted, Contractor shall, at direction of Engineer, water streets, roads, etc., to settle dust where excessive dust has, in opinion of Engineer, been caused by Contractor's operations. If Contractor refuses Owner shall, after 24 hours written notice through Engineer, be permitted to proceed with such work with cost to be billed to Contractor.

In Areas Not Subject to Vehicular Traffic- Where excavation is made in areas not subject to vehicular traffic or supporting permanent structures and where settlement is allowable, Contractor may backfill with approved excavated material using acceptable mechanical methods. Backfill material shall be brought up to the original ground level and shall then be mounded over to provide for additional settlement. Compaction of this backfill material will not be required, however, the Contractor shall exercise care to confine the mound to the area immediately over the trench and shall be responsible for bringing in such additional fill material as may be required from time to time during the one year warranty period to fill in areas where excessive settlement has occurred, and to re-seed these areas.

5.0 COMPLETING INSTALLATION OF LINES, STRUCTURES, ETC.

5.1 General

The Contractor shall not, without the permission of the Engineer, remove from the line of work any earth excavated therefrom which may be suitable for backfilling or surfacing until the excavation has been refilled and surfaced.

As soon as the backfilling of any excavation is completed and when in areas of existing development, the contractor must at once begin the removal of all surplus dirt except that actually necessary to provide for the settlement of the fill. He shall also remove all the pipe and other material placed or left on the street by him except material needed for the replacement of paving, and the street shall be opened up and made passable for traffic. Following the above work, the repairing and complete restoration of the street surfaces, bridged, crossings, and all places affected by the work shall be done as promptly as possible. All excavated material shall be cleared from adjacent street surfaces, gutters, sidewalks, parkways, railroads, grass plots, yards etc., and the whole work shall be left in tidy and acceptable condition. Contractor will be required to re-grass lawns or natural grounds where trenches are excavated in these locations or where Contractor has damaged lawns or natural grounds by his operations.

The engineer shall be sole authority in determining time in which rough and final clean-up shall be performed. Rough clean-up shall consist of removal of large rocks, grading of excess backfill material over pipe line or removal of said material, opening of any drainage device, restoration of any street or roadway to condition so that traffic may safely and conveniently use street or roadway, restoration of pedestrian ways to condition where pedestrians may safely and conveniently use same. Rough clean-up

shall, in general, be prosecuted no later than 1 day after pipe laying and backfilling or no farther behind pipe laying operations than 1000 feet; whichever time limit is shortest shall govern. Final clean-up consisting of pavement replacement, sidewalk replacement, removal of small rocks, hand raking with seeding, strawing, etc., of lawns and natural grounds, adjusting grade of ground over pipeline, property repair, and other items shall be prosecuted as soon as is practical after pipe has been laid and backfilled.

5.2 Final Grading and Seeding

(All work shall be in full compliance with the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 02-485 "Seeding" and Section 02-260 "Finish Grading")

Final Grading and Seeding shall be in compliance and equal to the Erosion Control requirements set forth in the Kentucky Transportation Cabinet's (KYTC) Standard Specifications, Section 212. Other final clean-up requirements and payment measurement for various land uses is defined in Technical Specification 02-500, Section 3.0.

The Contractor shall perform permanent seeding and final grading for areas where grass growth was damaged or destroyed by the Contractor's operation, and this work shall only be done during the period of September 1 thru April 30, unless specifically waived by the Owner. Between installation and final grading, the affected area must be stabilized by other practical methods to prevent erosion and protect the exposed areas. In areas of established lawns no rock shall be left in the top 6" of soil and the finished grade shall be equivalent to that which existed before construction began. In all cases, lawn and pasture areas shall be left neat and in a condition so that mowing is as easy and convenient as before construction began. The lawn areas and other areas disturbed by the Contractor's activities shall have ground cover restored to a condition satisfying the affected landowner and Owner.

Upon completion of final clean-up, the OWNER may request that the CONTRACTOR obtain each property owner's written release, indicating the affected owner's satisfaction with final seeding, grading and/or crop damage restitution.

5.3 Pavement Replacement

(All work shall be in full compliance with the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 02-575 "Pavement Repair")

In roadway or driveway areas as soon as the pipe has been installed, the trench shall be backfilled as specified and the surface replaced as indicated below:

1. Asphalt Highway or Roadways

   This item of pavement restoration shall conform to the details included in the Contract Drawings. The leveling course, binder course and the surface course shall be furnished and placed in accordance with Kentucky Department of Transportation Standard Specifications.

2. Asphalt Driveway and Parking Lot Replacement.

   Asphalt Driveways and Parking Lots shall be replaced equal to that existing prior to construction and shall consist of no less than 2 inches of surface course conforming to the Kentucky Department of Transportation Standard Specifications.

3. Crushed Stone Roadway Replacement or Driveway Replacement

   Crushed Stone Roadways and Pavement shall be replaced to that existing prior to construction but in no case less than 6 inches in depth.

5.4 Dust Control

From time that backfilling is complete until time permanent pavement surface is replaced or, in absence of pavement replacement, until the job is accepted, Contractor shall, at direction of Engineer, water streets, roads, etc. to settle dust where excessive dust has, in opinion of Engineer, been caused by Contractor's operations. If Contractor refuses or delays unnecessarily to obey direction of Engineer, the Owner shall, after 24 hours written notice through engineer, be permitted to proceed with such work with cost to be billed to Contractor.

5.5 Sodding or Sprigging

(All work shall be in full compliance with the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 02-486 "Sodding")

Where shown on the Drawings or directed by engineer, contractor shall install grass sod or sprigs in lieu of seeding in order to establish ground cover. Normally this would be done in steep areas or areas otherwise subject to erosion.

Such sodding or sprigging when authorized by the engineer as a necessary part of the work and not elected to be used by the Contractor in lieu of seeding shall be a separate pay item if identified separately on the Bid Form.

Prior to sodding or sprigging, soil shall be properly prepared and fertilized. The top 3" of soil shall be pulverized to remove roots, sticks, etc. and smooth the surface. The area shall be fertilized at a minimum rate of 500 pounds per acre. Fertilizer shall be mixed into the top 3" of soil by raking, disking, or other acceptable method. Do not over fertilize areas in order to avoid damaging growth. Fertilizer shall be "Vertigreen", "Vigaro", or approved equal. It shall contain not less than 10% nitrogen, 10% phosphorus, and 10% potash. If the area soil requires adjustment of the pH for proper growth of ground cover, ground limestone shall be applied to bring the pH into the proper range.

Sod shall be at least 8" wide and 12" long with at least 3" of dirt on the roots. The variety of grass shall be suitable to the growing conditions of the area, and compatible with the adjacent grasses. It shall be placed on the prepared surfaces with edges in close contact and, as much as is practicable, in a position to break joints. Each section shall be pounded into place with wooden tamps or other approved implements. Sod shall be maintained moist from the time of its removal until reset and shall be reset as soon as practicable after removal. Immediately after placing, it shall be rolled or hand tamped to the satisfaction of the Engineer. On steep slopes pinning or pegging will be required to hold the sod in place.

Sprigs shall be placed in a random manner at spacing suitable for optimum growth and cover as recommended by the supplier.

Immediately prior to sodding or sprigging, the area shall be sprinkled until saturated to at least 1" depth and kept moist until sodding or sprigging is completed. Sprigs or sod shall be watered as required after setting (normally through a 14-day period). Contractor shall not allow any equipment or material on any planted area and shall erect barricades and guards if necessary to prevent his equipment, labor or the public from traveling on any planted area until satisfactory growth is established.

6.0 SPECIAL CONSTRUCTION ITEMS

6.1 Roadway Crossings

Roads, streets or highways will be crossed at locations and in the manner as designated by the Drawings. State Highway crossings will be subject to the requirements of the crossing permit obtained from the Kentucky Transportation Cabinet.

When working in or near lines of traffic, the Contractor shall provide warning signals or flag men as required by Kentucky Transportation cabinet.

6.2 Sinkholes

When excavating within an area draining to a sinkhole, special precautions shall be required to avoid excessive silt runoff or debris entering the sinkhole. In such areas, the excavation shall be closed as quickly as possible and the surface restored and mulched to avoid erosion. In the immediate vicinity of sinkholes and when ordered by the Engineer, special erosion control measures as specified in Section 6.3 are to be used.

6.3 Slope Protection and Erosion Control

(All work shall be in full compliance with the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 01-568 "Erosion Control")

This section shall consist of temporary control measures as shown in the Drawings or directed by the Engineer or as required by the State of Kentucky - Water Pollution Control Division during the life of the contract to control erosion and water pollution through the use of silt fences, hay bales and other control devices.

a. Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw containing five (5) cubic feet or more of natural material.

b. Baled hay or straw erosion checks - hay or straw erosion checks shall be embedded in the ground 4 to 6 inches to prevent water flowing under them. These bales shall be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales may remain in place after construction, or be removed after they have served their purpose, as determined by the Engineer. The Contractor shall keep the checks in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris and sediment clear-out will be considered routine maintenance to be performed by the contractor as needed.

c. Temporary silt fences - Silt fences utilizing posts, filter cloth (burlap or plastic filter fabric, etc.) or other approved materials are temporary measures to erosion control. These fences shall be installed to retain suspended silt particles in the run-off-water where directed by the Engineer.

d. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the Contractor.

e. Erosion control outside project area - Temporary pollution control measures shall include construction work outside the project area where such work is necessary as a result of construction such as borrow pit operations, haul roads and equipment storage sited. Bid price in such cases shall include all necessary clearing and grubbing, construction incidentals, maintenance, and site restoration when no longer needed.

f. No separate measurement and payment will be made for this work. It will be considered a subsidiary obligation of the Contractor under other bid items.

END OF SECTION 02-300

Section 02-400

WATER MAIN TESTING AND ACCEPTANCE
(Waterline Relocation Work)

1.0 GENERAL

Upon completion of the construction work the Contractor shall conduct the necessary pressure and leakage tests, and shall disinfect the completed water mains and appurtenances. The Contractor shall furnish all labor, tools, equipment and materials for making the tests. In the event that the pressure or leakage test is unsatisfactory, or bacteriological tests indicate that disinfection is incomplete, the Contractor shall take corrective measures and shall repeat the tests until satisfactory results are obtained. Tests shall be made in the presence of an authorized representative of the City of Oak Grove.

1.1 Pressure and Leakage Tests

Each section of the completed water main extension shall be subjected to a pressure test. The section to be tested shall be valved off after having been filled with water, and a positive displacement test pump shall be used to pump clean water into the section to build up a test pressure of at least 150 psi at the highest point within the section of line being tested, but not exceeding 200 psi at the lowest point. The test pump shall then be valved off from the system and the pressure shall be observed over a period of four hours. A drop in pressure of 5 psi or more during the first hour of the four test shall be taken as a indication of leakage. In the event leaks are found and corrected, the Contractor shall repeat the pressure test using the same procedure described above. Should the Contractor be unable to obtain a satisfactory pressure test over a duration of four hours, he shall then be required to perform a leakage test using a water tap and standard water meter to measure the leakage in the test section at system pressure over a period of 24 hours. Leakage during the 24 hour period must not exceed the allowable leakage for mechanical or push-on joints as shown in Table 7 of ANSI/AWWA C600, latest revision. Should the system fail to pass the leakage test, the Contractor will be required to locate and correct the leaks and to retest the system until satisfactory results can be obtained.

The Contractor shall provide suitable first quality pressure gauges with 5 lb. or smaller graduations and a standard 5/8" X 3/4" water meter in the event the meter is required for the leakage test. Pressure gauges and water meter shall be in good condition and shall be subject to such tests for proof of accuracy as the City of Oak Grove may require.

1.2 Disinfection

All water main extensions and appurtenances shall be disinfected upon completion, and after the system has been flushed to remove dirt or foreign objects which may have been accidentally introduced into the line. Disinfection shall be accomplished by use of a main sterilizer for applying chlorine gas or a hypo-chlorinator for application of a hypochlorite solution.

The chlorine shall be introduced into the main as water is being added so that adequate mixing will occur. Chlorine shall be added until a concentration of not less than 50 parts per million of available chlorine is observed at check points throughout the section being disinfected. The chlorine solution shall be left in the mains for a period of 24 hours after which the mains shall be flushed until only the normal residual chlorine found in tap water is present. Samples of water shall then be taken by standard sampling methods approved by the City of Oak Grove and shall be submitted to a certified bacteriological testing laboratory for analysis. In the event any of the bacteriological samples show the presence of coliform organisms, the disinfection procedure shall be repeated until samples of satisfactory bacteriological quality can be obtained.

The Contractor shall furnish the chlorine for main disinfection and shall furnish all labor, tools and equipment for the disinfection. The City of Oak Grove will furnish water for one cycle of disinfection and flushing. Water for subsequent testing of a line will be charged to the contractor. Disinfection procedures shall generally be in accordance with the AWWA Standard for Disinfecting Water Mains. AWWA C601, latest revision.

Also see the City of Oak Grove's "Project Manual Standard Specifications for Water Lines", published in December 2002, Section 02-713, Paragraph 3.3 "Disinfection", Paragraph 3.4 "Bacteriological Tests" and Paragraph 3.5 "Disinfection Procedure after Cutting into or Repairing Existing Lines."

1.3 Water for Testing

The pipeline shall be tested using potable water. The Contractor shall make arrangements with the City of Oak Grove prior to testing for quantity and suitable testing times based upon demand conditions. The Contractor is responsible for making and removing any temporary connections between the water main and the existing potable water lines, and coordinating the work with the affected utility. Any temporary taps, blowoffs, or other modifications to the water main to facilitate flushing are also to be made and removed by the contractor.

The rate at which water may be drawn from the utility providing the test water shall be set by the utility, and the Contractor will be required to limit the draw of water as dictated by the utility. During certain times of the year or certain demand conditions, water for testing may not be available. If this occurs, testing may be delayed as necessary to accommodate the water shortage, and the Contractor shall be granted an extension of contract time commensurate with the delay.

1.4 Detection Wire Continuity Test

Pipeline detection wire shall be No. 12 solid copper insulated wire. The detection wire shall be spliced to seal out moisture. The splicing kit shall be or equal to 3M direct Bury Slice Kit (DBY). (Note: Wire Splice locations shall be noted on the Contractor's as-built drawings which will ultimately be supplied to the City of Oak Grove). Detection wire shall be accessible at all valves, air releases and other pipeline appurtenances for connection to detection equipment. Completed sections of detection wire shall be periodically checked for continuity by the Contractor. The Contractor is ultimately responsible for the continuity of the wire sections, and shall take measures during construction to insure a working final product. If, upon completion of the continuity test, a section of wire fails, the Contractor shall make corrective measures and the test will be repeated until satisfactory results are obtained. **Upon project completion, the contractor shall demonstrate to the Owner and/or Inspector with a locator device continuous continuity along the completed pipeline.**

END OF SECTION 02-400

Section 02-500

WATER MAIN MEASUREMENT AND PAYMENT
(Waterline Relocation Work)

1.0 GENERAL

The Contractor shall furnish all labor, tools, equipment and materials to construct the proposed improvements complete as shown on the plans and described in these Specifications. The work shall be measured for payment in accordance with applicable provisions of these Specifications and payment shall be made on the basis of the unit prices or lump sum prices bid. The sum of the payments for eligible pay items contained in the proposal form shall be the compensation to be paid for the completed project; provided however, that changes in the work covered by written change orders, properly executed, may result in additions or deductions from the contract price.

The Contractor's attention is called to the fact that although the pay items shown shall be the basis for establishing the contract price, the description of the pay items does not necessarily reflect the full extent of work to be performed. The cost of the incidental work such as clearing and grubbing, trenching, backfilling, testing, etc., which is necessary but which is not specifically listed as one of the pay items, shall be included in the prices bid for the pay items to which the incidental work is most closely related.

2.0 WATER MAINS

A. Measurement - Water mains shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot. Water main size shall be based on nominal pipe diameter as shown on the Plans.

B. Payment - Water mains shall be paid for on the basis of the respective unit prices bid per linear foot for pipe of the various sizes. Partial payments for water line installations shall be based upon the following percentages:

Status	Maximum Percentage of Bid Price
Line installed and backfilled only	70%
Line installed, backfilled, debris/rock removed, & rough clean-up completed	80%
Line installed, backfilled, debris removed, rough clean-up, & successfully tested	90%
Line installed, backfilled, successfully tested & final surface restoration completed	100%

The foregoing partial payments will be subject to retainage.

Payment for furnishing and installing the water mains shall constitute compensation in full for furnishing all labor, tools, equipment and materials and installing the water mains complete, including incidental work such as location and protection of existing utilities, clearing, excavation (including rock), dewatering trenches, bedding with crushed stone in accordance with Specifications, fittings, restraint gland packs (where required), thrust blocks, driveway and private road crossings and bores (including surface and pavement restoration), tracer wire (where required) backfilling, disposal of surplus excavated material, the removal of existing timber, structures and piping to be relocated or abandoned; also sheeting, diking, well pointing, bailing, dewatering; the furnishing, placing and removal of bulkheads, and restoration of any utilities, parkways, trees, turf, shrubbery, culverts, fences, and other surface features, and testing.

Backfill shall be in accordance with Section 02-300, and the cost thereof shall be included in the appropriate bid price. Where the water line is to be installed under roadways, railroads, creeks, or other special crossings for which a specific pay item is provided, payment based on the measured quantity and unit cost of the work shall be made in addition to the base unit cost for the designation of pipe provided as compensation for the additional work associated with the installation.

3.0 FINAL CLEANUP OF WATER MAINS (All sizes)

A. Measurement – Final Cleanup of Water mains shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot actually installed in accordance with the contract drawings and specifications.

B. Payment – Final Cleanup of Water mains shall be paid for on the basis of the respective unit price bid per linear foot, for all pipe size, in accordance with the contract drawings and specifications.

Payment for final cleanup of installed water mains shall constitute compensation in full for furnishing all labor, tools, equipment and materials for complete land restoration from the water main installation. Specific work items for the following areas shall be included for the payment:

i. Residential Yards: The disturbed water main areas shall be free of all rocks, and the area shall be fine graded and thickly sown in accordance with Specification 02-300, Section 5.2. If warranted, new top soil shall be placed to cover poor, rocky soil and promote the healthy re-growth of grass in the affected portions of the yard. Additionally, if the Contractor hauls off and disposes a load of waste material (i.e. rock) from a particular yard, the Owner reserves the right to request the Contractor haul in and replace the area with an equal amount of suitable, topsoil material at no additional cost. Prior to final seeding, all areas shall be leveled and trench settlement shall be sufficiently backfilled to bring the areas back to their original grade. Final Seeding and Grading to affected areas shall only be completed between September 1 and April 30. Upon completion of the final cleanup, the Contractor shall obtain and supply the Owner with a handwritten acceptance notice from each affected landowner (Sample included in the Appendix). A landowner's acceptance does not supersede the Owner's acceptance, and the Owner reserves the right to request that leftover debris be thoroughly removed from the utility easement or hauled to the landowner's desired location on the respective parcel.
ii. Fields: The disturbed water main areas shall be free of all rocks, and the area shall be graded and seeded sown in accordance with Specification 02-300, Section 5.2. Additionally, if the Contractor hauls off and disposes a load of waste material (i.e. rock) from a particular field, the Owner reserves the right to request the Contractor haul in and replace the area with an equal amount of suitable, topsoil material at no additional cost. Prior to final seeding, all areas shall be leveled and trench settlement shall be sufficiently backfilled to bring the areas back to their original grade. Final Seeding and Grading to affected areas shall only be completed between September 1 and April 30. Upon completion of the final cleanup, the Contractor shall obtain and supply the Owner with a handwritten acceptance notice from each affected landowner (Sample included in the Appendix). A landowner's acceptance does not supersede the Owner's acceptance, and the Owner reserves the right to request that leftover debris be thoroughly removed from the utility easement or hauled to the landowner's desired location on the respective parcel.

4.0 GATE VALVE AND BOX

A. Measurement - Gate valves and boxes shall be measured by count of each size actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the valve, valve box, restraint gland packs, concrete ring, and valve marker along with all related supplies and materials required for a complete installation in accordance with the contract drawings and specifications.

5.0 STEEL CASED ROAD BORE

A. Measurement - Steel cased road bore shall be measured to the nearest 1 linear foot of bore as shown on the Contact Drawings for each size of casing and carrier pipe installed in accordance with the contract drawings, profiles in particular, and specifications.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the steel casing pipe (excluding the carrier pipe), excavation, installation and backfill of the pipes, all required materials, supplies and equipment for a complete installation. Payment shall also include adhering to any special provisions, including bonding requirements, specifically instructed by Federal/State/County Highway Officials and the encroachment permit(s) obtained by the Owner.

6.0 OPEN CUT CASED ROAD CROSSING

A. Measurement - Open cut cased road crossing shall be measured to the nearest 1 linear foot of crossing as shown on the Contact Drawings for each size casing and carrier pipe installed in accordance with the contract drawings, profiles in particular, and specifications.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the steel casing pipe (excluding the carrier pipe), excavation, installation and backfill of the casing and water main, all required materials, supplies and equipment for a complete installation as well as all associated pavement and/or surface repair required for a complete installation. Payment shall also include adhering to any special provisions, including bonding requirements, specifically instructed by County/State Highway Officials and the encroachment permit(s) obtained by the Owner.

7.0 UNCASED DRIVEWAY BORE

A. Measurement – Uncased driveway bores shall be measured to the nearest 1 linear foot of bore as shown on the Contact Drawings for each size of carrier pipe installed in accordance with the contract drawings and specifications.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the installation of the carrier pipe, all required materials, supplies and equipment for a complete installation.

8.0 NEW HYDRANT W/ VALVE (All sizes)

A. Measurement - Flushing hydrants shall be measured by count and size of hydrants actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the hydrant as sized, gate valve as sized, valve box, piping, restraint gland packs and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

9.0 TAPPING SLEEVE AND VALVE

A. Measurement - Tapping sleeves and valves shall be measured by count of each size actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the tapping sleeve, tapping valve, valve box, restraint gland packs, valve marker, concrete ring and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

10.0 NEW METER AND SERVICE (If applicable)

A. Measurement - Meter and service shall be measured by count of each size of near side service and of far side service actually installed in accordance with the contract drawings and specifications in the completed system. Near side service means that the meter is on the same side of the road as the water main. Far side service means that the meter is on the opposite side of the road as the water main, and that a service line road crossing, either open cut or bore, is required.

B. Payment - Payment shall be at the unit bid prices for the measured quantity. Payment shall include tapping the main, service tubing, individual PRV (if specified), setter, meter and box, and all materials, supplies and accessories required for a complete installation. For far side meters, new service tubing shall be installed within a PVC casing pipe beneath the affected roadway as detailed in the contract drawings and profiles.

11.0 RECONNECTION OF EXISTING METER AND SERVICE (if applicable)

A. Measurement – Reconnections of existing meters and service shall be measured by count of each size of near side service and of far side service actually reconnected in accordance with the contract drawings and specifications in the completed system. Near side service means that the meter is on the same side of the road as the water main. Far side service means that the meter is on opposite side of the road as the water main, and that a service line road crossing, either open cut or bore, is required along with PVC encasement.

B. Payment - Payment shall be at the unit bid prices for the measured quantity. Payment shall include tapping the main, new service tubing from the tap to the meter, encasement for far side meter tubing, and all materials, supplies and accessories required for a complete installation and reconnection to the existing meter. For far side meters, new service tubing shall be installed within a PVC casing pipe beneath the affected roadway as detailed in the contract drawings and profiles.

12.0 RELOCATION & RECONNECTION OF EXISTING METER & SERVICE

A. Measurement – Relocation & Reconnection of existing meter & service shall be measured by count of each size of near side service and of far side service actually relocated and reconnected in accordance with the contract drawings and specifications in the completed system. Near side service means that the meter is on the same side of the road as the water main. Far side service means that the meter is on opposite side of the road as the water main, and that a service line road crossing, either open cut or bore, is required along with PVC encasement.

B. Payment - Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and disconnecting the existing service line, shutting off the existing service line, if active, relocating the referenced water meter as illustrated, tapping the main, new service tubing from the tap to the new location, new individual PRV (if required), new setter, new meter box with lid, all applicable fittings/piping for reconnection to the customer's existing service line, encasement for far side meter tubing (if applicable), and supplying all materials and accessories required for a complete installation and reconnection of the relocated meter and customer service line. For far side meters, new service tubing shall be installed within a PVC casing pipe beneath the affected roadway as detailed in the contract drawings and profiles.

13.0 CONNECTION TO EXISTING WATER MAINS

A. Measurement – Connections to existing water mains shall be measured by count and by size of connections actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and excavating the existing line, shutting off the existing line, if active, removing any plugs, fittings, blowoffs, or other items as may be required to make the connection and delivering any removed items that are re-usable to the OWNER, if requested. Payment shall include providing fittings that may be required for the connection, backfilling, and other accessories and work necessary for a complete and working installation.

14.0 TERMINATE EXISTING LINE WITH A PLUG & CAP (All Line Sizes)

A. Measurement – Plugging and Capping of existing lines shall be measured by count and by size of connections actually installed in accordance with the contract drawings and specifications in the

completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and excavating the existing line, shutting off the existing line, if active, installing any necessary plugs, fittings, or other items as may be required to make the cap. Payment shall include providing fittings that may be required, backfilling, concrete thrust blocking, and other accessories and work necessary for a complete and working installation.

15.0 ASPHALT/CONCRETE PAVEMENT REPLACEMENT

A. Measurement - The replacement of asphalt surface or concrete surface shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 1 foot (all depths).

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall be total compensation for saw cutting, granular backfill or flowable concrete fill (as specified), furnishing and placing all base and surfacing materials, including rolling and/or finishing, for disposal of all surplus material, and for all labor, tools, equipment and incidentals necessary to complete the work, all in accordance with the plans and specifications.

16.0 INSTALLATION OF NEW HYDRANT ON EXISTING WATERLINE VIA TAP

A. Measurement – Installation of new fire hydrants on existing waterlines shall be measured by count of hydrant actually connected to and installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the hydrant as sized, tapping sleeve as required, tapping valve as sized, valve box, piping, concrete ring and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

17.0 REPLACEMENT/ADDITION OF NEW GATE VALVE ON EXISTING WATERLINE (CUT-IN METHOD)

A. Measurement – Replacement or Addition of new gate valves on existing waterlines shall be measured by count and size of valve actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the gate valve as sized, valve box, piping, valve marker, concrete ring and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation. Payment shall also include locating and excavating the existing line, shutting off the existing line, if active, installing any temporary fittings or items as may be required to make the connection.

18.0 ADDITION OF NEW SHUTOFF ON EXISTING WATERLINE (VALVE INSERTION METHOD)

A. Measurement – Addition of new shutoff on existing waterlines via valve insertion shall be measured by count and size of valve actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the valve as sized, valve box, valve marker (non-paved areas), concrete ring (non-paved areas) and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation. Payment shall also include locating and excavating the existing line, as well as all associated pavement (including sidewalks) and surface repairs required for a complete installation.

19.0 REMOVAL OF EXISTING HYDRANT APPURTANCES

A. Measurement – Removal of an existing hydrant and appurtenances (i.e. valve boxes, etc), as instructed, shall be measured by the count of hydrants removed from service in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit price for the measured quantity. Payment shall include locating the referenced items after the existing line has been removed from service and removal of the specified items. Payment shall also include either disposing of the items or delivering the re-usable item(s) removed to the OWNER, if requested. Payment shall include all excavation and backfill as required for a complete and working installation.

20.0 WATERLINE LOWERING & PIPE MODIFICATIONS (if specified)

A. Measurement – Waterline Lowering & Pipe Modifications shall be measured by location and by percent complete of critical milestone items actually installed or delivered in accordance with the contract drawings, and specifications in the completed system.

B. Payment - Payment shall be at the lump sum basis for the items specified. Payment shall be total compensation for the piping, fittings, casing pipe, casing spacers, casing end seals, concrete backfill, aggregate backfill, and all other accessories referenced by the plans, elevations and specifications, including excavation, installation and backfill as required for a complete and working installation.

21.0 AIR VALVES

A. Measurement - Air release valves and combination air valves shall be measured by count of valves actually installed (including valve marker) in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include the air valve, valve vault or box and all accessories referenced by the plans and specifications, and excavation, installation and backfill as required for a complete and working installation.

22.0 WATER LINE MARKERS

A. Measurement – Isolated pipeline markers shall be measured as the actual number installed.

B. Payment – Payment will be made at the unit bid price for the measured quantity.

23.0 REINSTALLED HYDRANT WITH NEW GATE VALVE (if applicable)

A. Measurement – Reinstalled Hydrants shall be measured by count and size of hydrants actually installed in accordance with the contract drawings and specifications in the completed system.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include locating and excavating the existing line, shutting off the existing line, if active, installing any necessary plugs, fittings, or other items as may be required to remove the hydrant from the old water main to connect to the new. Payment shall include the new gate valve as sized, valve box, piping, fittings and all accessories referenced by the plans and specifications, including excavation, installation and backfill as required for a complete and working installation.

24.0 UNDERCUT AND REFILL

A. Measurement - Where directed by the Engineer to undercut an excavation to avoid unstable soils, the undercut shall be measured as the actual volume of material removed from the excavation in excess of that which would have been otherwise required. Refill shall be measured as the actual volume of crushed stone or concrete refill placed in accordance with the Engineer's directions. Undercut or refill made without the direction or concurrence of the Engineer will not be measured

for payment. Unclassified aggregate refill is not applicable for gravel driveway backfilling. No differentiation will be made between rock and soil undercutting.

B. Payment - Payment shall be at the unit bid price for the measured quantity. Payment shall include removing and disposing of undercut materials, placing and compacting any refill materials, and all other work as required for a complete and working installation.

END OF SECTION 02-500

STATE OF KENTUCKY
COUNTY OF CHRISTIAN

LANDOWNER'S AFFIDAVIT OF FINAL ACCEPTANCE AND RELEASE

BEFORE ME, the undersigned LANDOWNER(S) hereby accepts the post-construction conditions of his or her property as it was affected by the construction of the **Reconstruction of the KY 115 & 911 Intersection** (the "Project"). The undersigned hereby releases _____, (the "Contractor"), and the **City of Oak Grove,** (the "Owner") from any further remedial work requirements resulting from the construction of the Project. Furthermore, the LANDOWNER(S) acknowledges that he or she has communicated to the CONTRACTOR all of his or her disturbance concerns, and these disturbance concerns have been duly rectified to the LANDOWNER'S complete and total satisfaction and approval.

The LANDOWNER(S) shall hold harmless and indemnify the **CITY OF OAK GROVE** (the Owner) and _____, (the "Contractor") from any future claims of disturbance arising from the Project.

_____
Signature of Landowner 1

_____
Signature of Landowner 2 (if applicable)

_____
Signature of Landowner 3 (if applicable)

CONTRACTOR ATTEST:

_____
Signature

_____
Printed Name & Title

_____
Contractor

Technical Specifications

for

KY 115 and KY 911 Sanitary Sewer Relocation Item No. 2-156.00 Christian County, Kentucky

Hopkinsville Water Environment Authority

October 2014

Prepared by:

HDR Engineering, Inc.
2517 Sir Barton Way
Lexington, Kentucky 40509
(859) 629-4800

KY 115 AND KY 911 SANITARY SEWER RELOCATION
ITEM NO. 2156.00
CHRISTIAN COUNTY, KENTUCKY

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END OF TABLE OF CONTENTS

Division 1 - General Requirements

SECTION 01010 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Relocation and extension of sanitary sewer force mains sized 1½-inch to 8-inch, installation of 8-inch gravity sewer and related appurtenances in Oak Grove, Kentucky.

B. The Contractor shall provide all materials, labor and equipment necessary for completion of the Project. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the Project shall be included.

C. Continuous Operations: The existing system must be maintained in continuous operation in such a manner that it meets all local, state, and federal requirements. The Contractor is responsible not to deactivate, demolish, or interfere with any system component required for the continuous operation until a new or temporary permanent-like system has been installed and is operational. The Contractor is responsible for payment of all fines resulting from any action or inaction on his part or the part of his subcontractors during performance of the Work that causes the facility/facilities to operate in an illegal manner or fail to operate in a legal manner.

1.02 CODES

Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices, citations and similar communications, to the Owner.

1.03 EXISTING CONDITIONS AND DIMENSIONS

A. The Work in this Contract will primarily be performed in or around existing facilities of which a portion must remain functional. The Contractor must maintain the required items and/or systems functional without additional effort by the Owner's personnel and at no extra costs to the Owner.

B. The Contractor is responsible for verifying all existing conditions, elevations, dimensions, etc., and providing his finished work to facilitate existing conditions.

END OF SECTION 01010

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide cutting and patching work to properly complete the work of the project, complying with requirements for connection to existing lines and structures.

B. Do not cut and patch in a manner that would result in a failure of the work to perform as intended, decreased energy efficiency, increased maintenance, reduced operational life, or decreased safety.

PART 2 - PRODUCTS

2.01 MATERIALS

Match existing materials with new materials conforming to project requirements when performing cutting and patching work.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Inspect conditions prior to work to identify scope and type of work required. Protect adjacent work. Notify Owner of work requiring interruption to building services or Owner's operations.

B. Perform work with workmen skilled in the trades involved. Prepare sample area of each type of work for approval.

C. Cutting: Use cutting tools, not chopping tools. Make neat holes. Minimize damage to adjacent work. Check for concealed utilities and structure before cutting.

D. Patching: Make patches, seams, and joints durable and inconspicuous. Comply with tolerances for new work.

E. Clean work area and areas affected by cutting and patching operations.

END OF SECTION 01045

SECTION 01090 - REFERENCES AND ABBREVIATIONS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Where any of the following abbreviations are used in the Technical Specifications, they shall have the meaning set forth as follows:

ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ANS	American National Standard
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, DC
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IPS	Iron Pipe Size
NBS	National Bureau of Standards
NEC	National Electrical Code; latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Thread
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Stl. WG	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
125-lb. ANS; 250-lb. ANS	American National Standard for Cast-Iron Pipe Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
UL	Underwriters' Laboratories

B. REFERENCE STANDARDS

1. For products or workmanship specified by association, trade or federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

2. The date of the standard is that in effect as of the Bid date, or the date of the Owner-Contractor Agreement when there are no bids, unless a certain date is indicated for the standard in the Contract Documents.

3. When required by an individual Specification section, the Prime Contractor shall obtain a copy of the standard. Maintain the copy at the job site, available for review by Owner, Engineer, Resident Representative and other appropriate parties until Substantial Completion.

END OF SECTION 01090

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Reviewed Shop Drawings.
5. Change Orders.
6. Other Modifications to Contract.

B. Store documents in approved location, apart from documents used for construction.

C. Provide files and racks for storage of documents.

D. Maintain documents in clean, dry legible condition.

E. Do not use record documents for construction purposes.

F. Make documents available at all times for inspection by Engineer and Owner.

1.02 MARKING DEVICES

Provide colored pencil or felt-tip marking pen for all marking.

1.03 RECORDING

A. Label each document "RECORD DRAWING" in 2-inch high printed letters.

B. Keep record documents current.

C. Do not permanently conceal any work until required information has been recorded.

D. Contract Drawings: Legibly mark to record actual construction:

1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.

3. Field changes of dimension and detail.
4. Changes made by Change Order or Field Order.
5. Details not on original Contract Drawings.

E. Specifications and Addenda: Legibly mark up each Section to record:

1. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.
2. Changes made by Change Order or Field Order.
3. Other matters not originally specified.

F. Shop Drawings: Maintain as record documents; legibly annotate Shop Drawings to record changes made after review.

END OF SECTION 01720

Division 2 - Site Work

SECTION 02050 - DEMOLITION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Prior to demolition of structures the following procedures shall be accomplished.

1. Owner release of such structure.
2. All electrical and mechanical services rerouted or shut off outside the area of demolition.
3. Coordinate sequencing with Subcontractors.
4. Survey and record the condition of existing facilities to remain in place that may be affected by the demolition operations. After demolition operations are completed, survey the conditions again and restore existing facilities to the pre-demolition condition, at no additional cost to the Owner.

B. Demolition work shall include all items indicated on the Drawings.

1.02 SCHEDULE

A. Perform demolition and removal work at such a time and in such a manner, so as not to interfere with the Owner's operations, the work of other trades and other Contracts. Follow the Progress Schedule as agreed to and worked out with the Owner.

B. Coordinate demolition and removal work with the work of other Contractors, so that the new construction work installed before, during and after the work of this Section may commence without undue delay.

1.03 PROTECTION

A. Do not close or obstruct streets, walks, and other facilities occupied and used by the Owner and the public, without prior written permission from the Owner and local authorities having jurisdiction.

B. The structural stability of structures adjacent to, or affected by the work of this Contract will be the responsibility of the Contractor. Provide temporary shoring, and bracing where required.

C. Provide all necessary shielding of existing materials and equipment, which are to remain, within or adjacent to work areas.

D. Maintain in service and protect from damage the existing utilities that are indicated to remain.

1.04 UTILITIES

Notify all utilities in sufficient time prior to razing operations to permit them to disconnect and remove and/or relocate the respective utility.

1.05 SEWER SEALING

Plug and seal, using concrete, piping as shown on the drawings or as directed by the Engineer.

1.06 SALVAGEABLE MATERIALS

A. The Owner shall have first right to salvage material.

B. Salvage material and equipment to be retained by the Owner shall be located as directed by the Engineer.

1.07 DEMOLITION OPERATIONS

A. Demolition of existing structures shall be conducted to one of the following standards:
   1. As shown on the Contract Drawings, or if not detailed on the Contract Drawings,
   2. Removed to a minimum of 36 inches below the finished grade, or
   3. Removed to 36 inches below the location of a new structure.

B. Remove existing concrete using an abrasive saw to make initial cuts not less than 2 inches deep, between areas to be removed and areas to remain, providing a smooth, straight joint or cut line. Make cut lines in floor slabs parallel with walls.

C. If existing abandoned utility lines extend into the area of construction being removed, remove abandoned lines to elevations shown on the drawings, or as directed by the Engineer outside of demolition area and plug permanently with steel cap or concrete.

D. Adequate drainage of all structures demolished shall be provided by providing openings in the floors and walls of the portion of the structures remaining in place. The Contractor shall notify the Engineer, prior to backfilling the structures remaining in place, in order for him to inspect the drainage provision provided.

E. Provide all temporary shoring and bracing as required to transfer loads of existing construction to remain from construction being removed. Remove and dispose of temporary support measures when new construction has been installed by other contractors.

END OF SECTION 02050

SECTION 02150 - SHORING AND BRACING

PART 1 - GENERAL

1.01 SUMMARY

A. Shore and brace sidewalls in excavations with steel sheet piles with wale systems or soldier piles with timber lagging and tie back system as required to protect existing buildings, utilities, roadways, and improvements.

B. Maintain shoring and bracing during construction activities, and remove shoring and bracing if practical when construction and filling is complete.

1.02 SUBMITTALS

Provide copies of information on methods of the shoring and bracing system proposed for the work, design basis, calculations where applicable, and copies of shop drawings for inclusion in the project and job-site record files.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Deliver, handle, and store materials in accordance with manufacturer=s instructions.

B. Shoring and bracing system design shall be prepared and sealed by a registered professional engineer or structural engineer. The system design shall provide the sequence and method of installation and removal. Shoring and bracing system design shall be in accordance with Occupational Safety and Health Administration (OSHA) requirements 29 CFR Section 1926.652.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Sheet Piles: Heavy-gauge steel sheet.

B. Soldier Piles: Steel H-beams.

C. Timber Lagging: Heavy timber. Pressure treated with wood preservative for use below water table for extended time period.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in proper relation with adjacent construction. Coordinate with work of other sections.

B. Locate shoring and bracing to avoid permanent construction. Anchor and brace to prevent collapse.

END OF SECTION 02150

SECTION 02225 - EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall make excavations in such widths and depths as will give suitable room for below grade vaults, pump stations, etc., laying pipe to the lines, grades and elevations, furnish, place and compact all backfill materials specified herein or denoted on the Drawings. The materials, equipment, labor, etc., required herein are to be considered as part of the requirements and costs for installing the various pipes, structures and other items they are incidental to.

1.02 RELATED WORK

A. Section 02731 - Gravity Sewers.

B. Section 02732 - Force Mains.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Crushed stone aggregate shall meet the applicable requirements for the intended use according to Section 805 of the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, 1994 Edition.

B. Unless otherwise referred to on the Construction Plans or in these Specifications, crushed stone aggregate shall be graded size No. 57 according to the table below.

C. When referred to on the Construction Plans or in these Specifications, dense graded aggregate (DGA) shall have a sand equivalent value of not less than 25 and shall be graded according to Table 1.

D. Coarse aggregate gradations referred to by number size on the Construction Plans or in these Specifications shall conform to the following table (as copied from the above Kentucky Transportation Cabinet Specifications, Table 805.07):

Table 1 – Sizes of Coarse Aggregates

Size	Max. Size Square Openings (1)	Amounts Finer than Each Laboratory Sieve (Square Openings) Percentage by Weight																	
		100 (4)	90 (3½)	75 (3)	63 (2½)	50 (2)	37.5 (1½)	25 (1)	19 (3/4)	12.5 (½)	9.5 (3/8)	4.75 (No. 4)	2.36 (No. 8)	2 (No. 10)	1.18 (No. 16)	600 (3) (No. 30)	425 (3) (No. 40)	150 (3) (No. 100)	75 (3) (No. 200)
1	90 (3½)	100	90-100		25-60		0-15		0-5										
2	63 (2½)			100	90-100	35-70	0-15		0-5										
23	63 (2½)			100		40-90		0-15		0-5									
3	50 (2)				100	90-100	35-70	0-15		0-5									
357	50 (2)				100	95-100		35-70		10-30		0-5							
4	37.5 (1½)					100	90-100	20-55	0-15		0-5								
467	37.5 (1½)					100	95-100		35-70		10-30	0-5							
5	25 (1)						100	90-100	20-55	0-10	0-5								
57	25 (1)						100	95-100		25-60		0-10	0-5						
610	25 (1)						100	85-100		40-75		15-40							
67	19 (3/4)							100	90-100		20-55	0-10	0-5						
68	19 (3/4)							100	90-100		30-65	5-25	0-10		0-5				
710	19 (3/4)							100	80-100		30-75	0-30							
78	12.5 (½)								100	90-100	40-75	5-25	0-10		0-5				
8	9.5 (3/8)									100	85-100	10-30	0-10		0-5				
9-M	9.5 (3/8)									100	75-100	0-25	0-5						
10	4.75 (No. 4)										100	85-100						10-30	
11	4.75 (No. 4)										100	40-90	10-40					0-5	
DGA(2)	19 (3/4)							100	70-100		50-80	30-65				10-40			2-10
Gravel Base (2)	37.5 (1½)					100						25-65					6-30	5-20	
CSB (2)	50 (2)				100		90-100		60-95		30-70	15-55				5-20			0-8

(1) Nominal size in mm (inches), unless otherwise shown (2) Gradation performed by wet sieve KM 64-420 (3) micrometers

E. Testing:

1. Unless otherwise required in this Section, the Engineer shall determine the tests required for crushed stone aggregates according to Section 805. The Contractor shall be responsible for delivering materials proposed for use or being used in the work to a testing laboratory selected by the Engineer. This provision shall apply to any other aggregate tests required in this section.
2. The Contractor shall be responsible for paying the laboratory testing costs. Once a material has been tested and accepted for use, the Contractor shall be responsible throughout the job to use materials that are equal in all respects and from the same source as that accepted material delivered to the testing laboratory.

F. Controlled density (flowable) fill shall conform with the requirements of the Kentucky Transportation Cabinet/Department of Highways Standard Specifications for Road and Bridge Construction, 2008 Edition. Controlled density fill shall be proportioned as follows, per cubic yard batch:

1. Cement: 30 lbs.
2. Fly Ash, Class F: 300 lbs.
3. Natural Sand (SSD): 3,000 lbs.
4. Water (maximum): 500 lbs.

PART 3 - EXECUTION

3.01 EXCAVATION OF TRENCHES

A. Unless otherwise directed by the Engineer, trenches are to be excavated in open cuts.

1. Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to, or just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.
2. Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery. However, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

B. Trenches shall be sufficient width to provide working space on each side of the pipe and to permit proper backfilling around the pipe.

1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the Work. The pavement shall be cut with pneumatic tools, without extra compensation to the Contractor, to prevent damage to the remaining road surface. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.

C. All excavated materials shall be placed a safe distance back from the edge of the trench.

D. Unless specifically directed otherwise by the Engineer, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any one crew, and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew. Watchmen or barricades, lanterns and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the Contractor.

E. When so required, or when directed by the Engineer, only one-half of street crossings and road crossings shall be excavated before placing temporary bridges over the side excavated, for the convenience of the traveling public. All backfilled ditches shall be maintained in such manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridged at the direction of the Engineer.

F. Trench excavation shall include the removal of earth, rock, or other materials encountered in the excavating to the depth and extent shown or indicated on the Drawings.

3.02 GRAVITY SEWER BEDDING

A. Piping for gravity sewers shall be supported as follows:

1. All gravity sewer piping shall be laid on a bed of granular material except when a concrete encasement situation occurs. All pipe bedding material shall be Class I (No. 9 crushed stone aggregate) and shall be placed to a depth of 4 inches in an earth trench and 6 inches in a rock trench. Aggregate bedding shall be graded to provide for a uniform and continuous support beneath the pipe at all points.

B. After each pipe has been brought to grade, aligned, and placed in final position, Class I material shall be deposited and densified under the pipe haunches and on each side of the pipe up to the spring line of the pipe to prevent lateral displacement and hold the pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations. Densified bedding material shall be mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Articles 3.06 and 3.07 herein.

C. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.

D. Where an unstable (i.e., water, mud, etc.) trench bottom is encountered, stabilization of the trench bottom is required. This is to be accomplished by undercutting the trench depth and replacing to grade with a foundation of crushed stone aggregate.

E. The depth of the foundation is dependent upon the severity of the trench bottom. The size of stone aggregate used in the foundation will be determined by the condition of the unstable material. Once the trench bottom has been stabilized, the required Class I bedding material can be placed.

F. It should be noted that no pipe shall be laid on solid or blasted rock.

3.03 GRAVITY SEWER BACKFILLING

A. Initial Backfill:

1. This backfill is defined as that material which is placed over the pipe from the spring line to a point 12 inches above the pipe barrel for up to 4 feet cover, to a point 18 inches above the barrel for 4 feet to 10 feet cover, and 24 inches for more than 10 feet cover. For gravity sewer piping the material shall be Class I (No. 9 crushed stone aggregate) material and mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Articles 3.06 and 3.07 herein. Uneven places in the backfill shall be leveled by hand.

B. Final Backfill:

1. There are two cases where the method of final backfilling varies. The various cases and their trench situations are as follows:

a. Case I - Areas not subject to vehicular traffic.

b. Case II - Paved areas including streets, drives, parking areas, and walks.

2. In all cases, walking or working on the completed pipelines, except as may be necessary in backfilling, will not be permitted until the trench has been backfilled to a point 6 inches above the top of the pipe. The method of final backfilling for each of the above cases is as follows:

a. Case I - The trench shall be backfilled from a point 12, 18 or 24 inches above the top of the pipe (see 3.03A.1) to a point 12 inches below the surface of the ground with earth material free from large rock (greater than 6 inches in the longest dimension), acceptable to the Engineer. The final backfill shall be mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Articles 3.06 and 3.07 herein. The remainder of the trench shall be backfilled with earth material reasonably free of any rocks.

b. Case II - The trench shall be backfilled from a point 12, 18 or 24 inches above the top of the pipe (see 3.03A.1)to pavement replacement subgrade with Class I (No. 9 crushed stone aggregate) material. The backfill shall be mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Articles 3.06 and 3.07 herein. The remaining backfill shall be as follows:

(1) For gravel surfaces - Class II (dense graded aggregate) material mechanically tamped to maximum possible compaction. The trench may be left with a slight mound if permitted by the Engineer.

(2) For bituminous and concrete surfaces - Bituminous and concrete pavement sections as detailed on the Drawings and as specified for Bituminous Pavement Replacement and Concrete Pavement Replacement.

C. A sufficient amount of Class II material shall be stockpiled to insure immediate replacement by the Contractor of any settled areas.

D. Excavated materials from trenches, in excess of quantity required for trench backfill, shall be disposed of by the Contractor. It shall be the responsibility of the Contractor to obtain location or permits for its disposal, unless specific waste areas have been designated on the Drawings or noted in these Specifications.

3.04 FORCE MAIN BEDDING

A. Piping for gravity sewers and force mains shall be supported as follows: All gravity sewer and force main piping shall be laid on a bed of granular material except when a concrete encasement situation occurs. All pipe bedding material shall be Class I (No. 9 crushed stone aggregate) and shall be placed to a depth of 4 inches or 6 inches as indicated on the Drawings. Aggregate bedding shall be graded to provide for a uniform and continuous support beneath the pipe at all points.

B. After each pipe has been brought to grade, aligned, and placed in final position, earth material for force main piping in areas not subject to vehicular traffic and Class I material for force mains in paved areas, shall be deposited and densified under the pipe haunches and on each side of the pipe up to the spring line of the pipe to prevent lateral displacement and hold the pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations. Densified bedding material shall be mechanically tamped in 8-inch layers to obtain the maximum possible compaction as specified in Articles 3.06 and 3.07 herein.

C. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.

D. Where an unstable (i.e., water, mud, etc.) trench bottom is encountered, stabilization of the trench bottom is required. This is to be accomplished by undercutting the trench depth and replacing to grade with a foundation of crushed stone aggregate.

E. The depth of the foundation is dependent upon the severity of the trench bottom. The size of stone aggregate used in the foundation will be determined by the condition of the unstable material. Once the trench bottom has been stabilized, the required Class I bedding material can be placed.

F. It should be noted that no pipe shall be laid on solid or blasted rock.

3.05 FORCE MAIN BACKFILLING

A. Initial Backfill:

1. This backfill is defined as that material which is placed over the pipe from the spring line to a point 6 inches above the top of the pipe. For force main piping in paved or unpaved areas, initial backfill material shall be Class I material. Class I backfill material shall be mechanically tamped in

approximately 8-inch layers to obtain maximum possible compaction as specified in Articles 3.06 and 3.07 herein.

B. Final Backfill:

1. There are two cases where the method of final backfilling varies. The various cases and their trench situations are as follows:

   a. Case I - Areas not subject to vehicular traffic.
   b. Case II - Paved areas including streets, drives, parking areas, and walks.

2. In all cases, walking or working on the completed pipelines, except as may be necessary in backfilling, will not be permitted until the trench has been backfilled to a point 6 inches above the top of the pipe. The method of final backfilling for each of the above cases is as follows:

   a. Case I - The trench shall be backfilled from a point 6 inches above the top of the pipe to a point 12 inches below the surface of the ground with earth material free from large rock (greater than 6 inches in the longest dimension), acceptable to the Engineer. The final backfill shall be mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Article 3.07 herein. The remainder of the trench shall be backfilled with earth material reasonably free of any rocks.
   b. Case II - The trench shall be backfilled from a point 6 inches above the top of the pipe to pavement replacement subgrade with Class I (No. 9 crushed stone aggregate) material. The backfill shall be mechanically tamped in approximately 8-inch layers to obtain maximum possible compaction as specified in Article 3.07 herein. The remaining backfill shall be as follows:

      (1) For gravel surfaces - Class II (dense graded aggregate) material mechanically tamped to maximum possible compaction. The trench may be left with a slight mound if permitted by the Engineer.
      (2) For bituminous and concrete surfaces - Bituminous and concrete pavement sections as detailed on the Drawings and as specified for Bituminous Pavement Replacement and Concrete Pavement Replacement.

C. A sufficient amount of Class II material shall be stockpiled to insure immediate replacement by the Contractor of any settled areas.

D. Excavated materials from trenches, in excess of quantity required for trench backfill, shall be disposed of by the Contractor. It shall be the responsibility of the Contractor to obtain location or permits for its disposal, unless specific waste areas have been designated on the Drawings or noted in these Specifications.

3.06 BEDDING AND BACKFILLING PROCEDURES

A. Place all bedding in pipe trenches in horizontal layers not exceeding 8 inches in depth up to a point 6 inches or more above the top of the pipe and thoroughly compact each layer along the full trench width before the next layer is placed.

B. Backfill shall be placed in horizontal loose lifts not exceeding 8 inches in thickness and shall be mixed and spread in a manner assuring uniform lift thickness after placing. Backfill shall then be compacted as specified in Article 3.07, Compaction, up to 8 inches from existing ground level in non-paved areas or pavement subgrade level in paved areas.

C. Control the water content of bedding and backfill material during placement within the range necessary to obtain the compaction specified. In general, the moisture content of the fill shall be within 3% of the optimum moisture content for compaction as determined by laboratory tests. Perform all necessary work to adjust the water content of the material to within the range necessary to permit the compaction specified. Do not place backfill or fill material when free water is standing on the surface of the area where the bedding or backfill is to be placed. No compaction of bedding or backfill will be permitted with free water on any portion of the material to be compacted.

D. Perform compaction of bedding and backfill with equipment suitable for the type of material placed and which is capable of providing the densities required. Contractor shall select compaction equipment and submit it and his proposed procedure to Engineer for approval.

E. Bedding and backfill shall be compacted by at least two coverages of all portions of the surface of each lift by compaction equipment. One coverage is defined as the condition obtained when all portions of the surface of the material have been subjected to the direct contact of the compactor.

F. Test the effectiveness of the equipment selected by Contractor at the commencement of compaction by construction of a small section of trench bedding or backfill within the area where material is to be placed. If tests on this section show that the specified compaction is not obtained, Contractor shall increase the number of coverages, decrease the lift thickness or obtain a different type of compactor.

3.07 COMPACTION

A. Compacted Crushed Stone Aggregate:

1. Crushed stone shall be placed in uniform layers not greater than 6 inches deep and shaped by power equipment to required lines, grades, cross connections, and depths. No minimum compacted density, method of compaction or compaction equipment is required since a nominal amount of compaction effort with vibration can establish the desired intergranular locking of the aggregate under controlled placement depth. Acceptable compaction can be achieved with pneumatic-tired and tracked equipment and rollers.
2. All compaction operations shall be performed to the satisfaction of the Engineer.
3. Crushed stone shall be placed in those areas as shown on the Construction Plans and as may be directed by the Engineer.

B. Compacted Dense Graded Aggregate (DGA):

1. DGA shall be plant mixed with water, transported in a way that delivers the mix to the project without loss or segregation, spread, and compacted to produce a density throughout not less than 84% of solid volume.

    a. Minimum dry density for compacted limestone DGA shall be 139 lbs. per cubic foot when the specific gravity (S.G.) of limestone is 2.65. Construction requirements shall be according to Section 303 of the Kentucky Transportation Cabinet Department of Highways Standard Specifications for Road and Bridge Construction, 1994 Edition (KTCSSRBC).

2. Density tests shall be required in such number as determined by the Engineer. Density tests shall be made using a nuclear density meter, or other method referenced in Section 303 of the Standard Specifications for Road and Bridge Construction. The Contractor shall furnish all necessary labor, equipment and materials for making the density tests under observations of the Engineer.
3. Compacted material does not meet density requirements shall be removed. The Engineer shall determine if removed material can be remixed and used again for fills.

C. Earth Material: Compact to 90% standard proctor maximum dry density (ASTM D-698).

3.08 PLACEMENT OF IDENTIFICATION TAPE

A. Detectable underground marking tape shall be placed over all utility lines. Care shall be taken to insure that the buried marking tape is not broken when installed and shall be Lineguard brand encased aluminum foil, Type III. The identification tape is manufactured by Lineguard, Inc., P.O. Box 426, Wheaton, IL 60187.

B. The identification tape shall bear the printed identification of the utility line below it, such as "Caution - Buried Below". Tape shall be reverse printed; surface printing will not be acceptable. The tape shall be visible in all types and colors of soil and provide maximum color contrast to the soil. The tape shall meet the APWA color code, and shall be 2 inches in width. Colors are: yellow - gas, green - sewer, red - electric, blue - water, orange - telephone, brown - force main.

C. The tape shall be the last equipment installed in the trench so as to be first out. The tape shall be buried 4 to 6 inches below top of grade. After trench backfilling, the tape shall be placed in the backfill and allowed to settle into place with the backfill. The tape may be plowed in after final settlement, installed with a tool during the trench backfilling process, unrolled before final restoration or installed in any other way acceptable to the Owner or Engineer.

3.09 PLACEMENT OF LOCATION WIRE

A. Detectable underground location wire shall be taped to the top of all non-metallic water mains and force mains. Care shall be taken to insure that the buried wire is not broken.

B. The location wire shall be no smaller than #10 AWG solid copper-coated steel wire with minimum 550 lb. tensile strength or #12 AWG stranded wire, either copper-coated steel or solid copper with minimum 300 lb. tensile strength; each with HDPE insulating jacket. Wire requirements are based on electrical resistance per 1000 foot length. Copper-coated steel wire is preferred to reduce the likelihood of vandalism theft.

C. The location wire shall be continuous from valve box to valve box and shall be terminated (unconnected) with a wire nut and enough Aloose@ wire to extend 24 inches outside the valve box.

END OF SECTION 02225

SECTION 02505 - CRUSHED STONE PAVING

PART 1 - GENERAL

1.01 WORK INCLUDED

Crushed stone paving course, compacted.

1.02 REFERENCES

ASTM C33 - Aggregate for Concrete.

1.03 TESTS

Gradation of stone materials will be performed in accordance with ASTM C33.

PART 2 - PRODUCTS

2.01 MATERIALS

Crushed stone shall conform to ASTM C33, Type No. 57, Type No. 2, and No. 610.

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify compacted subgrade.

B. Verify that gradients and elevations of base are correct.

C. Beginning of installation means acceptance of existing conditions.

3.02 PLACING STONE PAVING

A. Spread stone material over prepared base to a total compacted thickness of 12 inches.

B. Place stone in 6-inch layers and compact.

C. Level surfaces to elevations and gradients indicated.

D. Add small quantities of sand to stone mix as appropriate to assist compaction.

E. Adequately compact placed stone materials.

F. Add water to assist compaction. With an excess water condition, rework topping and aerate to reduce moisture content.

END OF SECTION 02505

SECTION 02510 - BITUMINOUS PAVEMENT REPLACEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall be required to supply all materials and equipment and perform all work for the placement of the base and/or surface course for restoring to the preconstruction condition the surface of the existing streets, roads, drives and parking areas to the depths as shown in the Construction Plans and as specified herein.

1.02 REFERENCES

A. Unless noted, all Specifications designations denoted KTCSSRBC refers to the Kentucky Transportation Cabinet Department of Highways Standard Specification for Road and Bridge Construction.

1.03 WORK DESCRIPTION

A. Bituminous concrete shall be used for replacement of city streets, drives, parking areas and state highways of bituminous construction and for resurfacing existing roads and state highways at locations shown on the drawings or specified.

1.04 QUALIFICATIONS

A. The pavement design mixture shall be used as determined by local plant mix availability. The design mixture shall have been approved recently by the Kentucky Transportation Cabinet Department of Highways and used recently on a state paving project.

B. The design mix shall be submitted to the Engineer for review and acceptance. The submittal shall include the following:

1. The last date the mixture was approved by the Kentucky Transportation Cabinet Department of Highways for use on a state road project.
2. The location where the mixture was recently used, and the name and address of the paving contractor.

PART 2 - PRODUCTS

2.01 BITUMINOUS CONCRETE PAVING

A. Mixture

1. Bituminous concrete mixture shall conform to the applicable requirements of KTCSSRBC Section 401, Bituminous Plant Mixed Pavements-General, and Section 402, Bituminous Concrete Surface and Binder. The pavement mixture shall meet the requirements of Sections 401.02 through 401.05 and conform to the requirements below when tested according to ASTM D 1559-76:

Stability, minimum pounds: 750
Flow, 0.01 inch: Min. 8; Max. 16
Percent air voids: Min. 3; Max. 5
Minimum voids in the mineral aggregate, percent: 3/4 in.; 14
1 in.; 13
Voids filled, percent: Min. 75; Max. 85

B. Fine aggregates shall meet the requirements of KTCSSRBC Section 804.

C. Coarse aggregates shall meet the requirements of KTCSSRBC Section 805.

D. Bituminous materials shall meet the requirements of KTCSSRBC Section 806.

E. Bituminous materials for tack coats shall be one of the following: SS-1, SS-1h, CSS-1, CSS-1h, AE-60, RS-1, CRS-1, RC-70, or RC-250.

PART 3 - EXECUTION

3.01 GENERAL

A. Construction requirements shall conform to applicable requirements of Section 401, 402 and 407 of KTCSSRBC.

B. A tack coat shall be required to bond new paving to the surface of concrete or brick pavements and bases or existing bituminous surfaces. It shall be applied at the rate of 0.8 pounds (0.1 gallons) per square yard at the following range of application temperatures:

SS-1, SS-1h, CSS-1, CSS-1h, AE-60	21-71°C (70-160°F)
RS-1, CRS-1	21-60°C (70-140°F)

C. When SS1, SS1h, CSS1, CSS1h, or AE60 is furnished for tack material, it shall be diluted with an equal quantity of water conforming to Section 803, shall be thoroughly mixed before application, and shall be applied a sufficient time ahead of the paver to ensure that all water has evaporated before the bituminous concrete mixture is placed. The application rate shall be 0.8 pounds (0.1 gallons) per square yard of the diluted SS1, SS1h, CSS1, CSS1h, or AE60.

D. Where bituminous paving is placed against vertical surfaces such as curbs, gutters, manhole frames, valve boxes, etc., the vertical face shall be tack coated to seal the surface. Where these surfaces are inaccessible to pressure distributors, the tack coat may be brushed or broomed into place. The tack coat shall not be allowed to spill over onto any horizontal surface outside the area to be paved.

E. Unless otherwise indicated on the drawings or in these specifications, the compacted thickness of the bituminous concrete paving shall be a minimum of 2 inches (minimum size roller shall be 10 tons) and the minimum ambient temperature for placing shall be 40° F. Mixing and laying temperatures shall be as follows:

Aggregates : Min. 116°C (240°F) - Max. 163°C (325°F)
Asphalt Cement: Min. 107°C (225°F) - Max. 163°C (325°F)
Mixture at Plant (measured in truck) : Min. 116°C (240°F) - Max. 163°C (325°F)
Mixture When Placed (measured in truck when discharging): Min. 225°F

F. Trucks for hauling bituminous mixtures shall have tight, clean, and smooth metal beds that have been sprayed with a minimum amount of soap emulsion, paraffin oil, or other approved material that is not detrimental to the mixture to prevent the mixture from adhering to the beds. All trucks shall be equipped with covers of sufficient size to cover the loaded material completely, and all covers shall be securely fastened in place before the truck leaves the plant. Truck beds shall be insulated, when necessary, to maintain the specified temperature to the point of delivery. Any truck causing excessive segregation of material by its spring suspension or other factors, shall be discharged from the work, until such conditions are corrected.

G. The Contractor shall have an accurate thermometer on the job at all times for verifying all temperature requirements and for taking temperature measurements whenever requested by the Engineer or HWEA. The Contractor shall closely control temperature and compaction requirements to achieve quality bituminous paving and related work.

H. Bituminous paving that fails as the result of not meeting the requirements of these Specifications shall be removed and replaced as directed by the Engineer.

3.02 TRENCH WIDTH REPAVING - CITY AND COUNTY STREETS, ROADS AND PARKING AREAS

A. The cut edges of the existing paving surface shall be saw cut to a depth of at least 4 inches to straight lines, 12 inches on each side of trench for uniform appearance and clean surfaces at joints. The area between the cut edges of the paving shall be removed to a depth of 2 inches (minimum) or to the bottom of the existing paving. All unstable material in the trench shall be removed and replaced with mechanically compacted dense graded aggregate and dense graded aggregate added as needed to bring the base surface to the bottom of existing paving or 2 inches below the existing surface, whichever is the lower.

B. The paving subgrade shall be compacted under the wheel of a steel roller or asphalt compactor, until there is no observed settlement of the subgrade.

C. The sides of existing pavements shall be covered with a tack coat and bituminous paving shall be hot applied as previously described. Final surfaces shall be finished to 1/4 inch above existing paving surfaces at edges and crowned to 1/2 inch above existing surfaces at the center.

D. The Contractor shall maintain such repaving up to grade of existing street surface until completion and acceptance of work. During the guarantee period of one year, the Contractor will be responsible for defective materials or construction, and natural settlement.

E. If additional bituminous paving is to be added due to settlement, surface to be built up shall have all dirt removed and such surface swept clean with a stiff wire brush or broom. A tack coat shall be applied to the clean surface and additional paving placed in quantity required. Traffic shall be prevented from passing over the treated surface before the additional paving materials are placed.

3.03 TRENCH WIDTH REPAVING - STATE MAINTAINED STREETS AND HIGHWAYS

A. Streets, roads and highways maintained by the Kentucky Transportation Cabinet Department of Highways shall be repaved according to details shown on the Department of Highways Drawing No. TD 99-13, latest revision.

B. Concrete base slabs shall be cleaned and tack coated, and bituminous paving shall be hot applied as previously described.

C. Widths, depths, and other details and methods of application shall be as shown on attached drawing and as required by the Kentucky Transportation Cabinet, Department of Highways.

D. The Contractor shall maintain the bituminous surface of all state highways and state maintained streets to grade during the entire guarantee period of the work.

END OF SECTION 02510

SECTION 02520 - CONCRETE PAVEMENT REPLACEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Provide Portland cement concrete paving at following locations, with prepared subbase and compacted base.

1. Driveways and vehicular entrances.
2. Walkways.
3. Curbs.

1.02 SUBMITTALS

Submit for approval product data, mix design, mock-ups, test reports.

1.03 QUALITY ASSURANCE

Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete mix design: Specific mixes as required for sidewalks, curbs, and vehicular ways. Submit mix proposed for use, for approval, as detailed in Division 3.

B. Exposed aggregate paving:

1. Aggregate to match approved sample.
2. Retarder.

C. Reinforcing: 6 x 6, 1.9 x 1.9 welded flat wire mesh and ASTM A36 deformed steel bars.

D. Joints: Preformed joint fillers/sealers.

E. Finish:

1. Paving: Fine bristled stiff broom.
2. Exposed aggregate finish: Match approved sample.
3. Imprinting: Tools and hardeners by Bomanite Corp.
4. Curbs: Steel form finish.

F. Thickness (Unless shown otherwise on the drawings):

1. Driveways and vehicular entrances - 6 inches.
2. Walkways - 4 inches.
3. Curbs - 6 inches.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Proof roll subbase and check for unstable areas. Report unsatisfactory conditions in writing. Beginning paving work means acceptance of subbase.

B. Comply with Division 3 for concrete mix, testing, placement, joints, tolerances, curing, repairs, and protection.

END OF SECTION 02520

SECTION 02630 - ENCASEMENT PIPE

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install encasement pipe together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers.

C. Section 02732 - Sewage Force Mains.

PART 2 - PRODUCTS

2.01 STEEL COVER PIPE

A. Steel cover or jack pipe shall be plain end steel pipe with minimum yield strength of 35,000 psi and tensile strength of 60,000 psi per API-5L Grade B material. The steel pipe supplied shall be manufactured by the seamless, electric-weld, submerged-arc weld or gas metal-arc weld process as specified in API-5L. Certification of 35,000 psi minimum yield strengths shall be furnished by the supplier through the Engineer in sufficient copies before pipe is shipped to job to permit the HWEA to retain two copies.

B. A protective coating shall be applied to each length of pipe. Following an SSPC SP-7 "Brush-Off Blast Cleaning" surface preparation, 3 (dry) mils of Tnemec-Primer 10-99 (red), or Porter International Primer 260FD (red), or an equivalent thickness of an approved equivalent paint shall be applied in the manner recommended by the respective paint manufacturer.

C. The inside diameter of steel cover pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe, joints or couplings, except carrier pipe 6 inches or greater in diameter under railroads, the difference shall be 4 inches instead of 2 inches.

D. Cover pipe shall have a minimum wall thickness as shown in the following table:

Nominal Diameter Inches	Nominal Wall Thickness Inches	Nominal Diameter Inches	Nominal Wall Thickness Inches
Under 10	0.25	18	0.375
10 & 12	0.250	20	0.375
14 & 16	0.375	22	0.375

PART 3 - EXECUTION

3.01 TUNNELING, BORING OR JACKING

A. Boring or jacking as specified herein will be allowed at locations other than those noted on the Construction Plans, where advantageous to lay pipe under streets, driveways, and sidewalks, without their monolithic structure being destroyed.

B. Tunneling under paving, buildings and underground structures is included as an alternate to boring or repaving required by open cut trenching. Bore and cover pipe is also included as an alternate to tunneling. Backfilling of tunnels shall be mechanically tamped in not more than 3 inch layers and with materials rendered suitably for tamping before being placed in tunnels unless otherwise shown on the Construction Plans.

C. In tunneling under buildings, the Contractor will be held responsible for all damage by his operations and methods of excavation and backfilling.

D. Boring or jacking under highways, sidewalks, pipelines, etc., shall be done at the locations shown on the Construction Plans. It shall be performed by mechanical means and accurate vertical and horizontal alignment must be maintained. When shown on the drawings, cover pipe shall be used and shall be installed inside bored holes concurrently with boring, or jacking.

3.02 STEEL COVER PIPE INSTALLATION

A. Steel cover pipe shall be of the size and wall thickness as shown on the Construction Plans.

B. When cover pipe is jacked, concurrent with boring, all joints shall be solidly welded. The weld shall be such that the joint shall be of such strength to withstand the forces exerted from the boring and jacking operation and the vertical loading imposed on the pipe after installation. The weld shall also be such that it provides a smooth, non-obstructing joint in the interior of the pipe that will allow easy installation of the carrier pipe without hanging or abrasion to the carrier pipe upon installation.

C. When cover pipe is installed in an open trench, it shall be bedded and backfilled per the Specifications applying to sewer pipe in such locations. When cover pipe is installed in an open trench, it shall be laid accurately to alignment of the proposed sewer and at an elevation below sewer necessary to support it at the planned elevation.

D. Cover pipe in an open trench, a permanent tunnel and temporary tunnel shall be joined in such manners that they will not be moved out of alignment or grade and that will prevent backfill material from entering joint.

3.03 CARRIER PIPE IN COVER PIPE INSTALLATION

A. Pipeline Spacers

1. Pipes installed inside cover pipes shall be centered throughout the length of the cover pipe. Centering shall be accomplished by the installation of heavy duty stainless steel pipeline spacers, with 2 inches wide glass reinforced plastic runners, attached to the pipe in such manners as to prevent the dislodgement of the spacers as the carrier pipe is pulled or pushed through the cover pipe. Spacers shall be of such dimensions to provide (1) full supportive load capacity of the pipe and contents; (2) of such thickness to allow installation and/or removal of the pipe; and (3) to allow no greater than 1 inch movement of the carrier pipe within the cover pipe after carrier pipe is installed. All attachment hardware shall be stainless steel.
2. Spacers shall be located immediately behind each bell and at a maximum spacing distance as follows:

Pipeline Diameter (in.)	Maximum Spacing (ft.)
8" to 12"	7'
15" to 27"	4.3'

The materials and spacing to be used shall be accepted by the Engineer and HWEA before installation. The pipeline spacers shall be manufactured by PowerSeal, Model 4810 (stainless steel, center restrained) of Wichita Falls, Texas, or HWEA approved equal. Installation shall be according to manufacturers' recommendations.

B. Upon completion of installation of the carrier pipe, the annular space at the ends of the cover pipe shall be sealed to prevent the entrance of groundwater, silt, etc., into the cover pipe. The seal shall be a manufactured product specially made for this purpose. The seal shall be Link Seal - PL, or approved equal.

3.04 DAMAGE

The cost of repairing damage to the highway which is caused by a boring and jacking installation shall be borne by the Contractor.

END OF SECTION 02630

SECTION 02642 - SEWAGE VALVES AND GATES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish and install valves, gates, and miscellaneous piping appurtenances, as indicated on the Drawings and as herein specified.

B. The Drawings and Specifications direct attention to certain features of the equipment, but do not purport to cover all the details of their design. The equipment furnished shall be designed and constructed equal to the high quality equipment manufactured by such firms as are mentioned hereinafter, or as permitted by the Engineer. The Contractor shall furnish and install the equipment complete in all details and ready for operation.

C. Enclosures shall be of a suitable type for the atmospheres in which they are installed.

D. Sizes and capacities not specified herein are indicated on the Drawings.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers

C. Section 02732 - Sewage Force Mains.

1.03 SUBMITTALS

A. The manufacturer shall furnish the Engineer two (2) copies of an affidavit stating that the valve and all materials used in its construction conform to the applicable requirements of ANSI/AWWA valve, and that all tests specified therein have been performed and that all test requirements have been met.

B. The Engineer shall be furnished two (2) copies of affidavit that the "valve protection testing" has been done and that all test requirements have been met.

C. The Engineer shall be furnished with two (2) copies of affidavit that inspection, testing and rejection are in accordance with AWWA Standard.

PART 2 - PRODUCTS

2.01 CHECK VALVES

A. Check valves 3 inches and larger shall be iron body, bronze mounted, full opening, swing type check valves with bolted covers and flanged ends. Flanges shall be faced and drilled in accordance with the 125-pound AN Standard. Valves shall comply with AWWA Standard C517 latest revision.

B. Valves shall be equipped with outside levers and weights.

C. Valves shall be designed for working pressures as follows:

Valve Size (Diameter)	Pressure
3 to 12 inches	175 psi
14 to 24 inches	150 psi
30 inches and larger	120 psi

D. Check valves smaller than 3 inches in size shall be 200-pound WOG minimum bronze or all brass swing check valves. Valves shall have screw-on cap and renewable composition disks. Valve body shall be as herein specified for gate valves.

E. Check valves in pipelines carrying sewage or sludge shall be installed horizontally.

2.02 PLUG VALVES

A. Plug valves shall conform to the latest revision of AWWA C507 and shall be of the nonlubricated eccentric type with resilient plugs faced with natural or synthetic rubber suitable for service in sewage and sludge piping.

B. Port areas shall be unobstructed when open and have smoothly shaped waterways of not less than 80 percent (80%) of full pipe area except that valves 30 in. and larger shall have only 70 percent (70%) area.

C. Bodies shall be of semisteel, suitable for 125-pound working water pressure and shall have raised seats.

D. Valves 3 inches and larger shall have seats of a welded in overlay of not less than 90 percent (90%) pure nickel or other acceptable material.

E. Valves less than 3 inches shall have plastic-covered seats.

F. Valves shall have permanently lubricated upper and lower stainless steel bushings on plug journal ends.

G. Valves shall have bolted bonnets. Valves 4 inches and larger shall be designed so that they can be repacked under line pressure without removing the bonnet from the valve. Packing shall be adjustable.

H. Valves shall be wrench operated, except as otherwise specified or indicated on the Drawings.

I. Where there is a lack of space for the valve wrench to operate gear operators, handwheels shall be provided in lieu of the wrench.

J. Gear operators shall be totally enclosed, worm gear type, permanently lubricated, and shall be watertight and dust tight.

K. Gear operators shall be provided with adjustable stops for the open and closed position to prevent overtravel, and shall have a valve disk position indicator.

L. A suitable lever or wrench shall be provided for wrench operated valves but at least one wrench for each operating station. Wrenches or wheels and chains shall be of suitable size and sufficient length for easy operation of the valves at their rated working pressure.

M. Plug valves 2-1/2 inches and smaller shall have screwed ends.

N. Plug valves 3 inches and larger shall have mechanical joint or flanged ends faced and drilled in accordance with 125-pound ANSI Standard.

O. Plug valves shall be those manufactured by DeZurik, Clow, or approved equal.

2.03 COMBINATION AIR VALVES (SEWAGE)

A. The combination valve shall be of the type that automatically exhausts large quantities of air during the filling of a system and allows air to re-enter during draining or when a vacuum occurs. The over-all height less back wash accessories shall not exceed 24 inches. Valves shall be constructed of stainless steel.

B. All back wash accessories shall be furnished and assembled to the valve, consisting of an inlet shut-off valve clear water inlet valve, rubber supply hose and quick disconnect couplings.

C. All parts of the valves and the operating mechanisms shall be made of non-corrodible materials.

D. The following table may be used to determine air/vacuum valve sizing requirements. If the selection is unclear or if the selection of the valve appears critical to the operation of the system, contact the Engineer for assistance in the selection.

1. Sizing table:

Flow Rate (GPM)	0 to 1300	1301 to 3800	3801 to 7100
Valve Size (inch)	1	2	3

E. Sewage combination air valves shall be ARI D-025 as manufactured by A.R.I. Flow Control Accessories, or approved equivalent.

2.04 PLASTIC BALL VALVES: 1/2 IN. TO 4 IN. DIA.

A. Identified as "Control Valves" on drawings for low pressure sewer system.

B. Acceptable Manufacturers:
1. Chemtrol.
2. Spears.
3. ASAHI/America.

C. Materials
1. Body, stem, ball, handle, end connectors:
   a. PVC ASTM D1784-12454B.
2. Ball Seat: Teflon.
3. O-rings: Viton.

D. Design Requirements:
1. Rated at 150 psi at 75 DegF.
2. Double or "true union" design.
3. Blocks both directions, upstream and downstream.
4. Union but capable of compensating for seat wear.
5. Body with mounting pad for actuators where required.
6. Capable of being disconnected at downstream end under full line pressure.

2.05 VALVE BOXES

A. Each buried stop and valve shall be provided with a suitable valve box. Boxes shall be of the adjustable, telescoping, heavy-pattern type with the lower part of cast iron and the upper part of steel or cast iron. They shall be so designed and constructed as to prevent the direct transmission of traffic loads to the pipe or valve.

B. The upper or sliding section of the box shall be provided with a flange having sufficient bearing area to prevent undue settlement. The lower section of the box shall be designed to enclose the operating nut and stuffing box of the valve and rest on the valve bonnet.

C. The boxes shall be adjustable through at least 6 inches vertically without reduction of the lap between sections to less than 4 inches.

D. The inside diameter of boxes for valves shall be at least 4-1/2 inches, and the lengths shall be as necessary for the depths of the valves or stops with which the boxes are to be used.

E. Covers for valves shall be close fitting and substantially dirt-tight.

F. The top of the cover shall be flush with the top of the box rim. An arrow and the word OPEN to indicate the direction of turning to open the valve shall be cast in the top of the valve covers.

2.06 FIBERGLASS LINE AND VALVE MARKER

A. General:

1. Design: The continuous fiberglass reinforced composite line marker shall be a single piece marker capable of simple, permanent installation by one person using a manual driving tool. The marker, upon proper installation, shall resist displacement from wind and vehicle impact forces. The marker shall be of a constant flat "T" cross-sectional design with reinforcing support ribs incorporated longitudinally along each edge to provide sheeting protection and structural rigidity. The bottom end of the marker shall be pointed for ease of ground penetration.
2. Material: The marker shall be constructed of a durable, UV resistant, continuous glass fiber and marble reinforced, thermosetting composite material which is resistant to impact, ozone, and hydrocarbons within a service temperature range of -40^0 F to $+140^0$ F.
3. Workmanship: The marker shall exhibit good workmanship and shall be free of burns, discoloration, cracks, bulges or other objectionable marks which would adversely affect the marker's performance or serviceability.
4. Marking: Each marker shall be permanently marked "Water Line Below." The letters shall be a minimum of 2 inches in height. A black line shall be stamped horizontally across the front of the marker near the bottom to indicate proper burial depth as shown in the standard detail. The marker shall be a CRM-375 as manufactured by Carsonite International, or approved equivalent.

B. Physical and Mechanical Requirements:

1. Dimensions: The marker shall conform to the shape and overall dimensions shown in the standard detail.
2. Mechanical Properties: The marker shall have the minimum mechanical properties as follows:

Property	ASTM Test Method	Minimum Value
Ultimate Tensile Strength	D-638	50,000 psi
Ultimate Compressive Strength	D-638	45,000 psi
Specific Gravity	D-792	1.7
Weight % Glass Reinforcement	D-2584	50%
Barcol Hardness	D-2583	47

3. Color Fastness: The marker shall be pigmented throughout the entire cross-section so as to produce a uniform color which is an integral part of the material. Ultraviolet resistant materials shall be incorporated in the construction to inhibit fading or cracking of the delineator upon field exposure.
4. Vehicle Impact Resistance: The marker shall be capable of self-erecting and remain functional after being subjected to a series of ten head on impacts by a typical passenger sedan at 35 miles per hour. The marker shall retain a minimum of 60 percent of its sheeting.

C. Reflectors:

1. The reflector shall be of impact resistant, pressure sensitive retro-reflective sheeting which shall be subject to approval by the Engineer. The sheeting shall be of appropriate color to meet MUTCD requirements.
2. Mounting: The retro-reflective sheeting shall consist of a minimum of a 3-inch wide strip placed a maximum of 2 inches from the top of the post unless otherwise specified.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Valves shall be installed as nearly as possible in the positions indicated on the Drawings consistent with conveniences of operating the handwheel or wrench. All valves shall be carefully erected and supported in their respective positions

free from all distortion and strain on appurtenances during handling and installation.

B. All material shall be carefully inspected for defects in workmanship and material, all debris and foreign material cleaned out of valve openings and seats, all operating mechanisms operated to check their proper functioning, and all nuts and bolts checked for tightness.

C. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at the Contractor's expense.

D. Valves shall not be installed with stems below the horizontal.

E. Valves shall be set plumb and supported adequately in conformance with the instructions of the manufacturer. Valves mounted on the face of concrete shall be shimmed vertically and grouted in place. Valves in the control piping shall be installed so as to be easily accessible.

F. Valves shall be provided with extension stems where required for convenience of operation. Extension stems shall be provided for valves installed underground and elsewhere so that the operating wrench does not exceed 6 feet in length.

G. A permanent type gasket of uniform thickness shall be provided between flanges of valves and sluice gates and their wall thimble.

H. Plug valves in horizontal sewage and sludge piping shall be installed with the shaft horizontal such that when in the open position, the plug is located in the upper part of the valve body. Valves shall be oriented so that in the closed position, the plug is at the upstream end of the valve.

3.02 PAINTING

A. Valves shall be factory primed and fully coated, inside and out, with fusion bonded epoxy in accordance with the latest revision of AWWA C550 Standard.

END OF SECTION 02642

SECTION 02731 - GRAVITY SEWERS

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install gravity sewer piping together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling, and Compacting for Utilities.

B. Section 02735 - Manholes and Precast Sewage Structures.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Polyvinyl Chloride (PVC) Pipe:

1. Heavy Wall PVC Pipe (SDR 26):
   a. PVC pipe and fittings shall conform to the requirements of ASTM D3034 Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings. All pipe shall have a diameter to wall thickness ratio (SDR) of a maximum of 26.
   b. Joints shall be push-on bell and spigot type using elastomeric ring gaskets conforming to ASTM D3212 and F477. The gaskets shall be securely fixed into place in the bells so that they cannot be dislodged during joint assembly. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, and which will endure permanently under the conditions of the proposed use. The minimum wall thickness shall conform to ASTM F679 for a minimum pipe stiffness of 115 psi.
   c. Pipe shall be furnished in lengths of not more than 20 feet. The centerline of each pipe section shall not deviate from a straight line drawn between the centers of the openings at the ends by more than 1/16 inch per foot of length.
   d. PVC pipe shall <u>not</u> have filler content greater than ten percent (10%) by weight relative to PVC resin in the compound.

e. PVC pipe shall be clearly marked at intervals of 5 feet or less with the manufacturer's name or trademark, nominal pipe size, PVC cell classification, the legend "Type PS 115 PVC Sewer Pipe" and the designation "ASTM D3034". Fittings shall be clearly marked with the manufacturer's name or trademark, nominal size, the material designation "PSM", and the designation "ASTM F-679".
f. PVC pipe shall have a minimum pipe stiffness of 115 psi for each size when measured at 5 percent vertical ring deflection and tested in accordance with ASTM D-2412.
g. Five (5) copies of directions for handling and installing the pipe shall be furnished to the Contractor by the manufacturer at the first delivery of pipe to the job. PVC pipe installation shall conform to ASTM D-2321 latest revision.
h. All pipe shall be provided with home marks to insure proper gasket seating.

B. Fittings:

1. Fittings shall be ductile iron in accordance with AWWA C153 and have a body thickness and radii of curvature conforming to ANSI A21.10 or ANSI A21.53 for compact fittings and shall conform to the details and dimensions shown therein. Fittings shall have rubber gasket joints meeting the requirements of AWWA C111. All fittings shall be capable of accommodating pressure up to 250 psi.
2. All ductile iron pipe and fittings shall have the manufacturer's outside asphaltic coating and shall be cement mortar lined with a seal coat according to ANSI/AWWA C104/A21.4-80. Bituminous outside coating shall be in accordance with ANSI/AWWA C151/A21.51 for pipe and ANSI/AWWA C110/A21.10 for fittings.
3. Restrained joint pipe and fittings shall be a boltless system equivalent to "Field Lok" restraining gaskets or "TRFLEX Joint" as manufactured by U.S. Pipe & Foundry Company.
4. All ductile fittings shall be rated at 250 psi water working pressure plus water hammer. Ductile iron fittings shall be ductile cast-iron grade 70-50-05 per ASTM Specification A339.

C. Joints - Exterior Piping:

1. Joints for PVC pipe and fittings for sewer mains shall be "Push-On Type" composed of an elastomeric ring gasket compressed in the annular space between a bell end or socket and spigot end of the pipe.
2. All surfaces of the bell, socket or spigot end of the pipe against which the ring gasket may bear shall be smooth, free of cracks or other imperfections that could adversely affect the sealing capacity of the joint.

3. Lubricant for use in assembling joints shall be supplied with the pipe or be of the specific manufacturer as recommended by the pipe manufacturer for use with the specific pipe supplied. The lubricant shall not cause deterioration of either the elastomeric ring gasket or pipe material.
4. Where PVC pipe and fittings are connected to piping of other materials, the manufacturer's standard adapters or transition pieces shall be used. Should the manufacturer not produce an adapter for a specific pipe of other material, the adapters or transition fittings as specified shall be used.

2.02 SOURCE QUALITY CONTROL

A. PVC Polyvinyl-Chloride Sewer Pipe:

1. Pipe shall be tested and inspected at the factory and inspected at the job site. Testing shall be accomplished in conformance with the following ASTM specifications utilizing the test methods specified therein:

   Dimensions: ASTM D 3034-81 or ASTM F 679-80 and D 2122-81
   Extrusion Quality: ASTM D 2152-80
   Pipe Stiffness (5%): ASTM D 2412-77
   Impact Resistance: ASTM D 2444-80
   Chemical Resistance: ASTM D 1784-81

2. In addition, a typical joint assembly, both gasket type joint and solvent weld joint, shall be tested by a qualified independent laboratory per test requirements of ASTM D 3212-81. The manufacturer shall submit through the Engineer sufficient copies of certification and test results for each lot of material represented by shipment to the job site that will permit the HWEA to retain two copies.

PART 3 - EXECUTION

3.01 LAYING SEWER PIPE

A. General:

1. Checking of Pipe:
   a. The selection of pipe strength class shall be based on earth weight of 130 pounds per cubic foot and a safety factory of 1.50.
   b. All pipe and fittings must be tested for uniform diameter, straightness and defects by the Contractor before being lowered into the trench. Rejected pipe must be separated from accepted pipe and removed from the project. The Engineer and HWEA will make periodic

observations of pipe in storage and/or incorporated into the work. Pipe found defective shall be rejected and replaced.

2. Alignment and Grade:
   a. All pipe, after being inspected and accepted, shall be laid to correspond with lines and grades shown on the Drawings. All sewer lines shall be laid to constant grades between invert elevations shown on the Construction Plans. Grades shown on the Drawings are invert of pipe and NOT trench subgrade. The pipe lengths shall be fitted together and matched, so that they will form a sewer with a smooth and uniform invert, visible as a full circle from manhole to manhole. Gravity sewers within the HWEA Service Area shall not be laid on curves.
   b. The following table will establish alignment and grade tolerances to be used in the installation of gravity sewer mains:

ITEM	ALLOWANCE
Alignment	No tolerance shall be allowed for pipe out of the designed alignment. Pipe sections found out of the designed alignment shall be rejected.
Grade	A deviation of 0.02' from the designed elevation of the invert of the gravity sewer will be allowed. Gravity sewers found not within the 0.02' tolerance of the designed pipe elevation shall be rejected.

   Note: These tolerances are established for gravity lines only. The Engineer shall verify the pipe elevations at all locations throughout the system. The Final Record Drawings shall reflect the results of this verification. In addition to the Engineers' verification, the HWEA shall perform a field survey to confirm as-built elevations of the gravity sewer at the completion of construction.

3. Unstable Subgrade: In wet, yielding, and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.

4. Bedding of Pipe:
   a. Pipe shall be laid with the bottom quadrant of the barrel and bells of pipe bedded in at least 4 inch depth of stone when on earth subgrade and in at least 6 inch depth of stone, below the bottom of the barrel of pipe when on solid rock subgrade. Stone for bedding of 6 inch through 16 inch pipe shall be No. 8 to 1/2 inch Kentucky Department of Highways Size 78 crushed rock as specified in Section 02225 of this manual, spaded into place.
   b. No filling of the trench with earth to bring pipe to grade will be permitted. If trenches are dug too deep, they must be brought to grade and supported by crushed rock for pipe bedding (No. 8 to ½ inch or No. 8 to ¾ inch) as specified in Section 02225 of this manual. No pipe shall be laid in the trench until the subgrade is inspected and found correct.
5. Laying of Pipe (Mains):
   a. The Contractor's laying crew supervisor shall direct subgrade preparation and plumbing and leveling invert of pipe to grade and line, the pipe layer following his directions in placing the pipe. The pipe layer will be responsible for pipe bedding, cleaning joint, proper placement of joint annular ring or gasket, tight jointing and homing pipe, securing pipe against settlement or other movement, and inspecting and swabbing out any jointing material from inside pipe.
   b. No joints will be accepted that show leakage and, after backfilling and inspection, any joints are found that are allowing groundwater to enter the sewer must be excavated and corrected.
   c. Plugs in branch fittings to future building sewers shall be protected from excavators by the method as shown on the Construction Plans for protecting the ends of laterals and shall be so constructed and joined in the bell of pipe that they will be watertight, yet removable without breaking the bell or coupling when removed.
6. Laying of Laterals:
   a. Lateral shall be laid to serve the abutting property at points shown on the Construction Plans. Such pipes shall be connected to sewer mains through tees or Y-branches of size of running sewer barrel and 6-inch side opening, with 6 inch 30 degree or 45 degree bends (if required due to deep sewers). Branch fittings in the sewer and the connected bend, shall be supported from bottom of the trench per the Construction Plans.
   b. Laterals shall be laid to the right-of-way or property line as shown on the Construction Plans. The end openings shall be plugged with appropriate watertight plugs of permanent materials in the bell of the sewer pipe, removable without breakage of pipe bells. Dead ends of sewers shall be plugged similarly.
   c. Laterals shall be laid on not less than a 1/4" per foot slope (2.083%, or 0.37' per 13' joint). Where laterals are laid at or near minimum

grades, the Contractor shall install batter boards of use a pipe laser, same as specified for gravity mains.

d. In the case of deep sewers, laterals may be brought up to a depth of approximately 5 feet below ground level with suitable bends and sewer pipe. These pipes shall be laid on a slant outside sewer trench, not to exceed a 45-degree angle, so they will be supported on original earth and not dragged down and cracked by backfill settlement.

e. All lateral installed shall have a 4" x 4" x 8' timber installed vertically at the termination point of the lateral with the bottom end of the timber level with the invert of the pipe. The top one foot of the post shall be painted green with the lot number marked on the post in permanent ink. The timber shall be installed as shown on the Construction Plans.

7. Piping Connections at Structures:
   a. Lines:
      (1) Pipes shall be laid free from all structures other than manholes. Any pipe entering structures underground unsupported by original earth shall be supported by Class 2,000 concrete, brick and mortar masonry, or Class 4,000 concrete beams and columns as shown on Construction Drawings.
      (2) Pipe shall be connected to manholes by fabricated manhole entry seals, specified in Section 12.21 of these Specifications.
      (3) Pipe stubbed out of manholes for future connections shall be plugged and tightly sealed with same jointing material used to plug laterals.
8. Installing Sewer Pipe in Cover Pipe:
   a. Pipes installed inside cover pipes shall be centered throughout the length of cover pipe. Centering shall be accomplished by the installation of heavy-duty, stainless steel pipeline spacers attached to the pipe in such a manner as to prevent the dislodgement of the spacers as the carrier pipe is pulled or pushed through the cover pipe. Pipeline spacers shall be of such dimensions to provide, (1) full supportive load capacity of the pipe and contents; (2) of such thickness to allow installation and/or removal of the pipe; and (3) to allow no greater than 1 inch movement of the carrier pipe within the cover pipe after carrier pipe is installed.
   b. Pipeline spacers shall be located immediately behind each bell and at the midpoint of each length of pipe installed or a minimum of 7 feet spacing, whichever distance is the lesser. The materials used and methods of centering shall be acceptable to the Engineer and HWEA before installation. All clamps or attachment bands shall be stainless steel.
   c. Upon completion of installation of the carrier pipe, the annular space at the ends of the cover pipe shall be sealed to prevent the entrance of groundwater, silt, etc., into the cover pipe. The seal shall be a

manufactured product specifically made for this purpose. The seal shall be Link Seal - Series 500 as manufactured by the Thunderline Corporation, Wayne, Michigan.

9. Protection of Pipe in Trench: No walking upon the completed pipelines will be permitted until trench has been backfilled to a depth of at least 6 inches over the top of the pipe. The interior of the pipe shall, as the work progresses, be cleaned of all dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a suitable plug fitted into the pipe bell, to exclude earth and other material, precautions being taken to prevent flotation of pipe by runoff into the trench.
10. Observation of Pipeline: No backfilling (except securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to observe the joints, alignment and grade, in the section laid, but such observation shall not relieve the Contractor of further liability in case of defects occurring during or after placement of backfill.

3.02 JOINTING

All joint surfaces shall be cleaned immediately before jointing the pipe. The bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. All pipe shall be provided with home marks to insure proper gasket seating. Details of gasket installation and joint assembly shall follow the direction of the manufacturer's of the joint material and of the pipe. The resulting joints shall be watertight and flexible. **No solvent cement joints shall be allowed.**

3.03 TESTING OF GRAVITY SEWER LINES

A. After the gravity piping system has been brought to completion, and prior to final inspection, the Contractor shall rod out the entire system by pushing through each individual line in the system, from manhole to manhole, appropriate tools for the removal from the line of any and all dirt, debris, and trash. If necessary during the process of rodding the system, water shall be turned into the system in such quantities to carry off the dirt, debris and trash.

B. During the final inspection, the Engineer will require all flexible sanitary sewer pipe to be mandrel deflection tested after installation.

1. The mandrel (go/no-go) device shall be cylindrical in shape and constructed with nine (9) evenly spaced arms of prongs. The mandrel dimension shall be 95 percent of the flexible pipe's published ASTM average inside diameter. Allowances for pipe wall thickness tolerances of ovality (from shipment, heat, shipping loads, poor production, etc.) shall not be deducted

from the ASTM average inside diameter, but shall be counted as part of the 5 percent allowance. The contact length of the mandrel's arms shall equivalent or exceed the nominal diameter of the sewer to be inspected. Critical mandrel dimensions shall carry a tolerance ∀ 0.001 inch.

2. The mandrel inspection shall be conducted no earlier than 30 days after reaching final trench backfill grade provided, in the opinion of the Engineer, sufficient water densification or rainfall has occurred to thoroughly settle the soil throughout the entire trench depth. Short-term (tested 30 days after installation) deflection shall not exceed 5 percent of the pipe's average inside diameter. The mandrel shall be hand pulled by the contractor through all sewer lines. Any sections of the sewer not passing the mandrel test shall be uncovered and the Contractor shall replace and recompact the embedment backfill material to the satisfaction of the Engineer. These repaired sections shall be retested with the go/no-go mandrel until passing.
3. The Engineer shall be responsible for approving the mandrel. Proving rings may be used to assist in this. Drawings of the mandrel with complete dimensioning shall be furnished by the Contractor to the Engineer for each diameter and type of flexible pipe.

C. The pipe line shall be made as nearly watertight as practicable, and leakage tests and measurements shall be made. All apparatus and equipment required for testing shall be furnished by the Contractor and the cost shall be included in the unit price bid for pipe and manholes.

1. The Engineer may require the Contractor to smoke test the first section (manhole to manhole) of each size of pipe and type of joint prior to backfilling, to establish and check laying and jointing procedures. The test shall consist of smoke blown into closed-off sections of sewer under pressure and observing any smoke coming from the pipe line indicating the presence of leaks. Other supplementary smoke tests prior to backfilling may be performed by the Contractor at his option; however, any such tests shall not supplant the final tests of the completed work unless such final tests are waived by the Engineer.
2. Where the groundwater level is more than 1 foot above the top of the pipe at its upper end, the Contractor shall conduct either infiltration tests or low pressure air tests on the completed pipeline.
3. Where the groundwater level is less than 1 foot above the top of the pipe at its upper end, the Contractor shall conduct either exfiltration tests or low pressure air tests on the completed pipeline.

D. Low pressure air tests shall be made using equipment specifically designed and manufactured for the purpose of testing sewer lines using low pressure air. The equipment shall be provided with an air regulator valve or air safety valve so set that the internal pressure in the pipeline cannot exceed 8 psig.

1. The test shall be made on each manhole-to-manhole section of pipeline after placement of the backfill. The Engineer or his designated representative must be present to witness each satisfactory air test before it will be accepted as fulfilling the requirements of these Specifications.
2. Pneumatic plugs shall have a sealing length equivalent to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
3. Low pressure air passing through a single control panel, shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe at the time of test. However, the internal air pressure in the sealed line shall not be allowed to exceed 8 psig. When the maximum pressure exerted by the groundwater is greater than 4 psig, the Contractor shall conduct only an infiltration test.
4. At least two minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from control panel. The time required in minutes for the pressure in the section under test to decrease from 3.5 to 2.5 psig (greater than the maximum pressure exerted by groundwater that may be above the invert of the pipe) shall not be less than that shown in the following table:

Pipe in Diameter in Inches	Minutes
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5
30 & larger	13

5. When the sewer section to be tested contains more than one size of pipe, the minimum allowable time shall be based on the largest diameter pipe in the section, and shall be the time shown in the table reduced by 0.5 minutes.

E. Infiltration tests shall be made after underdrains, if present, have been plugged and other groundwater drainage has been stopped such that the groundwater is permitted to return to its normal level insofar as practicable.

1. Upon completion of a section of the pipeline, the line shall be dewatered and a satisfactory test conducted to measure infiltration for at least 24 hours. The amount of infiltration, including manholes, tees and connections, shall not exceed 100 gallons per nominal inch diameter per mile of sewer per 24 hours.

F. Exfiltration tests which subject the pipeline to an internal pressure, shall be made by plugging the pipe at the lower end and then filling the line and manholes with clean water to a height of 2 feet above the top of the sewer at its upper end. Where conditions between manholes may result in test pressures which would cause leakage at the plugs or stoppers in branches, provisions shall be made by suitable ties, braces and wedges to secure the plugs against leakage resulting from the test pressure.

1. The rate of leakage from the sewers shall be determined by measuring the amount of water required to maintain the level 2 feet above the top of the pipe.
2. Leakage from the sewers under test shall not exceed the requirements for leakage into sewers as hereinbefore specified.

G. The Contractor shall furnish suitable test plugs, water pumps, and appurtenances, and all labor required to properly conduct the tests. Suitable bulkheads shall be installed, as required, to permit the test of the sewer. The Contractor shall construct weirs or other means of measurements as may be necessary.

H. Should the sections under test fail to meet the requirements, the Contractor shall do all work of locating and repairing the leaks and retesting as the Engineer may require without additional compensation.

I. If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

END OF SECTION 02731

SECTION 02732 - SEWAGE FORCE MAINS

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to install force main piping together with all appurtenances as shown and detailed on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling, and Compacting for Utilities.

B. Section 02630 - Encasement Pipe

PART 2 - PRODUCTS

2.01 POLYVINYL CHLORIDE (PVC) PIPE (ASTM):

A. Pipe:

1. This Specification covers rigid polyvinyl chloride pipe and fittings, hereinafter called PVC pipe and PVC fittings, for sizes 3/4" through 12".
2. PVC pipe shall be extruded from Class 12454-B polyvinyl chloride material with a hydrostatic design stress of 2000 psi for water at 73.4° F, designated as PVC 1120, meeting ASTM Specifications D 1784-81 for material. Three-forths inch through 1-1/2 inch water service piping shall be PVC Schedule 80, Type IV, Grade 1, as specified in ASTM D 1785. Two inch through 12 inch pipe for sewage force main service shall be SDR 21 for 200 psi allowable working pressure at 73.4° F and a safety factor of 2.0, as specified in ASTM D 2241-80.
3. The pipe shall be homogeneous throughout and free from cracks, holes, foreign inclusions, or other defects. The pipe shall be uniform as commercially practical in color.
4. The workmanship, pipe dimensions and tolerances, outside diameters, wall thickness, eccentricity, sustained pressures, burst pressures, flattening, extrusion quality, marking and other requirements of ASTM D 2241-80 shall be conforming with all respects.
5. Pipe shall be furnished in 20 foot lengths. The pipe shall have a bell on one end. Male end of the pipe shall be beveled on the outside.
6. Pipe shall have a ring painted around the male end as to allow field checking of setting depth of pipe in the socket. This requirement is made

to assist construction superintendents and inspectors in visual inspection of the pipe installation.

7. Pipe must be delivered to the job site by means that will adequately support it, and not subject it to undue stresses. In particular, the load shall be so supported that the bottom rows of pipe are not damaged by crushing. Pipe shall be unloaded carefully and strung or stored as close to the final point of placement as is practical.
8. Pipe must not be exposed to the direct rays of the sun for extended periods of time. If pipe is not installed within 15 days after delivery to the job site, it shall be covered with black plastic.

B. Fittings:

1. Cast Iron/Ductile Iron: Cast iron/ductile iron mechanical joint type fittings with appropriate adapters shall be used with exterior PVC pipe sized 4-inch or larger. All such fittings shall be approved by the pipe manufacturer. The use of transition gaskets will not be allowed unless specifically approved by the pipe manufacturer.
2. Fittings for lines less than 4-inch diameter shall be PVC gasketed push-on type or socket glue-type manufactured specifically for the pipe class being utilized. All socket-glue type connections shall be joined with PVC solvent cement conforming to ASTM D2564. Product and viscosity shall be as recommended by the pipe and fitting manufacturer to assure compatibility. Solvent cement joints shall be made up in accordance with the requirements of ASTM D2855. Appropriate thrust blocks shall be provided for the fittings. PVC fittings for exposed installation and/or service mains shall be Schedule 80 conforming to the requirements of ASTM D2467.
3. All pipe and couplings shall bear identification markings that will remain legible during normal handling, storage and installation, which have been applied in a manner what will not reduce the strength of the pipe or the coupling or otherwise damage them. Pipe and coupling markings shall include the nominal size and OD base, material code designation, dimension ratio number, ASTM Pressure Class, ASTM designation number for this standard, manufacturer's name or trademark, seal (mark) of the testing agency that verified the suitability of the pipe material for potable-water service. Each marking shall be applied at intervals of not more than 5 feet for the pipe and shall be marked on each coupling.
4. All socket-weld connections shall be joined with PVC solvent cement conforming to ASTM D2564. Product and viscosity shall be as recommended by the pipe and fitting manufacturer to assure compatibility.
5. Solvent cement joints shall be made up in accordance with the requirements of ASTM D2855.

C. Joints:

1. Exterior Buried Pipe - Slip Joint Type:
   a. Exterior buried pipe shall be jointed with slip-type joints with rubber gaskets.
   b. Pipe with bells shall have all the parts of the bell, including the gasket groove, made from the same extruding piece, integral with the pipe, and shall be thickened to meet standard dimension ratios of wall thickness to outside diameter. The gasket groove shall be constructed such that gasket roll out will not occur. Rubber gaskets shall conform to ASTM D 3139-77.
2. Couplings: Coupling shall be same material as ductile iron pipe as specified in this section.

PART 3 - EXECUTION

3.01 LAYING DEPTHS

In general, force mains shall be laid with a minimum cover of 30 inches, except as otherwise indicated on the Drawings.

3.02 FORCE MAIN ENCASEMENT IN CONTROLLED DENSITY FILL

A. At locations shown on the Drawings, required by the Specifications, or as directed by the Engineer, force mains shall be encased in controlled density fill when the vertical clearance between the proposed sewer pipe crossing any existing water pipe is 18 inches or less, or when the horizontal distance between the proposed sewer pipe and an existing potable water pipe is less than 10 feet.

B. For sewer pipes crossing an existing water pipe, the controlled density fill shall fully encase the sewer pipe and extend to the spring line of the water pipe. Encasement shall extend in each direction along the sewer pipe until the encased sewer pipe is 10 feet from the water pipe, measured perpendicular to the water pipe. Controlled density fill shall flow between and under pipes to form a continuous bridge. Care shall be taken not to disturb the grade or line of either pipe or damage the joints.

C. For sewer pipes installed parallel to an existing water pipe, the controlled density fill shall be constructed in a 12-inch thick layer 6 inches above the sewer pipe for the width of the trench as indicated on the Drawings.

D. If necessary, pipes shall be braced to prevent flotation when placing controlled density fill.

3.03 LAYING PRESSURE PIPE

A. General:

1. Inspection of Materials:
   a. All pipe, fittings and accessories shall be subject to an inspection by the Engineer at the job site. Any damaged materials shall be repaired or replaced to the satisfaction of the Engineer. Should repairs to the piping materials be necessary, then same shall be made in the presence of the Engineer using proven methods prescribed by the pipe manufacturer.
   b. The HWEA's inspection of materials shall in no way relieve the Contractor or the Engineer of his responsibility.
2. Laying Requirements:
   a. Pressure pipe shall be laid to lines, cover or grades shown on the drawings.
   b. Pipes must be swabbed out before lowering into the trench. In the case of pipelines 3 inch through 16 inch, a swab must also be dragged through the pipe after it is in place. Larger size pipe shall be visually inspected for cleanliness and proper jointing.
   c. The points insisted upon in the laying of pipe will be: proper alignment, evenness of width and depth of joints, perfection in jointing, and care of the pipe in handling.
   d. Precautions must be taken to prevent flotation of the pipe should water enter the trench before putting the pipeline into operation.
   e. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of grade or alignment, or where the backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.
   f. Whenever pipe laying is stopped, the end of the pipe shall be securely plugged with the manufacturer's standard plug held in place by jute packing, caulked into place.
   g. Elbows, plugs, dead end valves, and tees shall be firmly blocked, as shown on the construction plans, to prevent internal pressure from springing the pipe from the intended alignment, with permanent materials solidly placed without covering pipe joints. Restrained type pipe joints can be substituted for thrust blocks with the Engineer's and HWEA's written permission. Pipe shall be free of all structures, other than manholes.
   h. No pipe shall be laid resting on solid rock, blocking or other unyielding objects. Jointing before placing in the trench and subsequent lowering of more than one section jointed together will not be allowed.

B. Blocking of Pipe at Bends and Ends:

1. General:
   a. All ductile and cast iron fittings shall be double polywrapped prior to the placement of concrete. Care shall be taken to avoid damage to the polywrap.
   b. Concrete thrust blocking must be allowed to cure, or protected as approved by the HWEA, before backfilling.
2. Horizontal Bends:
   a. Concrete thrust blocking required at bends in the horizontal plane shall be accomplished per the HWEA Standard Details for Construction of New Water Mains.
   b. The Contractor shall install concrete thrust blocking at each bend in the pipeline of five (5) degrees or greater to withstand maximum test pressure. The Contractor shall provide all material and labor to construct the concrete thrust blocking.
   c. Concrete thrust blocks shall be minimum dimension and size as indicated on the HWEA Standard Details for Construction of New Water Mains.
   d. Concrete used for thrust blocking shall have 3000 PSI compressive strength at 28 days.
3. Vertical Bends:
   a. The use of vertical bends in lieu of extra depth trenching shall be subject to permission by the Engineer and HWEA.
   b. Where the Contractor elects to use vertical bends, or where vertical bends are called for on the Construction Plans, the Engineer shall submit the blocking design, including calculations, to the Engineer for review and acceptance. Anchorages shall be designed to resist thrusts caused by the internal test pressure in the pipe. Protection against corrosion shall be inherent in the design.

C. Supplemental Backfilling Information:

1. General:
   a. Excavated materials from trenches and tunnels, in excess of quantity required for trench backfill, shall be disposed of by the Contractor. It shall be the responsibility of the Contractor to obtain location or permits for its disposal.
   b. Where sod is destroyed in areas maintained equivalent to residential yards, it shall be replaced on slightly ridged backfill on the trench, and where destroyed in areas adjacent to the trench, it shall be replaced by the Contractor with fresh sod. The timing of resodding shall be controlled by the Engineer. Ground shall be prepared and fertilized as herewith specified for seeded areas. In small patches, supplying of 3 inches of topsoil and raking may be substituted for disking.

c. Where pastures, thin grass or cover crops are destroyed by trenching, laying, backfilling, or tunneling operations, surfaces shall be prepared by disking, fertilizing, and seeding, as specified in Section 02930. The timing of this operation shall be controlled by the Engineer. Requirements of the Department of Highways for reseeding shall take precedence over these Specifications.

d. Before completion of the project, all backfills shall be reshaped, holes filled, and surplus materials hauled away and all permanent walks, streets, driveways, and highway paving and sod replacement (if such surface replacement items are included in the project) and reseeding performed.

e. Backfill material must be uniformly ridged over the trench, and excess hauled away. Ridged backfill shall be confined to the width of the trench and not allowed to overlap onto firm original earth, and its height shall not be in excess of material needed for replacement of settlement of backfill.

f. All rock, including crushed rock or gravel from construction, must be removed from yards and fields. Streets and walks shall be broomed to remove all earth and loose rock immediately following backfilling.

2. Special Requirements:

a. In case of street, highway, railroad, sidewalk and driveway crossings or within any roadway paving, or about manholes, valve and meter boxes in such paving, the following backfill material and procedure are required:

b. Fill the trench to within 6 inches of the surface with one of the following materials of limited compressibility, uniformly distributed without mechanical compaction.

(1) Kentucky Department of Highways No. 78 crushed stone, or other gradation acceptable to the Engineer. In order to accommodate compacted temporary surfacing it may be necessary to bulkhead or otherwise confine the stone fill at the open end of the trench.

c. Department of Highways requirements concerning backfilling will take precedence over the above general specifications where they are involved.

D. Tie-ins: A tie-in is defined as the removal of an existing plug or cap and the connecting of the new pipeline into the existing pipeline or fitting or valve at the joint opened by such removal.

3.04 JOINTING

A. Slip Jointed and Heat-Fusion Welded Pipe:

1. All pipe shall be laid with ends abutting and true to the lines and grades indicated on the plans. Pipe shall be fitted and matched so that when

laid in the Work, it will provide a smooth and uniform invert. Supporting of pipe shall be as set out in Section 02225 and in no case shall the supporting of pipe on blocks be permitted.

2. Before each piece of pipe is lowered into the trench, it shall be thoroughly swabbed out to insure it being clean. Any piece of pipe or fitting which is known to be defective shall not be laid or placed in the lines. If any defective pipe or fittings shall be discovered after the pipe is laid, it shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe. Bevel can be made with hand or power tools.
3. The interior of the pipe, as the Work progresses, shall be cleaned of dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted so as to exclude earth or other material and precautions taken to prevent floatation of pipe by runoff into trench.
4. Anchorage of Bends:
   a. At all tees, plugs, caps and bends of 11-1/4 degrees and over, and at reducers or in fittings where changes in pipe diameter occur, movement shall be prevented by using suitable harness, thrust blocks or ballast. Thrust blocks shall be as shown on the Drawings, with sufficient volumes of concrete being provided; however, care shall be taken to leave weep holes unobstructed and allow for future tightening of all nearby joints. Unless otherwise directed by the Engineer, thrust blocks shall be placed so that pipe and fitting joints will be accessible for repair.
   b. Bridles, harness or pipe ballasting shall meet with the approval of the Engineer. Steel rods and clamps shall be galvanized or otherwise rust-proofed or painted.

B. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has the opportunity to make an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the Contractor of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

C. All joint surfaces shall be cleaned immediately before jointing the pipe. The joint shall be lubricated in accordance with the pipe manufacturer's recommendations. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. All pipe shall be provided with home marks to insure proper gasket seating. Details of gasket installation and joint assembly shall follow the manufacturer's direction for the joint type and material of the pipe. The resulting joints shall be watertight and flexible.

D. Solvent Welded Pipe:

1. All rigid plastic pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations. When installed exposed, the pipe shall be supported or hung in accordance with the manufacturer's recommendations.
2. Containers of solvent cement shall be completely closed except when cement is being applied to pipe components. Should the solvent cement become lumpy or thickened, it shall be discarded, and a new container opened.
3. Schedule 80 threaded adapters shall be used where necessary to connect to a threaded valve or fitting.
4. Only strap wrenches shall be used for tightening threaded plastic joints, and care shall be taken not to overtighten those joints.
5. Solvent welded pipe shall not be laid or installed when the ambient temperature is below 40 degrees F, nor above 90 degrees F when exposed to direct sunlight. Ends to be joined shall be shielded from direct sunlight prior to and during the laying operation.
6. Provide adequate ventilation when working with pipe joint solvent cement.

3.05 FIELD QUALITY CONTROL

A. Testing Pressure Pipe for Leakage:

1. The Contractor will be required to test all pipelines and appurtenances with water after backfilling. The maximum test pressure, measured at the lowest elevation of the pipeline being tested, shall be the 200 psi or the pressure class of the pipe (To be determined by HWEA).
2. Backfilling before testing will be allowed, in the case of slip type or bolted joint pipe and at points where dangers to the public or other hazards demand that such be done immediately after pipe is laid.
3. When the line or section being tested is pumped up to the required pressure, it shall be valved off from the pump and a pressure gauge placed in the line. The pressure drop in the line, if any, shall be noted. If no pressure drop is noted in six hours, the Engineer and HWEA, at their discretion, may accept the line or section as tested, or may require the test run the full 24 hours.
4. At the end of the 24-hour test period, the pressure shall be recorded. If there is a drop in pressure, the Contractor will be required to pump the section being tested up to initial test pressure and maintain that pressure for 24 hours, measuring the amount of water required to accomplish this. The line will not be accepted until the leakage shall prove to be less than 10 gallons per inch diameter per mile of pipe per 24 hours.

5. Should there be leakage over the allowable amount, the Contractor will be required to locate and repair the leaks and retest the section.
6. If the leakage of a section of pipeline being tested is below the allowable amount, but a leak is obvious, in the opinion of the Engineer or HWEA, due to water at the surface of the ground, or by listening, the leak can be heard underground with the geophone, or any other means of determining a leak, the Contractor will be required to repair those leaks.
7. The Contractor shall furnish meter or suction tank, pipe test plugs, and bypass piping, and make all connections for conducting the above tests. The pumping equipment used shall be centrifugal pump, or other pumping equipment that will not place shock pressures on the pipeline. Power plunger or positive displacement pumps will not be permitted for use on closed pipe system for any purpose.
8. Inspection of pipe laying shall in no way relieve the Contractor of the responsibility for passing tests or correcting poor workmanship.
9. If in the judgment of the Engineer, it is impracticable to follow the foregoing procedures for any reason, modifications in the procedures shall be made as required and as acceptable to the Engineer, but in any event, the Contractor shall be responsible for the ultimate tightness of the line within the above test requirements.

END OF SECTION 02732

SECTION 02735 - MANHOLES AND PRECAST SEWAGE STRUCTURES

PART 1 - GENERAL

1.01 WORK INCLUDED

The Contractor shall furnish all labor, material, and equipment necessary to construct manholes for sanitary sewers, including frames, lids, and all appurtenances as shown and detailed on the Drawings and specified herein. Manhole materials shall be precast concrete as detailed on the Drawings. An internal flexible rubber frame seal and where necessary, an interlocking extension or extensions, shall be used to seal the entire chimney of all sanitary manholes.

1.02 RELATED WORK

A. Section 02225 - Excavating, Backfilling and Compacting for Utilities.

B. Section 02731 - Gravity Sewers.

C. Division 3 - Concrete.

1.03 REFERENCE STANDARDS

The latest editions of the following standards shall be considered a part of these specifications. In case of conflict, these specifications shall take precedence over the listed standard.

A. American Association of State Highway and Transportation Officials (AASHTO).

1. "Standard Specifications for Highway Bridges".

B. ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete.

C. ACI 318 - Building Code Requirements for Reinforced Concrete.

D. ASTM A48 - Standard Specification for Gray Iron Castings.

E. ASTM C443 - Standard Specification for Joints of Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets.

F. ASTM C478 - Specification for Precast Reinforced Concrete Manholes Sections.

G. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

H. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.

I. ASTM C890 - Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.

J. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.

K. ASTM C923 - Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures Pipes and Laterals.

L. ASTM C1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.

M. Kentucky Transportation Cabinet/Department of Highways (KDOH) - Standard Specifications for Road and Bridge Construction

1.04 QUALITY ASSURANCE

A. Precast concrete producer shall demonstrate adherence to the standards set forth in the National Precast Concrete Association Quality Control Manual. Precast concrete producer shall meet the following requirements:

1. NPCA Certification - The precast concrete producer shall be certified by the National Precast Concrete Association's Plant Certification Program prior to and during production of the products for this project.
2. Qualifications, Testing and Inspection.

a. The precast concrete producer shall have been in the business of producing precast concrete products similar to those specified for a minimum of 5 years. The precast concrete producer shall maintain a permanent quality control department or retain an independent testing agency on a continuing basis. The agency shall issue a report, certified by a registered engineer, detailing the ability of the precast concrete producer to produce quality products consistent with industry standards.

b. The precast concrete producer shall show that the following tests are performed in accordance with the ASTM standards indicated.

Tests shall be performed for each 150 cu. yd. of concrete placed, but not less frequently than once per week.

3. Slump: C143.
4. Compressive Strength: C31, C192, C39.
5. Air Content (when air-entrained concrete is being used): C231 or C173.
6. Unit Weight: C138.

a. The precast concrete producer shall provide documentation demonstrating compliance with this subparagraph.
b. The owner may place an inspector in the plant when the products covered by this specification are being manufactured.
c. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the precast sections.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handling: Products shall be stored, handled shipped and unloaded in a manner to minimize damage. Lifting holes or inserts shall be consistent with industry standards. Lifting shall be accomplished with methods or devices intended for this purpose.

B. Acceptance at Site: The Owner's representative shall make final inspection and acceptance of the precast concrete products upon arrival at the jobsite.

PART 2 - PRODUCTS

2.01 CONCRETE MANHOLES - GENERAL

A. Manholes: ASTM C478 shall conform, in shape, size, dimensions, materials, and other respects, to the details indicated on the Drawings.

1. Concrete manholes shall be minimum 4-foot inside diameter with precast reinforced concrete developed bases. Invert channels shall be factory constructed when the base is made. Sloping invert channels shall be constructed whenever the difference between the inlet and outlet elevation is 2 feet or less. The inverts of the developed bases shall conform accurately to the size of the adjoining pipes. Side inverts shall be curved and main inverts (where direction changes) shall be laid out in smooth curves of the longest possible radius which is tangent, within the manhole, to the centerlines of adjoining pipelines. Manholes shall have cast-in-place or plastic formed inverts which shall be installed after construction of the manhole.

2. The concrete manhole walls (risers and cones) shall be precast concrete sections. Minimum strength of the concrete for the precast sections shall be 4,000 psi at the time of shipment.
3. Manholes with a diameter of 5 feet or larger shall have a base slab.
4. Joints: ASTM C443 rubber gasket.
5. Grade Rings: ASTM C478 or ASTM D1248.
6. Flat Slab Tops : ASTM C478. Provide with 60-inch spigot for risers on base sections for 54-inch and 60-inch sewers.
7. Liner: Agru Sure-Grip.
8. Manhole frames and lids shall be as specified hereinafter in this Section.

B. Manholes shall be manufactured by Sherman Dixie, Rinker or approved equivalent.

2.02 PRECAST CONCRETE SECTIONS

A. Precast concrete sections and appurtenances: ASTM C478 with the following exceptions and additional requirements.

1. The wall sections shall be not less than 5 inches thick.
2. Only Type II cement shall be used except as otherwise specified.

B. Joints between sections shall be made watertight through the use of rubber O-ring gaskets or rubber profile gaskets. Gaskets shall conform to the ASTM C443. Rope mastic or butyl mastic sealant shall not be allowed except as sealant between the cone section, any adjusting sections or rings, and the frame casting.

C. Joints between grade rings shall be sealed with ASTM C443 1-inch O-ring gasket.

2.03 MANHOLE FRAMES AND LIDS

A. Cast-iron manhole frames and lids shall meet the requirements shown on the Drawings, or as specified.

1. The castings shall be of good quality, durable, evengrained cast iron, smooth, free from scale, lumps, blisters, sandholes, and defects. Contact surfaces of covers and frame seats shall be machined to prevent rocking of lids.
2. Castings ASTM A48, minimum Class 35.
3. Minimum manhole frame opening shall be 23 inches in diameter. The lids shall have two (2) pick holes about 1-1/4 inches wide and ½ inches deep with 3/8-inch undercut all around. Covers shall not be perforated unless otherwise indicated

4. All lids shall be marked in large letters "SANITARY SEWER" in the center, as shown on the Drawings.

B. Standard frames and lids: heavy duty, non-rocking Neenah R-1733 or approved equivalent. Watertight frames and lids: heavy duty, non-rocking Neenah R-1916E or approved equivalent.

2.04 PIPE CONNECTOR SYSTEM

A. All holes for pipe connections in manhole and wetwell barrels and bases shall have a factory-installed flexible rubber pipe connector system to prevent infiltration. The pipe connector system shall conform to the latest revision of ASTM C923.

B. For manholes of 12 feet or less in depth, without the presence of ground water, the pipe connector system shall be A-Lok Manhole Pipe Seal as manufactured by A-Lok Corporation, Trenton, NJ; Contour Seal or Kor-N-Seal as manufactured by National Pollution Control Systems, Inc., Nashua, NH; PSX as manufactured by Press-Seal Gasket Corporation, or an approved equivalent.

C. For manholes of 12 feet or greater in depth, or when ground water is present, the pipe connector system shall be A-Lok Manhole Pipe Seal as manufactured by A-Lok Corporation, Trenton, NJ, or an approved equivalent.

2.05 GRADE RINGS

A. All grade adjustments of manhole frame and cover assemblies shall be completed utilizing reinforced concrete grade rings or injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc. or approved equal.

B. Reinforced Concrete Grade Adjustment Rings

1. Precast reinforced concrete grade adjustment rings shall conform to ASTM C478 and shall be free from cracks, voids and other defects.
2. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges.
3. Installation shall be according to the manufacturer's recommendations and the following procedure:

    a. Clean the concrete cone or top slab with a whisk broom or chisel to assure a flat sealing surface free of rocks, gravel, blacktop, protruding concrete, frozen, and other debris.

b. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within 1/4-inch of grade with the cover frame in place.
c. Determine the best rings height combination to achieve necessary adjustment.
d. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply two strips of Conseal or approved equal to the cone or top slab around the entire circumference, overlapping the ends.
e. Place the first ring down onto the cone or top slab.
f. Apply two strips of Conseal or approved equal to the top of the first grade ring around the entire circumference, overlapping the ends.
g. Place the second ring down onto the first ring.
h. Continue the assembly per steps f) and g) for each adjustment ring being used.
i. Prior to setting the cover frame in place, apply two strips of Conseal or approved equal to the last rings around the entire circumference, overlapping the ends.
j. Set the cover frame in place, centered on the top ring.

C. High Density Polyethylene (HDPE) Grade Adjustment Rings

1. Plastic adjustment rings shall be manufactured from Polyethylene plastic as identified in ASTM D 1248 (Standard Specification for Polyethylene Plastic Molding and Extrusion Materials). Material properties shall be tested and qualified for usage per the ASTM Test Methods reference in ASTM D 1248. Recycled material meeting the above requirement may be used.
2. Plastic adjustment rings shall be manufactured utilizing the injection molding process as defined by the Society of Plastic Engineers (SPE).
3. The adjustment rings shall be tested to assure compliance with impact and loading requirements per AASHTO's Standard Specification for Highway Bridges.
4. Installation shall be according to manufacturer's recommendations and the following procedure.

    a. Clean the concrete cone or top slab with a whisk broom or chisel to assure a flat seating surface free of rocks, gravel, blacktop, protruding concrete, frozen or other debris.
    b. Measure the distance from the cone or top slab to the projected finish grade and deduct for the cover frame. Determine the net buildup of rings necessary to come within 1/4-inch of grade with the cover frame in place.

c. Determine the best ring height combination to attain necessary adjustment. Molded slope rings shall be used to match grades of paved surfaces that are not flat. Molded slope rings shall be used to match grades of paved surfaces that are not flat. Molded slope rings shall be used to accommodate other grades that are not flat only when directed by the ENGINEER.
d. Dry stack rings on cone. Index any slope rings as necessary. Place cover frame casting on top of the assembly and verify height and slope match.
e. Mark the entire stack with a vertical line and disassemble.
f. Use mortar to create a flat sealable surface if the cone or top slab is too badly chipped or damaged to attain a good seal. Apply a 1-inch by 1-inch Conseal as close to the male lip at the bottom of the first ring as possible.
g. Place the first ring down onto the cone or top slab with the male lip into the opening, aligning the vertical line.
h. Apply a 3/8-inch bead of approved butyl rope on the bottom of the next ring, as close to the male lip as possible around the entire 360° of the ring.
i. Place the second ring down onto the first ring with the male lip interlocking into the center, aligning the vertical line.
j. Apply the assembly per step h) and I) for each adjustment ring being used.
k. Prior to setting the cover frame in place, apply 1-1-inch by 1-inch Conseal inch bead of approved butyl sealant on top of the last ring. Apply the sealant in a location to contact the cover frame the full 360°.
l. Set the cover frame in place, centered on the top ring. Apply sufficient butyl rubber to achieve 10-inch vacuum test if required.

5. All HDPE adjustment rings shall be covered by a full two year warranty that warrants the adjustment rings for two years from the date of installation against defects in materials. Any defective adjustment rings shall be replaced at no cost to the OWNER.

2.06 ACCESSORIES

A. Straps: 306 stainless steel minimum 3-inch wide x 12-inch long x 0.25 inch thick.

B. Strap Anchors: Stainless steel 0.625-inch Hilti Kwik Bolt II stud version expansion anchor or equal with stainless steel washers and nuts. Verify length with connection location.

C. Frame Anchors: Stainless steel 0.625-inch Hilti Kwik Bolt II stud version expansion anchor or equal with stainless steel washers and nuts. Verify length with connection location.

D. Grade Ring Anchors: stainless steel 0.625-inch diameter x maximum 16-inch long threaded rod, washers and nuts with stainless steel Hilti HDI drop-in anchor or equal.

PART 3 - EXECUTION

3.01 FABRICATION - PRECAST SECTIONS

A. Prior to placement of reinforcing steel and concrete, secure liner with sealing strips and joint splices to formwork in accordance with the liner manufacturer recommendations to provide continuous uniform surface.

B. No more than two (2) lift holes or inserts may be cast or drilled in the exterior of each section.

C. Acceptance of the sections will be on the basis of material tests and inspection of the completed product and test cylinders if requested by the Engineer.

3.02 PREPARATION

A. Excavation, Backfill and Compaction shall be in accordance with Section 02225.

B. Foundations: Shall be obtained by removal and replacement of unsuitable material with well graded granular material; or by tightening with coarse ballast rock; or by such other means as provided for foundation preparation of the connected sanitary sewer. Where water is encountered at the site, cast-in-place base or monolithic structures shall be placed on a one-piece waterproof membrane, so placed as to prevent any movement of water into the fresh concrete.

C. Bedding: Shall be a well-graded granular bedding material conforming to the requirements for sewer pipe bedding material but not less than 4 inches in thickness and extending either to the limits of the excavation or to a minimum of 12 inches outside the outside limits of the base section. In the latter case, the balance of the excavated area shall be filled with borrow well tamped to the level of the top of the bedding to positively prevent any lateral movement of the bedding when the weight of the manhole is placed upon it. The bedding material shall be firmly tamped and made smooth and level to assure uniform contact and support of the manhole.

D. Pipe connections to existing manholes shall be made so that finish work will conform as nearly as practicable to the applicable requirements specified for new manholes, including all necessary concrete work, cutting, and shaping. The connection shall be centered on the manhole. Holes for the new pipe shall be of sufficient diameter to allow packing cement mortar around the entire periphery of the pipe but no larger then 1.5 times the diameter of the pipe. Cutting the manhole shall be done in a manner that will cause the least damage to the walls.

E. Cutting into piping for connections shall not be done except in special approved cases. When the connecting pipe cannot be adequately supported on undistributed earth or tamped backfill, the pipe shall be encased in concrete backfill or supported on a concrete cradle as directed. Concrete required because of conditions resulting from faulty construction methods or negligence by the Contractor shall be installed at no additional cost to the Government. The installation of wye branches in an existing sewer shall be made by a method which does not damage the integrity of the existing sewer. One acceptable method consists of removing one pipe section, breaking off the upper half of the bell of the next lower section and half of the running bell of wye section. After placing the new section, it shall be rotated so the broken half joint packing and cement mortar.

F. Where indicated on the Drawings, stub-outs of the specified size for future lateral connections shall be constructed. The pipe used for stubbing out shall extend a nominal 2 feet beyond the outside of the manhole barrel and shall terminate with a bell end (or spoigot end if applicable.) The pipe shall be sealed with an approved, prefabricated plug or cap conforming to the joint detail of the pipe supplied. For large sewers, a short section of pipe (not more than 4 feet in length) sealed at one end may be installed on the manhole stub. Shop Drawings shall be submitted for approval. The use of brick or concrete as a means of plugging will only be authorized on sewers to be abandoned. Unless otherwise provided for the Proposal or noted elsewhere on the Drawings, stub-outs will be considered to be incidental to the construction of manholes and all costs incurred shall be included in the unit price for the manhole structure.

3.03 SETTING PRECAST SECTIONS

A. Construct base slab of cast-in-place concrete or use precast concrete base sections. Make inverts in cast-in-place concrete and precast concrete bases with a smooth-surfaced semi-circular bottom conforming to the inside contour of the adjacent sewer sections. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit. For cast-in-place concrete construction, either place or cast bottom slabs and walls integrally or key and bond walls to bottom slab. No parging will be permitted on interior manhole walls. For precast concrete construction,

make joints between manhole sections with the gaskets specified for this purpose; install in the manner specified for installing joints in concrete piping. Parging will not be required for precast concrete manholes. Cast-in-place concrete work shall be in accordance with the requirements specified under paragraph entitled "Concrete Work" of this section. Make joints between concrete manholes and pipes entering manholes with the resilient connectors specified for this purpose; install in accordance with the recommendations of the connector manufacturer. Where a new manhole is constructed on an existing line remove existing pipe as necessary to construct the manhole. Cut existing pipe so that pipe ends are approximately flush with the interior face of the manhole wall, but not protruding into the manhole. Use resilient connectors as previously specified for pipe connectors to concrete manholes.

B. Pre-Cast Base Section Placement: Shall be placed on the prepared bedding so as to be fully and uniformly supported in true alignment and making sure that entering pipes can be inserted on proper grade.

C. Precast reinforced concrete sections shall be set so as to be vertical and with sections in plumb alignment.

D. Rubber gaskets shall be installed in all section joints in accordance with the manufacturer's recommendations or epoxy grout in accordance with manhole manufacturer recommendation.

E. All lift holes in sections shall be thoroughly plugged with rubber plugs made specifically for this purpose or epoxy grout in accordance with manhole manufacturer recommendations.

F. Liner joints shall be sealed in accordance with manufacturer recommendations.

G. The manholes shall be of watertight construction. Manhole lids shall be in place in the frames on completion of work at the manholes.

H. Clean manhole structures of all debris prior to installation of frames and testing.

3.04 SETTING MANHOLE FRAMES AND LIDS

A. Top of manholes shall be flush with finished lawns, landscaped areas and pavements and shall not project above the existing ground level more than 12 inches in other areas unless otherwise indicated on the plans.

B. The Contractor shall coordinate elevations of manhole covers in paved streets with the Owner. Properly slope and install casting to match existing pavement surface. If resurfacing of the street in which sewers are laid is scheduled within twelve (12) months, top of frame and lid shall be set 1-1/2 inches above the existing pavement surface in anticipation of the resurfacing operations, unless otherwise approved by Owner and Street Authorities.

3.05 VACUUM TESTING OF MANHOLES AND PRECAST SEWAGE STRUCTURES

A. Manholes shall be tested in accordance with ASTM C1244, after installation with all connection in place. The vacuum test method is intended to demonstrate the condition of manholes prior to backfill. It may also be used to test manholes after backfilling; however, testing should be correlated with the connector supplier.

B. Where groundwater is present in the excavation and trenches, the Contractor shall take any necessary steps (including construction of a piezometric tube adjacent to the manhole) to determine the depth of groundwater above the invert of the manhole at the time of testing, at no additional cost to the Owner. Information concerning groundwater levels above the invert shall be used to determine the amount of vacuum applied during the test.

C. A vacuum test for manholes **shall** include testing of the joint seal between the cast iron frame and the concrete cone, top slab, and any grade rings. Where a hatch and cover are provided in the top of a precast sewage structure, the Contractor shall provide a means of establishing a seal over the hatch, unless the Drawings and notes indicate that the hatch is to be tested for vacuum.

D. Prior to the test, the following items shall be complete:

1. Lift holes, if any, shall be plugged with an approved, non-shrink grout prior to testing.
2. Drop connections, if any, shall be installed prior to testing.

E. Testing Procedure:

1. Temporarily plug, with the plugs being braced to prevent the plugs or pipes from being drawn into the manhole, all pipes entering the manhole at least eight inches into the sewer pipe(s). The plug must be inflated at a location past the manhole/pipe gasket.
2. The test head shall be placed on the top of the conical, over the manway opening in a flat top, or (in the case of a wetwell or valve vault) over such adapter as may be required, and inflated in accordance with the manufacturer's recommendations.

3. A vacuum of 10-inches of mercury shall be drawn on the manhole, or such lesser amount of vacuum that the combined vacuum and positive external head pressure from groundwater does not exceed the recommended pressure ratings for the pipe connector system. The vacuum shall be measured by a test gauge which shall be liquid filled, having a 3.5-inch diameter face, reading from zero to thirty inches of mercury.
4. The indicated vacuum (as determined under the preceding paragraph) shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop 1-inch of mercury.
5. The manhole shall be considered to pass the vacuum test if the time for the vacuum reading to drop 1-inch of mercury meets or exceeds the values indicated in the following table:

Minimum Test Times for Various Manhole Diameters (seconds)									
Depth	**Diameter (inches)**								
(ft)	**30**	**33**	**36**	**42**	**48**	**54**	**60**	**66**	**72**
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	28	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	58	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	69	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

6. If a manhole fails the vacuum test, the manhole shall be repaired with a non-shrinkable grout or other suitable material based on the material of which the manhole is constructed and retested, as stated above.
7. Failure of this vacuum test shall not preclude acceptance by appropriate water infiltration of exfiltration testing, or such other means as may be accepted by the Engineer.
8. All temporary plugs and braces shall be removed after each test.

3.06 RESTORATION

A. Grade around manhole in unpaved areas to match adjacent contours and for positive drainage away from manhole lid.

B. Protect manholes during pavement restoration. Clean casting and lid after pavement restoration is complete.

END OF SECTION 02735

SECTION 02930 - RESTORATION OF LAWNS AND GRASSES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

The work covered by this section shall include the establishment or restoration of all ground cover including areas to be seeded and/or sodded. This work shall include the supply of all materials, labor, superintendence and maintenance as outlined in these specifications.

1.02 SCOPE OF THE WORK

Restoration of Lawns and Grasses by seeding and/or sod placement shall be performed on all areas which are not occupied by structures, roads, curbs and gutters, sidewalks, and concrete slab walls, etc.

PART 2 - PRODUCTS

2.01 SEED

A. The seed for use on this project shall be of the type as listed below with the listed germination and purity qualifications.

Species	Percent of Purity	Percent of Germination
Tall Fescue (KY-31) (Festuca arundinacea)	98.5	80
Ryegrass (Lolium multiflorium)	98.0	90
Oats (Avena sativa)	98.0	90
Rye, grain (Secale cereal)	97.0	85
Redtop (Agrostis alba)	90.0	80

B. All seed shall be fresh and clean and shall be delivered mixed, in unopened packages, bearing a guaranteed analysis of the seed and mixture.

2.02 SOD

A. Sod shall be bluegrass or fine fescue sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1/2 inches and shall have not less than 3/4 inches of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.

B. The sod shall be delivered and installed within 48 hours of being harvested by the producer.

2.03 FERTILIZER

A complete commercial fertilizer with a 1:2:2 ratio of nitrogen, phosphorus, and potassium shall be furnished. It shall be free flowing and suitable for application with approved equipment. The material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer.

2.04 LIME

Lime shall be agricultural grade limestone crushed so that no less than 85% will pass a No. 10 sieve.

PART 3 - EXECUTION

3.01 SEQUENCE OF WORK

All finish grading in a general area shall be complete before fertilizing and seeding or sodding begins.

3.02 SOIL PREPARATION AND SEEDING

A. The work consists of furnishing all labor, equipment, and materials in all operations in connection with the fertilizing and seeding of all the finished graded areas not occupied by structures, roads, concrete slabs, sidewalks, walls, etc., and including grassed areas destroyed or damaged by the Contractor.

B. The areas to be seeded shall be thoroughly tilled to a depth of at least 4 inches by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer or, in the event of work on an existing utility easement, to the satisfaction of the easement holder. After harrowing or discing, the seed bed shall be dragged and/or hand raked to finish grade.

2.02 SOD

A. Sod shall be bluegrass or fine fescue sod strongly rooted and free of pernicious weeds. It shall be a uniform thickness of not more than 1 1/2 inches and shall have not less than 3/4 inches of soil. All sod shall be grown on a commercial turf farm and no pasture sod shall be acceptable. The source of the sod must be approved by the Engineer before it is cut for delivery.

B. The sod shall be delivered and installed within 48 hours of being harvested by the producer.

2.03 FERTILIZER

A complete commercial fertilizer with a 1:2:2 ratio of nitrogen, phosphorus, and potassium shall be furnished. It shall be free flowing and suitable for application with approved equipment. The material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer.

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B. The areas to be seeded shall be thoroughly tilled to a depth of at least 4 inches by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer or, in the event of work on an existing utility easement, to the satisfaction of the easement holder. After harrowing or discing, the seed bed shall be dragged and/or hand raked to finish grade.

B. The areas where sod is to be placed shall be thoroughly tilled to a depth of at least 4 inches by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer or, in the event of work on an existing utility easement, to the satisfaction of the easement holder . After harrowing or discing, the sod bed shall be dragged and/or hand raked to 1/2" below finish grade.

C. The incorporation of the fertilizer and the agricultural lime may be a part of the tillage operation and shall be applied not less than 24 hours nor more than 48 hours before the sod is to be placed. Fertilizer shall be applied at a rate to provide not less than 2 1/2 pounds of nitrogen, 5 pounds of phosphorus, and 5 pounds of potash per 1,000 square feet. Agricultural limestone shall be applied at a rate of not less than 100 pounds per 1,000 square feet.

D. Prior to the sod being placed, the area to be sodded shall be lightly watered to moisten the soil surface. The sod shall be carefully unrolled and trimmed to fit irregular areas, with the edges of the sod strips placed tightly together in such a manner as to conceal the joints between the strips. Following placement, the sod shall be lightly watered (approximately a 1/4" application) and rolled with a medium weight lawn roller to minimize any ridging at the seams.

E. Sod may be placed whenever the sod is not dormant, and the ground is not frozen or muddy. Sod may not be placed at any other time.

F. For a period of first two weeks following placement, the sod shall be maintained by thoroughly watering the entire area covered by the sod every second day, with a 1/2" minimum application by sprinklers or a misting hose. Lawn watering gauges shall be used to measure the application. Flooding or sheet watering will not be allowed. For the third through sixth weeks following placement, the sod shall be maintained by thoroughly watering the entire area covered by the sod twice weekly (three to four days apart), with a 1/2" minimum application by sprinklers or a misting hose. Lawn watering gauges shall be used to measure the application. Flooding or sheet watering will not be allowed.

G. Actual rainfall event amounts received during the period of watering may be counted towards the required application totals when the amount of the rainfall exceeds 1/4" per event.

H. In the third through sixth week following placement, the Contractor shall maintain the sodded areas by mowing to a height of not less than three inches, prior to water applications. Contractor shall not allow sod blade height to exceed five inches during this period.

I. Following the six-week watering period, the area covered by the sod will be rolled one additional time with a medium weight lawn roller, and shall be inspected by the Owner for acceptance.

END OF SECTION 02930

Division 3 - Concrete

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section includes cast-in-place concrete, formwork, reinforcing steel and related accessories in conformance with the requirements of ACI 301-84 (Rev. 1988), Specifications for Structural Concrete for Buildings that is hereby made a part applicable projects except as modified by the Supplemental Requirements under PART 3 - EXECUTION, this Section.

B. ACI 301-84 (Rev. 1988) is the latest consensus standard publication on concrete work and, as modified by the Supplemental Requirements in PART 3 - EXECUTION, this Section, is a complete specification. ACI 301-84 (Rev. 1988) is part of Field Reference Manual ACI Publication SP-15 (1988) which includes pertinent ACI and ASTM standards considered helpful and necessary job-site reference. The Supplemental Requirements can easily be noted or clipped and taped in SP-15 (1988) for ready referral. The Contractor shall keep at least one copy of SP-15 (1988) on the job site at all times.

C. PART 2 - PRODUCTS, this Section, includes the common concrete ingredients of cement, aggregate and water plus admixture and grout and other concrete related items such as reinforcing steel, waterstop and joint materials. These products are also generally addressed under PART 3 - EXECUTION in ACI 301-84 (Rev. 1988) with modifications.

D. The work also includes furnishing all labor, materials, equipment and incidentals required to place anchor bolts, inserts, reglets, flashing, pipe sleeves, conduits and other items to be embedded or passed through the concrete as specified under other sections or as shown on the Construction Plans.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General

1. Before construction, the Engineer shall submit in writing to the HWEA the name, address and qualifications of the ready-mix supplier who will furnish concrete for the project. The testing laboratory shall also receive a copy of this Section of the project Specifications.

2. Also refer to ACI 301-84 (Rev. 1988) and Supplemental Requirements under PART 3 - EXECUTION, this Section.

B. Cement (ACI Section 2.1)

1. Portland cement for concrete and mortar shall conform to ASTM C 150-86, Type I.
2. The Engineer or HWEA may require the Contractor to deliver cement to a testing laboratory for tests according to ASTM Specification C 150-86 for Type I. Should cement fail the tests, the Contractor shall pay for the tests and the Engineer or HWEA shall have the right to reject the brand.
3. Cement for tests shall be delivered in four-ply paper bags with supplier and source identified in writing. Cement shall be stored in a dry location for not longer than 90 days after delivery from the mill.

C. Admixtures (ACI Section 2.2)

1. The air-entraining admixture for concrete shall conform to ASTM C 260-86, and shall be American Admixtures' AMEX, Master Builders' Micro-Air, W. R. Grace's Darex AEA, or equal.
2. The water-reducing admixture for concrete shall conform to ASTM C 494-86 for Type A (water-reducing admixtures) and shall be American Admixtures' Lubricon 300, Master Builders' Pozzolith 322N or 344N, as recommended by Master Builders for the brand of cement to be used, or equal. The water-reducing, set-retarding admixture for concrete shall conform to ASTM C 494-86 for Type D (water-reducing and retarding admixtures) and shall be American Admixtures' Lubricon R, Master Builders' Pozzolith 300R, or equal.

D. Water (ACI Section 2.3)

1. Water shall be clean and free from harmful amounts of oils, acid, alkali, organic matter, or other deleterious substances.
2. When subjected to the mortar strength test described in ASTM C 87-83, the 28-day strength of mortar specimens made with the water under examination and normal Portland cement shall be at least 100 percent of the strength of similar specimens made with distilled water.
3. Potable tap water will normally fulfill the above requirements.

E. Fine Aggregate (ACI Section 2.4)

1. Fine aggregate shall consist of clean, well-graded particles of hard, durable sand and shall contain limited amounts of deleterious substances. It shall be washed Ohio, Scioto, or Cumberland River sand. Most Tennessee River sand, bank sands, and limestone fines are not acceptable.

2. Sand shall be graded according to Section 804 of the Kentucky Transportation Cabinet, Department of Highways Standard Specifications for Road and Bridge Construction, 1994 Edition.

	Percent
Passing 3/8 Inch Sieve	100
Passing No. 4 Sieve	90-100
Passing No. l6 Sieve	45-80
Passing No. 50 Sieve	5-25
Passing No. l00 Sieve	0-8

3. Sand shall meet the requirements of these Specifications and the specifications and tests listed below:

Deleterious Substances	- Par. 5 - ASTM Designation C 33-86.
Soundness	- Par. 6 - ASTM Designation C 33-86.
Organic Impurities	- ASTM Designation C 40-88.

F. Coarse Aggregate (ACI Section 2.4)

1. Coarse aggregate shall be washed river gravel or crushed limestone of hard durable particles and shall contain limited amounts of deleterious substances. Crushed limestone shall come from ledges of a quarry approved by the Kentucky Transportation Cabinet, Department of Highways for use in reinforced concrete untreated bridge superstructures above the tops of the caps, excluding pedestals.

2. Coarse aggregate shall be either No. 57 or No. 67 graded according to Section 805 of the Kentucky Transportation Cabinet, Department of Highways Standard Specifications for Road and Bridge Construction, 1994 Edition. Refer to Section 3.6 of ACI 301-84 (Rev. 1988) for maximum size of coarse aggregate.

	Percent By Weight	
	No. 57	No. 67
Passing l-l/2-Inch Square Sieve	100	
Passing l-Inch Square Sieve	95-l00	100
Passing 3/4-Inch Square Sieve	90-100	
Passing 1/2-Inch Square Sieve	25-60	
Passing 3/8-Inch Square Sieve	20-55	
Passing No. 4 Square Sieve	0-10	0-10
Passing No. 8 Square Sieve	0-5	0-5

3. Coarse aggregate shall meet the requirements of these specifications and the specifications and tests listed below:

Deleterious Substances	Par. 9 - ASTM Designation C 33-86.
Soundness	Par. 9 - ASTM Designation C 33-86.
Abrasion	Par. 9 - ASTM Designation C 33-86.

G. Reinforcing Steel (ACI Section 5.2)

1. Unless otherwise required or permitted, concrete reinforcing bars shall conform to grade 60 deformed bars and shall meet requirements of Deformed and Plain Billet-Steel Bars for Concrete Reinforcement (ASTM A 615-87a), Rail-Steel Deformed and Plain Bars for Concrete Reinforcement (ASTM A 616-87) or Axle-Steel Deformed and Plain Bars For Concrete Reinforcement (ASTM A 617-87). All other reinforcement and details shall conform to ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318-83).
2. Before steel is shipped to job, the reinforcing steel supplier shall submit to the Engineer, two certified copies of mill tests on all steel to be used in the work. The tests shall prove that chemical and physical properties of the steel comply with the requirements of the governing specification.
3. The Engineer may require the Contractor to deliver samples of reinforcing steel to a testing laboratory, to determine compliance with governing specifications.

PART 3 - EXECUTION

3.01 Concrete work shall conform to all requirements of ACI 301-84 (Rev. 1988) Specifications for Structural Concrete for Buildings.

END OF SECTION 03300

Division 4 through 8 – Not Used

Division 9 - Finishes

SECTION 09851 – CHEMICAL RESISTANT CONCRETE COATING SYSTEM

PART 1 – GENERAL

1.1 WORK INCLUDED

A. This section covers workmanship, materials, and quality requirements for coating new or rehabilitated concrete structures, not including wetwells to be rehabilitated by lining.

1.2 REFERENCES

A. ICRI (International Concrete Restoration Institute): Guideline No. 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

B. NACE International: Standard Recommended Practice, Discontinuity (Holiday) Testing of Protective Coatings.

C. National Association of Pipe Fabricators: NAPF 500-03-04 Abrasive Blast Cleaning.

D. SSPC (The Society for Protective Coatings): SSPC-SP13 - Surface Preparation of Concrete, SSPC-SP5 - White Metal Blast Cleaning.

1.3 QUALITY ASSURANCE

A. Requirements:

1. Use only products of approved manufacturers. Use products of one manufacturer in any one chemical resistant coating system with compatible materials. Provide same material product for touch-up as for original material.
2. Make available all locations and phases of the work for access by the Engineer or other personnel designated by the Engineer. The Contractor shall provide ventilation and means to safely access the coating work areas for inspection.

3. Conduct work so that the chemical resistant coating system is installed as specified herein. Inspect work continually to ensure that the system is installed as specified. The Contractor shall provide for independent verification that the work has been performed in accordance with the specifications. The independent verifier is subject to acceptance by the Owner and Engineer.
4. Employ only tradespeople who have experience performing chemical resistant coating work of similar size and complexity as the work specified in this Section. Applicators must be acceptable to the manufacturer of the chemical resistant coating system.

1.4 SUBMITTALS

A. Submit the following prior to commencing with any phase of the work covered by this Section:

1. Manufacturer's current printed recommendations and product data sheets for all coating system products supplied under this section including performance criteria, surface preparation and applications, volatile organic compound (VOC) data, and safety requirements.
2. Material Safety Data Sheets (MSDS) for any materials brought on-site including all chemical resistant coating system materials, solvents, and abrasive blast media.
3. Storage requirements including temperature, humidity, and ventilation for resurfacing system materials.
4. Manufacturer's requirements, including application procedures for resurfacing materials, shall be in writing and shall be followed in detail. All safety precautions recommended by the manufacturer shall be strictly adhered to at all times when work is in progress.
5. Submit daily reports that contain the following information: substrate conditions, ambient conditions, application procedures, work completed and location thereof. Mark-up drawings that show location of work.

1.5 DELIVERY AND STORAGE

A. Materials shall be stored in accordance with Manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life recommended by the manufacturer shall be removed from the site.

B. Deliver all materials to the jobsite in their original, unopened containers. Each container shall bear the Manufacturer's name and label.

1. Labels on all material containers must show the following information:
   a. Name or title of product.
   b. Manufacturer's name.
   c. Generic type of material.
   d. Manufacturer's batch number and date of manufacture.
   e. Application and mixing instructions.
   f. Hazardous material identification label.
   g. Shelf life date.
   h. Storage requirements.
2. All containers shall be clearly marked indicating any personnel safety hazards associated with the use of or exposure to the materials.
3. Chemical resistant coating material storage and mixing areas shall be designated by the Engineer.
4. Do not use or retain contaminated, outdated, prematurely opened, diluted materials, or materials which have exceeded their shelf life.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Materials named are those that have been evaluated for the specific service. The following products are named:

1. Products of Carboline, Inc.; Phenoline 311, Reactimine 760; used as a coating system.
2. Products of Epoxytec International, Inc.; Uroflex Urethane-Modified-Epoxy; used as a coating system.

B. Equivalent materials of other manufacturers may be submitted for review for acceptability by the Engineer. As part of the proof of quality, certified test reports from a nationally known, reputable and independent testing laboratory conducting comparative tests between the products named and the products proposed for substitution. Comparison tests shall be conducted for exposure to liquid and gaseous phases, on a continuous (not intermittent) basis.

C. Submittals for substitution shall also include manufacturer's literature for each product giving name, a unique product identifier, generic type, descriptive information, solids by volume and recommended dry film thickness. In addition, a list of five projects shall be submitted in which each product has been used and rendered satisfactory service.
D. Certified data indicating material costs for the proposed substitution and the named materials shall be provided. Any material savings shall be passed to the Owner in the form of a contract dollar reduction.

2.2 MATERIALS

A. Chemical Resistant Coating Systems:

1. Materials specified herein are the only approved standard coating systems unless an "or equivalent" is approved in writing by the Engineer in accordance with this document.
2. The following list specifies the material requirements for rehabilitated concrete surface systems. The approved products are as follows:
   a. Carboline System:
      1) Surface Restoration: Carboguard 501/501
      2) Primer: Phenoline 311 at 2.0 – 3.0 mils DFT.
      3) Basecoat: Reactimine 760, to reasonably level surface, 25.0 – 30.0 mils DFT.
      4) Topcoat: Reactimine 760, not less than 80.0 – 100.0 mils DFT.
      5) Total system thickness shall not be less than 125 mils.
   b. Epoxytec System:
      1) Surface Restoration: Reliner MSP cement.
      2) Primer and Topcoat: Uroflex.
      3) Total system thickness shall not be less than 125 mils.

B. Sealants: Polysulfide Caulk - Thiokol 2235SL Industrial Polysulfide Joint Sealant, or equivalent.

PART 3 - EXECUTION

3.1 GENERAL

A. Environmental Requirements:

1. Comply with the Manufacturer's recommendations as to environmental conditions under which resurfacing system materials can be applied.
2. Do not apply chemical resistant coating system materials when dust is in work site.
3. The Contractor shall provide all temporary lighting during the work.

B. Protection:

1. Cover or otherwise protect finish work or other surfaces not being coated or resurfaced.
2. Erect and maintain protective tarpaulins, enclosures and/or maskings to contain debris (such as dust or airborne particles resulting from surface preparation) generated during any and all work activities. This includes, but is not limited to, the use of dust/debris collection apparatus as required.

C. Initial Inspection of Surfaces to be Coated: It is the responsibility of the Contractor to inspect and report unacceptable concrete substrate surface conditions to the Engineer prior to the commencement of surface preparation activities. Unacceptable surface conditions are defined as the presence of cracked surfaces or concrete deteriorated to a depth of greater than 1" or otherwise unable to withstand surface preparation as specified herein.

3.2 SURFACE PREPARATION REQUIREMENTS

A. General:

1. All phases of surface preparation work specified herein must be inspected by the Engineer before the Contractor proceeds with the subsequent phase of surface preparation.
2. All specified surface preparation shall be performed in accordance with the latest version of the SSPC, NACE, ICRI and other standards referenced in this section.
3. Where necessary after chemical resistant coating installation, prepare concrete joint and install sealant in accordance with sealant manufacturer's instructions.

B. Decontamination:

1. Before abrasive cleaning, all oil, grease, dirt, loose matter and other contaminants shall be removed by high-pressure water blasting, steam cleaning, or any other acceptable method, to satisfy ASTM D-4258 "Surface Cleaning Concrete for Coating." Environmentally acceptable, biodegradable detergents may be used; however, they shall be completely rinsed off with plenty of fresh, clean water.

C. Abrasive Blast Cleaning:

1. Concrete surfaces shall be abraded to produce a minimum surface profile of a CSP-5 as noted in ICRI Guideline 03732. This preparation will be followed by cleaning to remove all dust, dirt or friable substances leaving clean, dust free surfaces for resurfacing as detailed in SSPC-SP 13/NACE No. 6).
2. The air used for blast cleaning shall be free of oil and moisture to not cause contamination of the surfaces to be resurfaced.

3.3 APPLICATION REQUIREMENTS

A. General:

1. Areas not to be coated shall be masked using painter's masking tape or other protective materials.
2. Ensure straight, even termination of base/topcoat materials on wall edges and flush with embedded steel.
3. The Contractor shall strictly comply with the minimum and maximum re-coat limitation times and related temperature range restrictions between successive lifts for all products, as per manufacturer's stated requirements.
4. All equipment and procedures used for chemical resistant coating system application shall be as recommended by the manufacturer.
5. The Contractor shall comply with the manufacturer's most recent written instructions with respect to the following:
   a. Mixing of all materials.
   b. Protection and handling of all materials.
   c. Minimum ambient and substrate temperatures, substrate moisture content, relative humidity, and dew point.
   d. Application.
   e. Final Curing.
   f. Use of Proper Application Equipment.

6. Curing of Chemical Resistant Coating System: The applied coating system shall be protected from damage during curing and shall be cured as recommended by the manufacturer. Ambient conditions shall be controlled by the Contractor during curing to ensure that the minimum air temperature and minimum relative humidity stipulated by the manufacturer are maintained.

3.4 FIELD QUALITY CONTROL INSPECTION AND TESTING

A. Inspection by Engineer or others does not limit the Contractor's responsibilities for quality control inspection and testing as specified herein or as required by the manufacturer's instructions.

B. Perform the quality control procedures listed below in conjunction with the requirements of this Section.
   1. Inspect all materials upon receipt to ensure that all are supplied by the manufacturer.
   2. Provide specified storage conditions for the chemical resistant coating system materials, solvents, and abrasives.
   3. Inspect and record findings for the degree of cleanliness of substrates used. The pH of the concrete substrate will be measured using pH indicating papers. Acceptable pH values shall be between 8.0 and 11.0 as measured by a full-range (1-12) color indicating pH paper with readable color calibrations and a scale at whole numbers (minimum).
   4. Inspect and record substrate profile (anchor pattern). Surfaces shall be abraded, as a minimum, equal to the roughness of CSP-5 ICRI Guideline 03732.
   5. Measure and record ambient air temperature once every four hours of each shift using a thermometer and measure and record substrate temperature once every four hours using a surface thermometer.
   6. Measure and record relative humidity every two hours of each shift using a sling psychrometer, or other approved relative humidity measuring device or instrument.
   7. Provide correct mixing of resurfacing materials in accordance with the manufacturer's instructions.
   8. Inspect and record that the "pot life" of resurfacing materials is not exceeded during installation.
   9. Verify curing of the resurfacing materials in accordance with the manufacturer's instructions.

10. Upon full cure, the installed chemical resistant coating system may be checked by high voltage spark detection in accordance with NACE RP0188-90, and the manufacturer's printed application guide to verify a pinhole-free surface. Areas which do not pass the spark detection test shall be corrected at no cost to the Owner and rechecked.
11. Upon completion of the chemical resistant coating system installation, the lined area shall be cleaned and prepared to permit close visual inspection by the Engineer or the Engineer's representative. Any and all deficiencies or defective work (not in compliance with this section or related sections) will be marked for repair or removal/replacement by the Contractor at no additional cost to the Owner.

3.5 FINAL INSPECTION

A. Perform a final inspection to determine whether the resurfacing system work meets the requirements of the specifications. The Engineer and the Engineer's representative will conduct final inspection with the Contractor.

B. Rework required on any holidays or any other inadequacies found by the Engineer or the Engineer's representative in the quality of the coating work shall be marked. Such areas shall be recleaned and reworked by the Contractor according to these specifications and the manufacturer's recommendations at no additional cost to the Owner.

C. The Contractor is ultimately responsible for the quality performance of the applied materials and workmanship. Inspections by the Engineer or the Engineer's representative do not limit this responsibility.

3.6 CLEANUP

A. Upon completion of work, the Contractor shall remove surplus materials, equipment, protective coverings, and accumulated rubbish, and thoroughly clean all surfaces and repair any work-related damage. The surrounding surface areas including roadways and all other surfaces shall be restored to their pre-project condition.

END OF SECTION

Kentucky Transportation Cabinet

Highway District 2 (1)

And

_____(2), Construction

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

Groundwater protection plan

For Highway Construction Activities

For

RECONSTRUCT THE KY 115/KY 911 INTERSECTION IN OAK GROVE

Project: PCN ## -

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 2

2. Resident Engineer: (2)

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

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

4. Project Control Number (2)

5. Route (Address) : KY 115/KY 911

6. Latitude/Longitude (project mid-point) dd/mm/ss, dd/mm/ss:

   Lat: 36/39/53, Long: 87/25/71

7. County (project mid-point): CHRISTIAN

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): Reconstruct the KY 115/ KY 911 Intersection in Oak Grove

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

3. Projected volume of material to be moved : 40,797 C. Y.(1)

4. Estimate of total project area (acres) : 9.24 acres(1)

5. Estimate of area to be disturbed (acres) : 7.37 acres(1)

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

7. Data describing existing soil condition: See Geotech report if available. See Roadway Plans(1) & (2)

8. Data describing existing discharge water quality (if any): (1) & (2)

9. Receiving water name: N/A(1)

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

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

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:

   - Ø 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.
   - Ø 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.

- Ø 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.
- Ø 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
- Ø 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
- Ø 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

Ø 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 : Seeding and Protection, Erosion Control Blanket, Grassed Waterways (1)

C. Other Control Measures

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

2. Waste Materials

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

3. Hazardous Waste

All hazardous waste materials will be managed and disposed of in the manner specified by local or state regulation. The contractor shall notify the 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.

Ø **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

Ø **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:

Ø **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.

Ø **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.

Ø **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.

Ø **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

Ø **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. (1)

E. Maintenance

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

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

- Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. (1)

F. Inspections

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

- Ø 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.
- Ø 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.
- Ø Inspection reports will be written, signed, dated, and kept on file.
- Ø Areas at final grade will be seeded and mulched within 14 days.
- Ø 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.
- Ø All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of being reported.
- Ø Built-up sediment will be removed from behind the silt fence before it has reached halfway up the height of the fence.
- Ø Silt fences will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- Ø 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.
- Ø 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.
- Ø 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.
- Ø 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:

- Ø Water from water line flushings.
- Ø Water form cleaning concrete trucks and equipment.
- Ø Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).
- Ø 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.

- Ø Contractors statement: (3)

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

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

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

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

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

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

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

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

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

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

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 25, 2014

Joseph McClearn
Jct of KY115 & KY 911 - Christian Co
1840 N Main St
Madisonville, KY 42431

Re: KYR10 Coverage Acknowledgment
KPDES No.: KYR10I616
KY115/KY 911 Intersection Improvements
Permit Type: Construction
AI ID: 123260
Christian County, Kentucky

Dear Joseph McClearn:

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: 36.6586, -87.4128

Sincerely,

Shawn Hokanson
Surface Water Permits Branch
Division of Water

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.

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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.

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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.

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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.

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Subsection: **Part:** **Number:** **Revision:**	402.03.02 Contractor Quality Control and Department Acceptance. D) Testing Responsibilities. 5) Gradation. Delete the second paragraph.
Subsection: **Part:** **Number:** **Revision:**	402.03.02 Contractor Quality Control and Department Acceptance. H) Unsatisfactory Work. 1) Based on Lab Data. 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: **Revision:**	402.03.03 Verification. 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: **Part:** **Revision:**	402.03.03 Verification. A) Evaluation of Sublot(s) Verified by Department. 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: **Part:** **Revision:**	402.03.03 Verification. B) Evaluation of Sublots Not Verified by Department. 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.

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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.

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Subsection: **Revision:**	412.03.07 Placement and Compaction. 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: **Revision:**	412.04 MEASUREMENT. 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: **Part:** **Revision:**	501.03.19 Surface Tolerances and Testing Surface. B) Ride Quality. 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: **Revision:**	603.03.06 Cofferdams. 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: **Revision:**	605.03.04 Tack Welding. Insert the subsection and the following: 605.03.04 Tack Welding. The Department does not allow tack welding.
Subsection: **Part:** **Number:** **Revision:**	606.03.17 Special Requirements for Latex Concrete Overlays. A) Existing Bridges and New Structures. 1) Prewetting and Grout-Bond Coat. Add the following sentence to the last paragraph: Do not apply a grout-bond coat on bridge decks prepared by hydrodemolition.
Subsection: **Revision:**	609.03 Construction. 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: **Revision:**	611.03.02 Precast Unit Construction. 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:

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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.

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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:

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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.

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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.

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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.

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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.

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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.

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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.

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Subsection: 806.03.01 General Requirements.
Table: PG Binder Requirements and Price Adjustment Schedule
Revision: 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: 806.03.01 General Requirements.
Table: PG Binder Requirements and Price Adjustment Schedule
Superscript: (3)
Revision: Replace (3) with the following:
Perform testing at 64°C.

Subsection: 813.04 Gray Iron Castings.
Revision: Replace the reference to "AASHTO M105" with "ASTM A48".

Subsection: 813.09.02 High Strength Steel Bolts, Nuts, and Washers.
Number: A) Bolts.
Revision: 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: 814.04.02 Timber Guardrail Posts.
Revision: Third paragraph, replace the reference to "AWPA C14" with "AWPA U1, Section B, Paragraph 4.1".

Subsection: 814.04.02 Timber Guardrail Posts.
Revision: 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: 814.04.02 Timber Guardrail Posts.
Revision: Fourth paragraph, replace the reference to "AWPA C2" with "AWPA U1, Section B, Paragraph 4.1".

Subsection: 814.04.02 Timber Guardrail Posts.
Revision: Delete the second sentence of the fourth paragraph.

Subsection: 814.05.02 Composite Plastic.
Revision: 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: 816.07.02 Wood Posts and Braces.
Revision: First paragraph, replace the reference to "AWPA C5" with "AWPA U1, Section B, Paragraph 4.1".

Subsection: 816.07.02 Wood Posts and Braces.
Revision: Delete the second sentence of the first paragraph.

Subsection: 818.07 Preservative Treatment.
Revision: First paragraph, replace all references to "AWPA C14" with "AWPA U1, Section A".

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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.

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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.

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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

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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.

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SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS

This Special Note will apply when indicated on the plans or in the proposal.

1.0 DESCRIPTION. Furnish, install, operate, and maintain variable message signs at the locations shown on the plans or designated by the Engineer. Remove and retain possession of variable message signs when they are no longer needed on the project.

2.0 MATERIALS.

2.1 General. Use LED Variable Message Signs Class I, II, or III, as appropriate, from the Department's List of Approved Materials.

Unclassified signs may be submitted for approval by the Engineer. The Engineer may require a daytime and nighttime demonstration. The Engineer will make a final decision within 30 days after all required information is received.

2.2 Sign and Controls. All signs must:

1) Provide 3-line messages with each line being 8 characters long and at least 18 inches tall. Each character comprises 35 pixels.
2) Provide at least 40 preprogrammed messages available for use at any time. Provide for quick and easy change of the displayed message; editing of the message; and additions of new messages.
3) Provide a controller consisting of:
   a) Keyboard or keypad.
   b) Readout that mimics the actual sign display. (When LCD or LCD type readout is used, include backlighting and heating or otherwise arrange for viewing in cold temperatures.)
   c) Non-volatile memory or suitable memory with battery backup for storing pre-programmed messages.
   d) Logic circuitry to control the sequence of messages and flash rate.
4) Provide a serial interface that is capable of supporting complete remote control ability through land line and cellular telephone operation. Include communication software capable of immediately updating the message, providing complete sign status, and allowing message library queries and updates.
5) Allow a single person easily to raise the sign to a satisfactory height above the pavement during use, and lower the sign during travel.
6) Be Highway Orange on all exterior surfaces of the trailer, supports, and controller cabinet.
7) Provide operation in ambient temperatures from -30 to + 120 degrees Fahrenheit during snow, rain and other inclement weather.
8) Provide the driver board as part of a module. All modules are interchangeable, and have plug and socket arrangements for disconnection and reconnection. Printed circuit boards associated with driver boards have a conformable coating to protect against moisture.
9) Provide a sign case sealed against rain, snow, dust, insects, etc. The lens is UV stabilized clear plastic (polycarbonate, acrylic, or other approved material) angled to prevent glare.
10) Provide a flat black UV protected coating on the sign hardware, character PCB, and appropriate lens areas.
11) Provide a photocell control to provide automatic dimming.

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12) Allow an on-off flashing sequence at an adjustable rate.
13) Provide a sight to aim the message.
14) Provide a LED display color of approximately 590 nm amber.
15) Provide a controller that is password protected.
16) Provide a security device that prevents unauthorized individuals from accessing the controller.
17) Provide the following 3-line messages preprogrammed and available for use when the sign unit begins operation:

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

*Insert numerals as directed by the Engineer.
Add other messages during the project when required by the Engineer.

2.3 Power.

1) Design solar panels to yield 10 percent or greater additional charge than sign consumption. Provide direct wiring for operation of the sign or arrow board from an external power source to provide energy backup for 21 days without sunlight and an on-board system charger with the ability to recharge completely discharged batteries in 24 hours.

3.0 CONSTRUCTION. Furnish and operate the variable message signs as designated on the plans or by the Engineer. Ensure the bottom of the message panel is a minimum of 7 feet above the roadway in urban areas and 5 feet above in rural areas when operating. Use Class I, II, or III signs on roads with a speed limit less than 55 mph. Use Class I or II signs on roads with speed limits 55 mph or greater.

Maintain the sign in proper working order, including repair of any damage done by others, until completion of the project. When the sign becomes inoperative, immediately repair or replace the sign. Repetitive problems with the same unit will be cause for rejection and replacement.

Use only project related messages and messages directed by the Engineer, unnecessary messages lessen the impact of the sign. Ensure the message is displayed in either one or 2 phases with each phase having no more than 3 lines of text. When no message is needed, but it is necessary to know if the sign is operable, flash only a pixel.

When the sign is not needed, move it outside the clear zone or where the Engineer directs. Variable Message Signs are the property of the Contractor and shall be removed from the project when no longer needed. The Department will not assume ownership of these signs.

4.0 MEASUREMENT. The final quantity of Variable Message Sign will be

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the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

5.0 PAYMENT. The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

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.

General Decision Number: KY140102 10/24/2014 KY102

Superseded General Decision Number: KY20130102

State: Kentucky

Construction Type: Highway

Counties: Allen, Ballard, Butler, Caldwell, Calloway, Carlisle, Christian, Crittenden, Daviess, Edmonson, Fulton, Graves, Hancock, Henderson, Hickman, Hopkins, Livingston, Logan, Lyon, Marshall, McCracken, McLean, Muhlenberg, Ohio, Simpson, Todd, Trigg, Union, Warren and Webster 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	04/04/2014
2	04/18/2014
3	05/16/2014
4	05/23/2014
5	06/06/2014
6	07/04/2014
7	07/18/2014
8	08/01/2014
9	10/24/2014

* BRIN0004-002 06/01/2014

BALLARD, BUTLER, CALDWELL, CARLISLE, CRITTENDEN, DAVIESS, EDMONSON, FULTON, GRAVES, HANCOCK, HENDERSON, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, MCLEAN, MUHLENBERG, OHIO, UNION, and WEBSTER COUNTIES

	Rates	Fringes
BRICKLAYER		
Ballard, Caldwell, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, Marshall, and McCracken Counties	$ 29.52	13.37
Butler, Edmonson, Hopkins, Muhlenberg, and Ohio Counties	$ 24.61	10.22
Daviess, Hancock, Henderson, McLean, Union, and Webster Counties	$ 28.68	13.72

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* BRTN0004-005 06/01/2014

ALLEN, CALLOWAY, CHRISTIAN, LOGAN, SIMPSON, TODD, TRIGG, and
WARREN COUNTIES

	Rates	Fringes
BRICKLAYER	$ 25.37	10.50

CARP0357-002 04/01/2014

	Rates	Fringes
CARPENTER	$ 27.50	14.92
Diver	$ 41.63	14.92
PILEDRIVERMAN	$ 27.75	14.92

ELEC0369-006 05/29/2013

BUTLER, EDMONSON, LOGAN, TODD & WARREN COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 29.48	14.37

ELEC0429-001 02/01/2010

ALLEN & SIMPSON COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 21.85	10.35

ELEC0816-002 06/01/2014

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN,
FULTON (Except a 5 mile radius of City Hall in Fulton), GRAVES,
HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 30.82	25.5%+5.85

Cable spicers receive $.25 per hour additional.

ELEC1701-003 06/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO,
UNION & WEBSTER COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 30.03	13.72

Cable spicers receive $.25 per hour additional.

ELEC1925-002 06/01/2014

FULTON COUNTY (Up to a 5 mile radius of City Hall in Fulton):

	Rates	Fringes
CABLE SPLICER	$ 25.00	10.27
ELECTRICIAN	$ 24.80	11.01

ENGI0181-017 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 equals or exceeds 150 ft. - $1.00 above 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.

IRON0070-005 06/01/2014

BUTLER COUNTY (Eastern eighth, including the Townships of Decker, Lee & Tilford);
EDMONSON COUNTY (Northern three-fourths, including the Townships of Asphalt, Bee Spring, Brownsville, Grassland, Huff, Kyrock, Lindseyville, Mammoth Cave, Ollie, Prosperity, Rhoda, Sunfish & Sweden)

	Rates	Fringes
IRONWORKER		
Structural; Ornamental; Reinforcing; Precast Concrete Erectors	$ 26.97	19.75

IRON0103-004 04/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, OHIO, UNION & WEBSTER COUNTIES
BUTLER COUNTY (Townships of Aberdeen, Bancock, Casey, Dexterville, Dunbar, Elfie, Gilstrap, Huntsville, Logansport, Monford, Morgantown, Provo, Rochester, South Hill & Welchs Creek);
CALDWELL COUNTY (Northeastern third, including the Township of Creswell);
CHRISTIAN COUNTY (Northern third, including the Townships of Apex, Crofton, Kelly, Mannington & Wynns);
CRITTENDEN COUNTY (Northeastern half, including the Townships of Grove, Mattoon, Repton, Shady Grove & Tribune);
MUHLENBERG COUNTY (Townships of Bavier, Beech Creek Junction, Benton, Brennen, Browder, Central City, Cleaton, Depoy, Drakesboro, Eunis, Graham, Hillside, Luzerne, Lynn City, Martwick, McNary, Millport, Moorman, Nelson, Paradise, Powderly, South Carrollton, Tarina & Weir)

	Rates	Fringes
Ironworkers	$ 27.82	16.555

IRON0492-003 05/01/2013

ALLEN, LOGAN, SIMPSON, TODD & WARREN COUNTIES
BUTLER COUNTY (Southern third, including the Townships of Boston, Berrys Lick, Dimple, Jetson, Quality, Sharer, Sugar Grove & Woodbury);
CHRISTIAN COUNTY (Eastern two-thirds, including the Townships of Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
EDMONSON COUNTY (Southern fourth, including the Townships of Chalybeate & Rocky Hill);
MUHLENBERG COUNTY (Southern eighth, including the Townships of Dunnior, Penrod & Rosewood)

	Rates	Fringes
Ironworkers:	$ 23.84	10.96

IRON0782-006 05/01/2014

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES
CALDWELL COUNTY (Southwestern two-thirds, including the Townships of Cedar Bluff, Cider, Claxton, Cobb, Crowtown, Dulaney, Farmersville, Fredonia, McGowan, Otter Pond & Princeton);
CHRISTIAN COUNTY (Western third, Excluding the Townships of Apex, Crofton, Kelly, Mannington, Wynns, Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
CRITTENDEN COUNTY (Southwestern half, including the Townships of Crayne, Dycusburg, Frances, Marion, Mexico, Midway, Sheridan & Told)

	Rates	Fringes
Ironworkers:		
Projects with a total contract cost of $20,000,000.00 or above	$ 27.09	20.66
All Other Work	$ 25.50	19.02

LABO0189-005 07/01/2014

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL & MCCRACKEN COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 21.50	12.26
GROUP 2	$ 21.75	12.26
GROUP 3	$ 21.80	12.26
GROUP 4	$ 22.40	12.26

LABORER 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; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-006 07/01/2014

ALLEN, BUTLER, CALDWELL, CHRISTIAN, DAVIESS, EDMONSON, HANCOCK, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, SIMPSON, TODD, TRIGG & WARREN 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

LABORER 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; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0561-001 07/01/2014

CRITTENDEN, HENDERSON, UNION & WEBSTER COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 21.36	12.65
GROUP 2	$ 21.61	12.65
GROUP 3	$ 21.66	12.65
GROUP 4	$ 22.26	12.65

LABORER 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; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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PAIN0032-002 05/01/2013

BALLARD COUNTY

	Rates	Fringes
Painters:		
Bridges	$ 30.56	15.18
All Other Work	$ 28.26	15.18

Spray, Blast, Steam, High & Hazardous (Including Lead Abatement) and All Epoxy - $1.00 Premium

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PAIN0118-003 06/01/2014

EDMONSON COUNTY:

	Rates	Fringes
Painters:		
Brush & Roller	$ 18.50	12.02
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning	$ 19.00	12.02

PAIN0156-006 04/01/2014

DAVIESS, HANCOCK, HENDERSON, MCLEAN, OHIO, UNION & WEBSTER COUNTIES

	Rates	Fringes
Painters:		
BRIDGES		
GROUP 1	$ 27.20	12.51
GROUP 2	$ 27.45	12.51
GROUP 3	$ 28.20	12.51
GROUP 4	$ 29.20	12.51
ALL OTHER WORK:		
GROUP 1	$ 26.05	12.51
GROUP 2	$ 26.30	12.51
GROUP 3	$ 27.05	12.51
GROUP 4	$ 28.05	12.51

PAINTER CLASSIFICATIONS

GROUP 1 - Brush & Roller

GROUP 2 - Plasterers

GROUP 3 - Spray; Sandblast; Power Tools; Waterblast; Steamcleaning; Brush & Roller of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

GROUP 4 - Spray of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

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PAIN0456-003 07/01/2011

ALLEN, BUTLER, LOGAN, MUHLENBERG, SIMPSON, TODD & WARREN COUNTIES:

	Rates	Fringes
Painters:		
BRIDGES		
Brush & Roller	$ 22.55	9.65
Spray; Sandblast; Power Tools; Waterblast & Steam Cleaning	$ 23.55	9.65
ALL OTHER WORK		
Brush & Roller	$ 17.55	9.65
Spray; Sandblast; Power Tools; Waterblast & Steam Cleaning	$ 18.55	9.65

ALL OTHER WORK - HIGH TIME PAY
Over 35 feet (up to 100 feet) - $1.00 above base wage
100 feet and over - $2.00 above base wage

DURING SPRAY PAINTING AND SANDBLASTING OPERATIONS, POT TENDERS SHALL RECEIVE THE SAME WAGE RATES AS THE SPRAY PAINTER OR NOZZLE OPERATOR

PAIN0500-002 06/01/2014

CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
Painters:		
Bridges	$ 26.45	12.05
All Other Work	$ 20.20	12.05

Waterblasting units with 3500 PSI and above - $.50 premium
Spraypainting and all abrasive blasting - $1.00 premium
Work 40 ft. and above ground level - $1.00 premium

PLUM0184-002 07/01/2013

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN and TRIGG COUNTIES

	Rates	Fringes
Plumber; Steamfitter	$ 33.11	14.83

PLUM0502-004 08/01/2013

ALLEN, BUTLER, EDMONSON, SIMPSON & WARREN

	Rates	Fringes
Plumber; Steamfitter	$ 32.00	17.17

PLUM0633-002 08/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, TODD, UNION & WEBSTER COUNTIES:

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 29.87	14.25

TEAM0089-003 03/30/2014

ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES

	Rates	Fringes
Truck drivers:		
Zone 1:		
Group 1	$ 19.58	17.83
Group 2	$ 19.76	17.83
Group 3	$ 19.84	17.83
Group 4	$ 19.86	17.83

GROUP 1 - Greaser; Tire Changer

GROUP 2 - Truck Mechanic; Single Axle Dump; Flat Bed; All Terrain Vehicles when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors

GROUP 3 - Mixer All Types

GROUP 4 - Winch and A-Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker; Euclid and Other Heavy Earth Moving Equipment; Low Boy; Articulator Cat; Five Axle Vehicle

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TEAM0215-003 03/31/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO & WEBSTER COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 20.93	16.85
Group 2	$ 21.16	16.85
Group 3	$ 21.23	16.85
Group 4	$ 21.24	16.85

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; 5 Axle Vehicle; Winch and A- Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker

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TEAM0236-001 03/31/2013

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN,TODD & TRIGG COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 19.38	16.85
Group 2	$ 19.56	16.85
Group 3	$ 19.56	16.85
Group 4	$ 19.66	16.85
Group 5	$ 19.64	16.85

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Drivers of Distributors

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; Five Axle Vehicle; Winch and A-Frame when used in transporting materials; Ross Carrier

GROUP 5: Mixer All Types

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

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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.

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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-I-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
18.2%	6.9%

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

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

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

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

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

141294

PROPOSAL BID ITEMS

Report Date 10/29/14

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE (PHASE 2)	7,234.00	TON		$	
0020	00190		LEVELING & WEDGING PG64-22	10.00	TON		$	
0030	00212		CL2 ASPH BASE 1.00D PG64-22	7,554.00	TON		$	
0040	02101		CEM CONC ENT PAVEMENT-8 IN	757.00	SQYD		$	
0050	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
0060	02677		ASPHALT PAVE MILLING & TEXTURING	69.00	TON		$	
0070	23362ES403		CL2 ASPH SURF 0.5B PG64-22	1,186.00	TON		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0080	00069		CRUSHED AGGREGATE SIZE NO 3	3,606.00	TON		$	
0090	01000		PERFORATED PIPE-4 IN	105.00	LF		$	
0100	01010		NON-PERFORATED PIPE-4 IN	12.00	LF		$	
0110	01020		PERF PIPE HEADWALL TY 1-4 IN	1.00	EACH		$	
0120	01810		STANDARD CURB AND GUTTER	4,352.60	LF		$	
0130	02014		BARRICADE-TYPE III	18.00	EACH		$	
0140	02091		REMOVE PAVEMENT	787.00	SQYD		$	
0150	02159		TEMP DITCH	700.00	LF		$	
0160	02200		ROADWAY EXCAVATION	33,046.00	CUYD		$	
0170	02223		GRANULAR EMBANKMENT	172.75	CUYD		$	
0180	02242		WATER	28.00	MGAL		$	
0190	02429		RIGHT-OF-WAY MONUMENT TYPE 1	43.00	EACH		$	
0200	02432		WITNESS POST	4.00	EACH		$	
0210	02483		CHANNEL LINING CLASS II	253.00	TON		$	
0220	02545		CLEARING AND GRUBBING (APPROXIMATELY 7.0 ACRES)	1.00	LS		$	
0230	02562		TEMPORARY SIGNS	1,157.00	SQFT		$	
0240	02585		EDGE KEY	192.71	LF		$	
0250	02599		FABRIC-GEOTEXTILE TYPE IV	2,029.00	SQYD		$	
0260	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	2,294.00	SQYD	$2.00	$	$4,588.00
0270	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0280	02651		DIVERSIONS (BY-PASS DETOURS) (PHASE 1)	1.00	LS		$	
0290	02651		DIVERSIONS (BY-PASS DETOURS) (PHASE 2)	1.00	LS		$	
0300	02651		DIVERSIONS (BY-PASS DETOURS) (PHASE 3)	1.00	LS		$	
0310	02651		DIVERSIONS (BY-PASS DETOURS) (PHASE 4)	1.00	LS		$	
0320	02671		PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH		$	
0330	02701		TEMP SILT FENCE	2,925.70	LF		$	
0340	02703		SILT TRAP TYPE A	4.00	EACH		$	
0350	02704		SILT TRAP TYPE B	33.00	EACH		$	
0360	02705		SILT TRAP TYPE C	56.00	EACH		$	
0370	02706		CLEAN SILT TRAP TYPE A	12.00	EACH		$	
0380	02707		CLEAN SILT TRAP TYPE B	33.00	EACH		$	

PROPOSAL BID ITEMS

141294

Report Date 10/29/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0390	02708		CLEAN SILT TRAP TYPE C	501.20	EACH		$	
0400	02709		CLEAN TEMP SILT FENCE	5,851.00	LF		$	
0410	02720		SIDEWALK-4 IN CONCRETE	1,906.70	SQYD		$	
0420	02726		STAKING	1.00	LS		$	
0430	02775		ARROW PANEL	2.00	EACH		$	
0440	05950		EROSION CONTROL BLANKET	13,598.00	SQYD		$	
0450	05952		TEMP MULCH	33,691.00	SQYD		$	
0460	05963		INITIAL FERTILIZER	.70	TON		$	
0470	05964		20-10-10 FERTILIZER	.70	TON		$	
0480	05985		SEEDING AND PROTECTION	14,526.00	SQYD		$	
0490	05990		SODDING	527.60	SQYD		$	
0500	05992		AGRICULTURAL LIMESTONE	.70	TON		$	
0510	06510		PAVE STRIPING-TEMP PAINT-4 IN	22,312.00	LF		$	
0520	06514		PAVE STRIPING-PERM PAINT-4 IN	11,596.00	LF		$	
0530	06530		PAVE STRIPING REMOVAL-4 IN	1,258.00	LF		$	
0540	06566		PAVE MARKING-THERMO X-WALK-12 IN	625.50	LF		$	
0550	06568		PAVE MARKING-THERMO STOP BAR-24IN	175.00	LF		$	
0560	06574		PAVE MARKING-THERMO CURV ARROW	16.00	EACH		$	
0570	10020NS		FUEL ADJUSTMENT	21,832.00	DOLL	$1.00	$	$21,832.00
0580	10030NS		ASPHALT ADJUSTMENT	34,170.00	DOLL	$1.00	$	$34,170.00
0590	23131ER701		PIPELINE VIDEO INSPECTION	2,126.00	LF		$	
0600	23158ES505		DETECTABLE WARNINGS	472.00	SQFT		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0610	00440		ENTRANCE PIPE-15 IN	48.00	LF		$	
0620	00441		ENTRANCE PIPE-18 IN	108.50	LF		$	
0630	00443		ENTRANCE PIPE-24 IN	28.00	LF		$	
0640	00451		ENTRANCE PIPE-18 IN EQUIV	122.20	LF		$	
0650	00462		CULVERT PIPE-18 IN	50.70	LF		$	
0660	00521		STORM SEWER PIPE-15 IN	1,779.80	LF		$	
0670	00522		STORM SEWER PIPE-18 IN	2,338.40	LF		$	
0680	00524		STORM SEWER PIPE-24 IN	84.10	LF		$	
0690	01202		PIPE CULVERT HEADWALL-15 IN	2.00	EACH		$	
0700	01204		PIPE CULVERT HEADWALL-18 IN	1.00	EACH		$	
0710	01432		SLOPED BOX OUTLET TYPE 1-15 IN	6.00	EACH		$	
0720	01433		SLOPED BOX OUTLET TYPE 1-18 IN	2.00	EACH		$	
0730	01434		SLOPED BOX OUTLET TYPE 1-24 IN	1.00	EACH		$	
0740	01480		CURB BOX INLET TYPE B	16.00	EACH		$	
0750	01559		DROP BOX INLET TYPE 13G	21.00	EACH		$	
0760	01568		DROP BOX INLET TYPE 13S	2.00	EACH		$	
0770	01577		DROP BOX INLET TYPE 14	10.00	EACH		$	
0780	01585		REMOVE DROP BOX INLET	1.00	EACH		$	
0790	01642		JUNCTION BOX-18 IN	2.00	EACH		$	

Section: 0004 - SEWER

141294

PROPOSAL BID ITEMS

Report Date 10/29/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0800	01082		STEEL ENCASEMENT PIPE-BORE&JACK-16 IN	205.00	LF		$	
0810	02220		FLOWABLE FILL	40.00	CUYD		$	
0820	03387		PVC PIPE-8 IN (GRAVITY SEWER)	355.00	LF		$	
0830	03444		RECONNECT SEWER SERVICE (1 1/2" HOUSE SEWER WITH SERVICE BOX)	9.00	EACH		$	
0840	03493		VALVE-2 IN (2" DIAMETER CONTROL VALVE WITH VALVE BOX)	2.00	EACH		$	
0850	03539		BEND 11.25 DEG 8 IN (BEND AND BLOCK)	3.00	EACH		$	
0860	03546		BEND 22.50 DEG 8 IN (BEND AND BLOCK)	4.00	EACH		$	
0870	03563		BEND 45 DEG 8 IN (BEND AND BLOCK)	12.00	EACH		$	
0880	20056NN		REDUCER (2" X 1 1/2")	5.00	EACH		$	
0890	20057ES601		CONCRETE ENCASEMENT	43.00	LF		$	
0900	20123EC		SOLID SLEEVE-8 IN	1.00	EACH		$	
0910	20153EC		ACCESS MANHOLE VAULT (8" FORCE MAIN VAULT)	1.00	EACH		$	
0920	20424EC		CONNECT TO EXIST MANHOLE (CONNECT 8" SANITARY SEWER TO EXISTING MANHOLE)	1.00	EACH		$	
0930	20424EC		CONNECT TO EXIST MANHOLE (2 1/2" DIAMETER SANITARY FORCE MAIN TO EXISTING MANHOLE)	1.00	EACH		$	
0940	20757ED		PAVEMENT REPAIR (BITUMINOUS)	429.00	SQYD		$	
0950	20757ED		PAVEMENT REPAIR (CONCRETE)	65.00	SQYD		$	
0960	21353ND		TIE-IN TO FORCE MAIN (SMALL DIAMETER, 1 1/2", 2 " & 2 1/2")	6.00	EACH		$	
0970	21353ND		TIE-IN TO FORCE MAIN (8" DIAMETER)	1.00	EACH		$	
0980	21353ND		TIE-IN TO FORCE MAIN (10")	1.00	EACH		$	
0990	21354ND		CUT CAP AND BLOCK FORCE MAIN (3" DIAMETER)	1.00	EACH		$	
1000	21354ND		CUT CAP AND BLOCK FORCE MAIN (1 1/2" DIAMETER)	12.00	EACH		$	
1010	21354ND		CUT CAP AND BLOCK FORCE MAIN (2" DIAMETER)	3.00	EACH		$	
1020	21354ND		CUT CAP AND BLOCK FORCE MAIN (2 1/2" DIAMETER)	1.00	EACH		$	
1030	21354ND		CUT CAP AND BLOCK FORCE MAIN (8" DIAMETER)	2.00	EACH		$	
1040	21393ND		PLUG 8 IN SEWER-STUB OUT (PVC GRAVITY SEWER WITH END CAP)	3.00	EACH		$	
1050	21918NN		MANHOLE-4 FT (STANDARD MANHOLE WITH INTERIOR COATING)	4.00	EACH		$	
1060	21921EN		MANHOLE-4 FT BARREL EXTENSION (EXISTING WATERLINE)	3.00	VTFT		$	

PROPOSAL BID ITEMS

141294

Report Date 10/29/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1070	22082NN		AIR RELEASE VALVE ASSEMBLY (SEWAGE COMBINATION AIR/VACUUM VALVE & VALVE VAULT)	5.00	EACH		$	
1080	23013EN		SANITARY SEWER FORCE MAIN (1 1/2" PVC)	1,260.00	LF		$	
1090	23013EN		SANITARY SEWER FORCE MAIN (2" PVC)	1,000.00	LF		$	
1100	23013EN		SANITARY SEWER FORCE MAIN (2 1/2" PVC)	130.00	LF		$	
1110	23311EC		SOLID SLEEVE-10 IN (MJ)	1.00	EACH		$	
1120	23330EC		WYE CONNECTION (10"X10"X8" TEE-WYE)	1.00	EACH		$	
1130	24241EN		PVC FORCE MAIN-8 IN (CLASS 350)	3,255.00	LF		$	
1140	24244EC		REMOVE AIR RELEASE PIT (ARV VAULT, SALVAGE ARV FOR OWNER)	2.00	EACH		$	
1150	24746EC		STUB OUT (6" DIAMETER WITH END CAP)	1.00	EACH		$	
1160	24746EC		STUB OUT (1 1/2" DIAMETER FOR FUTURE SERVICE CONNECTION)	1.00	EACH		$	
1170	24747EC		HOUSE SERVICE BOX (FOR 1 1/2" FORCE MAIN)	13.00	EACH		$	

Section: 0005 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1180	04792		CONDUIT-1 IN	15.00	LF		$	
1190	04793		CONDUIT-1 1/4 IN	140.00	LF		$	
1200	04795		CONDUIT-2 IN	120.00	LF		$	
1210	04811		ELECTRICAL JUNCTION BOX TYPE B	4.00	EACH		$	
1220	04820		TRENCHING AND BACKFILLING	275.00	LF		$	
1230	04830		LOOP WIRE	3,310.00	LF		$	
1240	04844		CABLE-NO. 14/5C	2,675.00	LF		$	
1250	04850		CABLE-NO. 14/1 PAIR	2,195.00	LF		$	
1260	04885		MESSENGER-10800 LB	410.00	LF		$	
1270	04895		LOOP SAW SLOT AND FILL	1,247.00	LF		$	
1280	04931		INSTALL CONTROLLER TYPE 170	1.00	EACH		$	
1290	04932		INSTALL STEEL STRAIN POLE	4.00	EACH		$	
1300	04950		REMOVE SIGNAL EQUIPMENT	1.00	EACH		$	
1310	20093NS835		INSTALL PEDESTRIAN HEAD-LED	8.00	EACH		$	
1320	20188NS835		INSTALL LED SIGNAL-3 SECTION	12.00	EACH		$	
1330	20456NS835		INSTALL TEMP VIDEO CAMERA	4.00	EACH		$	
1340	21659NN		RELOCATE SIGNAL HEAD	8.00	EACH		$	
1350	21743NN		INSTALL PEDESTRIAN DETECTOR	8.00	EACH		$	
1360	23157EN		TRAFFIC SIGNAL POLE BASE	19.60	CUYD		$	
1370	23670EC		INSTALL VIDEO DETECTION CABLE	600.00	LF		$	
1380	23982EC		INSTALL ANTENNA	1.00	EACH		$	

Section: 0006 - WATERLINE

PROPOSAL BID ITEMS

141294

Report Date 10/29/14

Section: 0006 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1390	01093		DUCTILE IRON PIPE-6 IN (CLASS 350)	1,439.00	LF		$	
1400	01095		DUCTILE IRON PIPE-8 IN (CLASS 350)	225.00	LF		$	
1410	01099		DUCTILE IRON PIPE-12 IN (CLASS 350)	2,711.00	LF		$	
1420	03385		PVC PIPE-6 IN (C900, CLASS 200)	177.00	LF		$	
1430	03431		RELOCATE WATER METER (RELOCATE & RECONNECT)	14.00	EACH		$	
1440	03434		REMOVE FIRE HYDRANT	3.00	EACH		$	
1450	03439		FLUSH HYDRANT (POST HYDRANT W/ VALVE - TEMPORARY)	1.00	EACH		$	
1460	03522		GATE VALVE-2 IN (VALVE & BOX)	2.00	EACH		$	
1470	03526		GATE VALVE-6 IN (VALVE & BOX)	13.00	EACH		$	
1480	03528		GATE VALVE-8 IN (VALVE & BOX)	4.00	EACH		$	
1490	03532		GATE VALVE-12 IN (VALVE & BOX)	6.00	EACH		$	
1500	20169EC		RECONNECT METER	1.00	EACH		$	
1510	20559NC		CONNECT TO 6 IN (EXISTING WATERLINE)	5.00	EACH		$	
1520	20757ED		PAVEMENT REPAIR	185.00	SQYD		$	
1530	20951ND		TAPPING SLEEVE AND VALVE-6IN X 6 IN (VALVE & BOX)	6.00	EACH		$	
1540	21180ND		TAPPING SLEEVE & VALVE 8 X 8 (VALVE & BOX)	1.00	EACH		$	
1550	22871NN		CONNECT TO 2 IN (EXISTING WATERLINE - TEMPORARY)	3.00	EACH		$	
1560	22871NN		CONNECT TO 2 IN (EXISTING WATERLINE)	4.00	EACH		$	
1570	23012EN		BORE HARD PAVED DRIVEWAY (UNCASED DRIVE BORE, ALL SIZES)	47.00	LF		$	
1580	23133ND		RESTRAINED JOINT GASKET-12 IN (CLASS 350)	8.00	EACH		$	
1590	23310EC		VALVE BOX (6" VALVE INSERTION & BOX)	1.00	EACH		$	
1600	23502EC		FIRE HYDRANT WITH GATE VALVE (LARGE HYDRANT)	10.00	EACH		$	
1610	23510EC		PROJECT CLEANUP (FINAL, EXCLUDING DRIVE AND STREET X-INGS)	1.00	LS		$	
1620	24239ED		OPEN CUT W/ STEEL ENCASEMENT-22 IN (ROAD CROSSING, 22" CASING, 12" CARRIER)	70.00	LF		$	
1630	24243EC		OPEN CUT W/ STEEL ENCASEMENT-14 IN (ROAD CROSSING, 14" CASING, 6" CARRIER)	156.00	LF		$	
1640	24633EC		CAP & PLUG (EXISTING WATERLINE, ALL SIZES)	22.00	EACH		$	
1650	24668EC		STEEL ENCASEMENT PIPE (ROAD BORE, 22" CASING, 12" CARRIER)	110.00	LF		$	
1660	24668EC		STEEL ENCASEMENT PIPE (ROAD BORE, 16" CASING, 8" CARRIER)	40.00	LF		$	

PROPOSAL BID ITEMS

141294

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Report Date 10/29/14

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1670	24668EC		STEEL ENCASEMENT PIPE (ROAD BORE, 14" CASING, 6" CARRIER)	95.00	LF		$	

Section: 0007 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1680	02568		MOBILIZATION	1.00	LS		$	
1690	02569		DEMOBILIZATION	1.00	LS		$	