CALL NO. 306

CONTRACT ID. 131056

METCALFE COUNTY

FED/STATE PROJECT NUMBER JL03 085 0068 009-011

DESCRIPTION US-68 AND LOUIE B. NUNN PARKWAY

WORK TYPE GRADE, DRAIN & SURFACE WITH BRIDGE

PRIMARY COMPLETION DATE 270 WORKING DAYS

LETTING DATE: December 13,2013

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME December 13,2013. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

PLANS AVAILABLE FOR THIS PROJECT.

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

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PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 03

CONTRACT ID - 131056

JL03 085 0068 009-011

COUNTY - METCALFE

PCN - DE08500681356
JL03 085 0068 009-011

US-68 AND LOUIE B. NUNN PARKWAY NEW INTERCHANGE FROM US-68 SOUTH ONTO THE LOUIE B. NUNN PARKWAY.GRADE, DRAIN & SURFACE WITH BRIDGE SYP NO. 03-08505.00.

GEOGRAPHIC COORDINATES LATITUDE 37:00:01.00 LONGITUDE 85:36:58.00

COMPLETION DATE(S):

270 WORKING DAYS	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.

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 Kentucky Division of Forestry has imposed a quarantine in Anderson, Boone, Bourbon, Boyd, Boyle, Bracken, Campbell, Carroll, Fayette, Franklin, Gallatin, Garrard,

Grant, Greenup, Hardin, Harrison, Henry, Jefferson, Jessamine, Kenton, Oldham, Owen, Pendleton, Scott, Shelby, Trimble, and Woodford Counties 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 county of its origin. 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.

SPECIAL NOTE FOR RECIPROCAL PREFERENCE

Reciprocal preference to be given by public agencies to resident bidders

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the Expedite Bidding Program. Submittal of the Affidavit should be done along with the bid in Bid Express.

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.

INCIDENTAL SURFACING

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

JPC RIDE QUALITY

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

ASPHALT PAVEMENT RIDE QUALITY CATEGORY B

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

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.

8/21/13

US 68, Metcalfe County
Item Number: 3-8505.00

SPECIAL NOTE
ALTERNATE PAVEMENT BID ADJUSTMENT

This project includes alternate bidding for asphalt or concrete pavement. There are specific items listed for each pavement type to be bid with the alternate selected by the Contractor. There is also a line item in the alternate categories for each alternate to adjust for the projected out-year life-cycle costs to the Cabinet. These line item adjustments are as follows:

Asphalt Pavement Adjustment= **$212,074**

Concrete Pavement Adjustment= **$103,906**

NOTE: The Concrete Pavement Adjustment will be the same regardless of the shoulder alternate chosen.

The amount reflective of the pavement type selected by each contractor will be added to their respective bid for comparison of the low bid. The adjustment ***shall be used only for determination of the lowest bidder*** *and* ***shall not be used to determine the final payment*** to the contractor when the project is completed.

Please note that these adjustments should not be used for the calculation of the maximum Mobilization amount and are not required to be included in the minimum Demobilization amount.

Proposal Guaranty

As a supplement to Section 102 of the current Standard Specifications, it will not be necessary for the Proposal Guaranty to include an amount necessary to cover the amount of the bid adjustment.

TRANSPORTATION CABINET
Frankfort, Kentucky 40622
www.transportation.ky.gov/

Steven L. Beshear
Governor

Michael W. Hancock, P.E.
Secretary

Memorandum

To: Renee Slaughter

CC: Scott Schurman

From: O'Dail Lawson
Environmental Scientist II
Division of Environmental Analysis

Date: 9/30/2013

Re: Asbestos Inspection Report for Metcalfe 3-8505

This report is prepared to accompany the 10-Day NOI for Demolition to the Division of Air Quality. Please include all pages with submittal.

Project and Structure Information

Project # 3-8505

Bridge # B00038N

Description: The concrete samples collected were negative for asbestos. The guard rail mastic and joint compound were point counted below 1% ACM. No abatement necessary.

Inspection Date: September 19, 2013

Results

The results revealed that there is no ACM abatement required at this time.

MRS, INC. *MRS, Inc. Analytical Laboratory Division*

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

BULK SAMPLE ASBESTOS ANALYSIS

Analysis N #: 211209286
Client Name: KYTC
Sampled By: O'Dail Lawson
Address: Metcalfe 3-8505 / B00038N

				% FIBROUS ASBESTOS				% NON-ASBESTOS FIBERS			
Number	Color	Layered	Fibrous	Chrysotile	Amosite	crocidolite	Others	Cellulose	Fiberglass	Syn. Fiber	Other/Mat.
M1	Gray	Yes	No				None				100%
M2	Gray	Yes	No				None				100%
M3	Gray	Yes	Yes	2%	(To Be	Point Counted)		2%			96%
M4	Black	Yes	Yes	3%	(To Be	Point Counted)		2%			95%
M5	Gray	Yes	No				None				100%

Methodology : EPA Method 600/R-93-116
Date Analyzed : 28-Sep-13
Analyst : Winterford Mensah
Reviewed By: Winterford Mensah
Signature

AIHA # 102459

AJHA #1 02459

MRS, INC. *MRS, Inc. Analytical Laboratory Division*

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

Client:	**KY Transportation Cabinet**	**Project No:**	**211209286**
Address:	**200 Mero Street**	**Sample ID:**	**M3**
	Frankfort, KY	**Sampled:**	**19-Sep-13**
	40601	**Received:**	**24-Sep-13**
		Analyzed:	**28=sep-13 - Point Count -**
	Attention O'Dail Lawson		

Bulk Sample Analysis

Sampled by: O'Dail Lawson
Facility/Location: Metcalfe - 38505 / B00038N
Field Description: Guard Rail - Mastic
Laboratory Description:
Gray Material

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

Non-asbestos Fibrous Materials & Matrix Materials:

Cellulose	0.25 %
Binders	99.50 %

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

Analyst: Winterford Mensah Reviewed By: Winterford Mensah
Signature

MRS, INC. *MRS, Inc. Analytical Laboratory Division*

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

Client:	**KY Transportation Cabinet**	**Project No:**	**211209286**
Address:	**200 Mero Street**	**Sample ID:**	**M4**
	Frankfort, KY	**Sampled:**	**19-Sep-13**
	40601	**Received:**	**24-Sep-13**
		Analyzed:	**28=sep-13 - Point Count -**
	Attention O'Dail Lawson		

Bulk Sample Analysis

Sampled by: O'Dail Lawson
Facility/Location: Metcalfe - 3-8505 / B00038N
Field Description: Joint Compound
Laboratory Description:
Thick Black Material

Asbestos Materials:
Chrysotile = 2/400 = 0.50 % (< 1 %) Sample Is Negative

Non-asbestos Fibrous Materials & Matrix Materials:

Cellulose	0.25 %
Binders	99.25 %

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

Analyst: Winterford Mensah Reviewed By: Winterford Mensah Signature

Chain of Custody Record

Kentucky Transportation Cabinet
200 Mero Street, 5th Floor West
Frankfort, Kentucky 40622
(502) 564-7250 fax (502) 564-5655

O'Dail Lawson o'dail.lawson@ky.gov
KYTC
Address: 200 Mero Street
Frankfort KY
Phone: 502-564-7650 Fax: 502-564-5655
PO#:

Client Information KY TRANS CABINET
Results Code:
ND = None Detected
FTD = Filter Tampering or Damaged
N/A = Not Applicable

Samplers (signature):

Project or Subject Reference: Metcalfe 3-8505 B00038N

Sample ID		Collected Date	Collected Time	Sample Location	Matrix	Color	Size	Other
M1	Curb Concrete	9-19-13	13:33	North/West End	Concrete	Grey		
M2	Abutment Concrete				Concrete	Grey		
M3	Guard Rail Mastic				Mastic	~~Black~~ Gray		
M4	Joint Compound				Tar	Black		
M5	Span Concrete				Concrete	Grey		

Relinquished By: Date/Time:

Received By: Date/Time: 9/24/13 9:30 Am

Relinquished By: Date/Time:

Received at Lab By: Date/Time:

The EI Group, Inc.

This certifies that

Tilmon O'Dail Lawson

Student Address: 132 Old Fort Drive, Georgetown, KY 40324

Has attended and satisfactorily passed an examination covering the contents of an EPA/AHERA approved course entitled

Asbestos Inspector Refresher (4-Hour) Training Course

7213080011
Certificate Number

7910
Social Security Number

August 23, 2013
Course Dates

August 23, 2013
Exam Date

August 23, 2014
Expiration Date

3240 Office Point Place, Suite 200
Louisville, KY 40220
888-372-5859

Approved by:
Indiana Department of Environmental Management

Louisville,, KY
Location

Barry Maxwell, Training Manager

Kerri Boddy, Principal Instructor

Kerri Boddy, Exam Administrator

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: September 25, 2013

Project Name: Campbellsville Road
Project #: 1381 JL04 085 8301701R
Item #: 03-8505.00
Letting Date: November 22, 2013
County: METCALFE
Federal #: N/A

Description of Project: New interchange from US 68 South onto the Cumberland Parkway.

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: Kelly R. Divine _____ _____ Right-of-Way Supervisor
Printed Name Signature 9/25/13

Approved: DAVID L. ORR _____ _____ KYTC, Director of ROW &Utilities
Printed Name Signature

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

Right-of-Way Certification Form

Revised 2/22/11

Date: September 25, 2013

Project Name: Campbellsville Road
Project #: 1381 JL04 085 8301701R
Item #: 03-8505.00
Letting Date: November 22, 2013

County: METCALFE
Federal #: N/A

This project has 20 total number of parcels to be acquired, and 1 total number of individuals or families to be relocated, as well as -0- total number of businesses to be relocated.

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

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

-0- Parcels have not been acquired at this time (*explain below for each parcel*)

-0- 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)*

-0- 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

SPECIAL NOTES FOR UTILITY CLEARANCE

IMPACT ON CONSTRUCTION

METCALFE COUNTY
JL04 085 83017 01 U
US-68, Campbellsville Road
Item No. 3-8505.00

GENERAL PROJECT NOTE ON UTILITY PROTECTION

The Contractor is fully responsible for protection of all utilities

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

N/A

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

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

N/A

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

East Kentucky Power has existing and proposed electric facilities at the following locations: Existing Mainline: Crossing at Sta. 508+06. Harvey Hurt Road Approach Crossing at Sta. 45+63.25, KY-3524 Approach Crossing at Sta. 53+76.68. Proposed KY-3524 Approach 2 Poles, 115' Right of Sta. 54+00 outside of R/W.

The Company expects to complete their relocation on or before March 31, 2014.

Farmers RECC has existing and proposed electric facilities at the following locations: Existing Mainline From Lt. Sta. 511+40 to Rt. Sta. 513+40 with a crossing at Sta. 511+10 and From Lt. Sta. 527+70 to Rt. Sta. 530+60 with a crossing at Sta. 528+77. Harvey Hurt Road Approach From Lt. Sta. 41+50 to Rt. Sta. 42+60 with a crossing at Sta. 42+70. Ramp 1 From Lt. Sta.104+55 to Rt. Sta. 106+40 with a crossing at Sta. 105+05. KY-3524 Approach From Lt. Sta. 58+65 to Rt. Sta. 61+40 with a crossing at Sta. 59+90. Ramp 4 From Rt. Sta. 409+80 to Lt. Sta. 410+20 and From Rt. 410+35 to Rt. Sta. 412+00 with a crossing at Sta. 410+00. Maplewood Road Approach From Rt. Sta. 41+70 to Lt. Sta. 52+15 with a crossing at Sta. 51+95. KY-1243 Road Approach From Lt. Sta. 33+75 to Rt. Sta. 37+55 and From Lt. Sta. 43+00 to Rt. Sta. 45+35 with crossing at Sta. 37+08 and 43+82.

Proposed Mainline From Lt. Sta. 511+40 to Rt. Sta. 511+00 and From Lt. Sta. 525+00 to Rt. Sta. 530+60 with a crossing at Sta. 511+10. Ramp 1 From Rt. Sta. 103+00 to Rt. Sta. 106+70. KY1243 Road Approach From Lt. Sta. 35+20 to Lt. Sta. 37+70 and from Lt. Sta. 43+15 to Rt. Sta. 45+00 with crossings at Sta.'s 35+50, 37+30 and 43+65.

The Company expects to complete their relocation on or before March 31, 2014.

SPECIAL NOTES FOR UTILITY CLEARANCE
IMPACT ON CONSTRUCTION

METCALFE COUNTY
JL04 085 83017 01 U
US-68, Campbellsville Road
Item No. 3-8505.00

South Central Rural Telephone Coop. has existing and proposed telephone (Copper and Fiber) facilities at the following locations: Existing Mainline: Left and Right of and in between Sta.'s 503+00 to 512+75 and Left and Right of and in between Sta.'s 530+00 to 537+50 with Mainline Crossing's at Sta.'s 508+95, 512+75 and 531+10. Road Approaches: Harvey Hurt Road Approach Right and Left of and in between Sta.'s 31+50 to 50+00. Ramp 2 Left and Right of and in between Sta.'s 206+90 to 215+00. Louis B. Nunn Parkway Crossings Sta.'s 38+25 and 44+75. Ramp 4 Left and Right of and in between Sta.'s 407+80 to 416+65 with Crossing's at Sta.'s 409+00, 409+75 and 416+65. Maplewood Lane Left and Right of and in between Sta.'s 50+00 to 52+50 with Crossing at Sta. 50+75. KY-1243 Approach Left and Right of and in between Sta.'s 33+75 to 49+50 with Crossings at Sta.'s 35+17, 35+27, 36+55, 37+95, 43+50, 43+55, 43+80, 43+95, 48+55, 49+03, 49+08. Ramp 1 Left and Right of and in between Sta.'s 102+06.30 to 106+00 with crossing at Sta. 104+10. KY-3524 Approach Right and Left of and in between Sta.'s 58+60 to 60+50 with crossing at Sta. 59+85.
Proposed Mainline: Outside of proposed R/W Left of Sta. 503+00 to Left of 504+50. Right of 532+20 to Right of 537+50 with Mainline Crossing at Sta. 532+05. Road Approaches: Harvey Hurt Road Approach Outside of Proposed R/W Right of Sta. 31+50 to Right of 49+30. Ramp 4 Outside of Proposed R/W Right of Sta. 413+20 to Right of Sta. 419+60 with Crossing at Sta. 419+60. KY-1243 Approach Outside of Proposed R/W Right of Sta. 33+75 to Right of Sta. 36+55 with Crossing at Sta. 34+35, Outside of Proposed R/W Left of Sta. 34+35 to Left of Sta. 49+25. Louis B. Nunn Parkway Crossing at Sta. 35+30. Ramp 2 Crossing at Sta. 204+00.
The Company expects to complete their relocation on or before March 31, 2014
Mediacom has existing and proposed cable TV facilities (Fiber) at the following locations: Existing Harvey Hurt Approach Left of Sta. 41+00 to Right of Sta. 47+50. Ramp 2 Crossing Sta. 214+66. Louis B. Nunn Parkway Crossing Sta. 44+75. Ramp 4 Crossing Sta. 410+00. Maplewood Approach Crossing Sta. 51+90. KY-1243 Approach Left of Sta. 33+75 to Right of Sta. 38+50.
Proposed Harvey Hurt Road Approach Right of Sta. 41+50 to Right of 47+25. Louis B. Nunn Parkway Crossing Sta. 28+10. Ramp 4 Crossing Sta. 426+60.
The Company expects to complete their relocation on or before March 31, 2014.

(NOTE: Use the following Text Only If Applicable) The Department will consider submission of a bid as the Contractor's agreement to not make any claims for additional compensation due to delays or other conditions created by the operations of (Utility Company(s) Name). Working days will not be charged for those days on which work on (Utility Company(s) Name) facilities is delayed, as provided in the current edition of the KY Standard Specifications for Road and Bridge Construction. Should a difference of opinion arise as to the rights of the Contractor and others working within the limits of, or adjacent to the

SPECIAL NOTES FOR UTILITY CLEARANCE

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project, the KYTC Resident Engineer will decide as to the respective rights of the various parties involved in order to assure the completion of the Department's work in general harmony and in a satisfactory manner, and his decision shall be final and binding upon the Contractor. .

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

City of Edmonton has existing (4" Gas, 2" & 6" Water lines) and proposed (3", 4" & 6" PE gas, 6" PE & 6"PVC Water) water and gas facilities at the following location: Existing Mainline Left and Right of and in between Sta.'s 503+00 to Sta. 514+35 and Sta.'s 527+00 to Sta. 537+50. Ramp 1 Right and Left of and in between Sta.'s 102+06.30 to Sta. 108+00. KY-3524 Approach Crossing Sta. 50+60. Left and Right of and in between Sta.'s 59+00 to Sta. 63+15. Harvey Hurt Road Approach Left and Right of and in between Sta. 31+50 to Sta. 37+00 with a crossing at Sta. 49+30. Ramp 2 Right of and in between Sta.'s 210+00 to Sta. 218+26.75. Ramp 4 Left and Right of and in between Sta.'s 408+00 to Sta. 411+00. Louis B. Nunn Parkway Crossings Sta.'s 44+80 and 46+90. KY-1243 Road Approach Left and Right of and in between Sta.'s 33+75 to 49+00. Maplewood Lane Approach Left and Right of and in between Sta.'s 50+00 to 52+50.
Proposed Mainline Left of and outside of R/W between Sta.'s 503+00 to 504+50, Right of and inside project R/W between Sta.'s 503+00 to 504+00 with crossings at Sta. 503+00 and 503+25. Left of and outside of R/W between Sta.'s 531+00 to 535+42, Left of and inside R/W between Sta.'s 535+20 to 537+00 with crossing at Sta. 532+00. KY 3524 Right of and outside of R/W and project limits between Sta.'s 50+75 extending 300' past End Approach Sta. 61+15. Harvey Hurt Road Approach From Right of a point extending 125' past Begin Approach Sta. 31+50 outside of R/W to Sta. 49+50 outside of R/W with a crossing 125' from Begin Approach Sta. 31+50. Ramp 2 Crossing at Sta. 203+50. Louis B. Nunn Parkway Crossing Sta. 34+80. Ramp 4 Crossing Sta. 420+15. Right of and outside of R/W from Sta. 409+60 to 420+15. KY-12434 Approach From Left of and outside of R/W from 34+55 to left of Sta.49+00. Right of and outside of R/W From 34+55 to right of Sta. 38+50.

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SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

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

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

BEFORE YOU DIG

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

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

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AREA UTILITIES CONTACT LIST

Utility Company/Agency	Contact Name	Contact Information
East Kentucky Power Coop. Inc.	**Shaun Vance**	**(859) 745-9383**
Farmers Rural Electric Coop.	**Todd Stephens**	**(270) 651-2191**
Tri-County Electric Coop.	**Steve Linville**	**(615) 666-2111**
South Central Telephone Coop.	**Tim Gibson**	**(270) 678-8249**
City of Edmonton	**Howard Dickson**	**(270) 646-6273**
Mediacom Southeast LLC	**Albert Gaboriault**	**(270) 527-9939**

DIVISION I - GAS MAINS AND APPURTENANCES

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FOR

DIVISION I

GAS MAINS AND APPURTENANCES

GAS MAINS AND APPURTENANCES

SECTION 1

GENERAL REQUIREMENTS

1. GENERAL

Scope of Work

The gas mains and appurtenances required on this Contract shall be furnished in full compliance with the Contract Specifications and the Contract Drawings.

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 and placing of bulkheads, the restoration of any utilities, parkways, trees, shrubbery, culverts, fences, and other items not covered under subsequent 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 gas installation not specifically included for payment under the Item of Unit Price Payment Nos. described herein shall be merged with the various unit prices for the Unit Price Construction Items.

1.2 Standards

Where material and methods are indicated in the Specifications as being in conformance with the standard specification, it shall refer in all cases to the latest edition of the specifications and shall include all interim revisions. Listing of a standard specification without further reference indicates that the particular material or method shall conform with such listed specification.

2. WORK INCIDENTAL TO CONSTRUCTION

Work to be performed under this heading includes all the work designated as "Incidental to Construction" and shall be done in compliance with the Contract Drawings. The Contractor is hereby referred to the Agreement, General and Special Conditions Sections of these Specifications and the Contract Drawings. All work wherein there are not specified pay items shall be considered as "Incidental to Construction" and no additional compensation will be allowed.

2.2 In addition to the above-referenced requirements and unless otherwise noted, the below listed work shall be considered incidental to construction.

2.3 Public and Private Utilities

Utilities. Where any utilities such as water, sewer, telephone, power, oil and 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 endanger the foundation of any utility conduit, 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 conduits, poles, or structures.

The cost of any bracing or support of conduits, poles or structures as shown on the Contract Drawings shall be merged into the unit price per linear foot of gas main.

When, in order to carry out the work a pole, power or telephone must be removed to a new location or moved and replaced after construction, the Contractor shall arrange for the moving of such pole or poles and lines thereof.

Where it is the policy of any utility owner to make his own repairs to damaged conduit or other structures, the Contractor shall cooperate to the fullest extent with the utility owner and he shall see that his operations interfere as little as possible with the utility owner's operations.

Existing Water, Sewer, Gas, Telephone, Electric and Drain Facilities. In some instances, existing water, sewer, gas, telephone, electric or drains may be encountered along the line of work. In all such cases, the Contractor shall perform his operations in such manner that such service will not be interrupted, and shall, at his own expense, make all temporary provisions to maintain such services. Furthermore, the Contractor will give adequate notice to the Utility to allow their location of lines ahead of the proposed construction with paint or stakes. The Contractor will be required to expose the lines prior to dynamiting and excavation where crossing pipeline installations.

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 re-laying same at a new grade or line.

Existing Gas Facilities. Where existing gas mains are encountered in the work, they shall be maintained in operation to the extent that gas service is not interrupted.

Existing Water Facilities. Where existing water mains shown on the Contract Drawings are encountered, the Contractor shall arrange with the Water Utility for any necessary re-laying.

Existing Underground Electric and Telephone Facilities. Where existing underground electric or telephone facilities are encountered, the Contractor shall arrange with the Electric Company or Telephone Company for any necessary re-laying.

2.4 Dewatering

The Contractor shall perform all pumping, well pointing, ditching and any other necessary procedure to keep the excavation clear of groundwater, stormwater, 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, stormwater, or sewage will be allowed to build up over any concrete and/or masonry at manholes or structures for a period of 6 hours. This time period will be adjusted by the Engineer should temperature and curing conditions warrant.

All water pumped or drained from the work shall be disposed of in a manner satisfactory to the Engineer without damage to adjacent property or to other work under construction. The Contractor shall not dispose of storm or surface water through new or existing 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 integral part of pipe laying and no separate payment will be allowed therefore.

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 placed on each side of the manhole and/or at points in the trench down stream might be required. When required to protect the freshly placed concrete and/or masonry, timber or plywood forms will be positioned around 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 structure 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 ensure 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 and at least one free lane shall 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 local Municipality, County, and/or State Highway Authority, as the case may be.

Where gas mains are constructed under paved roadway surfaces, within public rights-of-way, 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 gas main installation, to regrade the street with pug mix to the template that existed prior to construction. This regrading shall be satisfactory to the local Municipality, County and/or State Highway Authority before the street is released for paving operations.

The Contractor shall further be responsible for the maintenance of disturbed streets until repaving operations have been completed. The Contractor shall restore all curbs, gutters, sidewalks, ramps and private driveways or parking lots. Compensation for this work is detailed in other portions of this document and any item which must be removed as was evidence and necessary for the installation of the proposed gas main for which there is no specific pay item(s) shall be considered as incidental to the construction of the proposed gas main and, therefore, no additional compensation will be allowed for the restoration of this (these) item(s).

The Contractor shall also be required to restore, at his own expense, all pavements disturbed by his operations where the gas 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 gas main deficiency discovered after restorations have been completed.

3. 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 weathertight 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. SPECIAL CONDITIONS

The Contractor's attention is called to the Special Conditions indicated on the Drawings and described in this Section of the Specifications. The Drawings 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 water company, telephone company, railroad 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 gas main and service to customers is maintained to the maximum extent possible. Such service shall be disrupted at such times and in such a manner as approved by the Engineer.

(b) The Contractor shall submit a work schedule to the Engineer 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, upon request, will be furnished with drawings showing easements obtained for the construction of gas mains and appurtenances. The Contractor shall exercise due care in staying within the easement indicated and will be held strictly accountable for violations thereof. Any desired access points not shown on the Drawings must be acquired by the Contractor by negotiation with the property owner involved.

5. SUBMITTALS

Submittals for this work include: pipe supplier with information on pipe to be used including the joint design, pipe material, recommended laying methods and material test reports; manufacturer's data on valves and valve boxes to be used. Such submittals are to be made for approval by Engineer prior to incorporation of any materials into the work.

6. 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 Owner or the Engineer, requires immediate correction, the Contractor will be notified and requested to make the necessary repairs immediately. Should this be impractical or if the Contractor should fail to respond to the request for corrective action within the specified period, the Owner 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, refuses or neglects to pay the Owner, the Surety shall be liable for such charges.

7. 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, Engineer will inspect the work for completeness in accordance with the Contract Documents. Any deficiencies shall be promptly corrected by Contractor.

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

Payment in full of the Final Application for Payment shall constitute acceptance of the work by the Owner subject to conditions of the Contract Documents.

GAS MAINS AND APPURTENANCES

SECTION 2

MATERIALS

1. 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.

2. CONCRETE

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 C-150, latest revision. Cement shall be furnished in undamaged 94 pound, one cubic foot sacks and shall show no evidence of lumping.

Concrete Fine Aggregate - Fine aggregate shall be clean, hard uncoated natural sand conforming to ASTM Designation C-33, latest revision, "Standard Specifications for Concrete Aggregate."

Concrete Coarse Aggregate - Coarse aggregate shall consist of clean, hard, dense particles of stone or gravel conforming to ASTM Designation C-33, latest revision, "Standard Specifications for Concrete Aggregate." Aggregate shall be well graded between 1½-inch and #4 sieve sizes.

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

Ready-Mix Concrete - Ready-mix concrete shall be secured only from a source approved by the Engineer and shall conform to ASTM Designation C-94, 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.

Class "A" Concrete - Class "A" concrete shall have a minimum compressive strength of 4,000 pounds per square inch in 28 days and shall contain not less than 5.5 sacks of cement per cubic yard.

Class "C" Concrete - Class "C" concrete shall have a minimum compressive strength of 2,000 pounds per square inch in 28 days and shall contain no less than 4.5 sacks of cement per cubic yard.

Metal Reinforcing - Reinforcing bars shall be intermediate grade steel conforming to ASTM Designation A-615, 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 sizes.

3. BACKFILL MATERIAL

Sand for pipe bedding shall meet the quality requirement of **Section 903.06(b)** of the Standard Specifications of the Kentucky Transportation Cabinet.

Crushed stone for backfill in roadways and other designated locations shall meet the quality requirements of ASTM D-692 and the grading requirements of AASHTO M-43, size 67.

4. VALVE BOX FRAMES AND COVERS

Valve box frames and covers shall be made of heavy cast iron and shall meet the requirements of ASTM A-48, Class 30.

All casting shall be made accurately to the required dimensions and shall be sound, smooth, clear and free of blemishes or other defects. Defective castings which have been plugged or otherwise treated to remedy defects shall be rejected. Contact surfaces of frames and covers are to be machined so that the covers rest securely in the frames with no movement. The cover shall be in contact with the frames for the entire perimeter of the contact surface.

Valve box frames shall be supported by concrete blocks on each side of the valves with no weight of the valve box frame being on the gas main or gas valve.

The valve box frames and covers shall be as manufactured by John Bouchard and Sons Company, Nashville, Tennessee, No. 8004 Roadway Type, or approved equal. The cover shall be marked "GAS."

5. PIPELINE DETECTION TAPE/MARKING TAPE AND TRACER WIRE

Detectable pipeline location tape shall be plastic composition film containing one layer of metalized foil laminated between two layers of inert plastic film specifically formulated for prolonged use underground. Tape shall be a minimum of 5.5 mils thickness, orange in color, and continuously printed in permanent ink to indicate caution for a buried gas line below. Detectable tape shall be placed atop all gas mains, including steel gas mains, and service lines installed under this project.

Detectable tape shall be 3 inches wide, with a minimum tensile strength of 5,000 psi, and shall be an inert, bonded layer plastic with a metalized foil core and shall be highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. The tape shall be brightly colored (Orange) to contrast with soil and shall bear the imprint “CAUTION -- GAS LINE BURIED BELOW.” Tape shall be Terra-Tape as manufactured by Reef Industries, Inc. or approved equal.

Additionally, the Contractor shall provide and install a 14-gauge insulated copper wire on top of the newly installed PE gas main. (See Special Detail in Contract Drawings.)

6. CASING PIPE

Where noted on the Drawings or required by these Specifications, roadway, railroad or other 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 or described in these Specifications. Casing pipe and joints shall be of leakproof steel construction in accordance with the following table, unless specifically shown otherwise on the drawings or in the Specifications describing construction requirements or a particular casing location,

TABLE OF MINIMUM WALL THICKNESS
FOR STEEL CASING PIPE
(COOPER E-80 LOADING)

Casing, Diameter inches	Wall Thickness with approved protective coating, inches	Wall Thickness without approved protective coating, inches
Under 14	0.188	0.25

Casing Spacers/Insulators shall be equal to units manufactured by Advance Products and Systems, Inc., Lafayette, Louisiana, or approved equal. Spacers/Insulators shall be suitable for supporting the carrier pipe and shall provide a permanent insulation between the carrier pipe and casing pipe. The contractor shall submit method of installation for approval. End seals shall be pull-on rubber, seamless, with a minimum of 1/8-inch thickness and shall be Model AC as manufactured by Advance Products and Systems, Lafayette, Louisiana.

Note: Casing pipes are required only for bores with “P.E.” polyethylene gas lines.

7. 2406 POLYETHYLENE (P.E.) GAS PIPE AND FITTINGS

Polyethylene (P.E.) pipe for gas main and fittings shall be manufactured in accordance with the latest edition/requirements of ASTM D-2513, ASTM D-2683, ASTM D-3251, the Plastics Pipe Institute and Section 192.59 of U.S. Department of Transportation Standards.

P.E. pipe and fittings shall meet or exceed the following:

Property	Unit	Procedure	Requirements
Material Designation	-	PPI/ASTM	P.E. 2406
Material Classification	-	D-1248	II C5 P34
Cell Classification	-	D-3350	345434C
Density (3)	gm/cm^3	D-1505	0.941
Melt Flow (4)	gm/10 min.	D-1238	0.2 Max
Flexural Modulus (5)	psi	D-790	125,000
Tensil Strength (4)	psi	D-638	2,800
ESCR (3)	Failure % Hrs.	D-1693	>F 5000
Elastic modulus	psi	D-638	110,000
Brittleness Temperature	F	D-746	-180
Vicat Softening Temperature	F	D-1525	235
Thermal Expansion	in/in F	D-696	8x10^-5
Hardness	Shore D	D-2240	62
HDB @ 73.4	psi	D-2837	1,250

Pipe and fittings shall be manufactured from identical materials meeting the above requirements. In addition, the manufacturer’s equipment and quality control facilities

must be adequate to ensure that pipe and fittings are uniform in texture, dimensions and strength.

As part of the manufacturer bid submittal, the pipe manufacturer shall furnish a certificate stating that he is fully competent to manufacture P.E. pipe of uniform texture and strength and in full compliance with these Specifications, and that he has manufactured such pipe and fittings in sufficient quantities to be certain that all requirements of this Specification will be met and that pipe furnished for this project meets the requirements of these specifications.

Testing and inspection of all pipe shall be done at the factory with a certified copy of test results furnished to the Owner/Engineer prior to any pipe being installed. Tests shall be done in accordance with ASTM 2837 and validated in accordance wit the latest revision of PPI TR-3. The owner may take random samples and have them tested by an independent laboratory. Samples that fail to comply with the requirements set forth in these Specifications shall be rejected.

Pipe and fittings shall be manufactured in accordance with ASTM F-714. Pipe and fittings, unless otherwise indicated on the Contract Drawings, shall be butt fusion type meeting the requirements of ASTM D-3261. All fittings shall be pressure rated to match the system piping and the outside diameter and minimum wall thickness shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714.

The pipe manufacturer shall coordinate with the Owner/Contractor all points of connections including pipe to valves and other points of connection as may be required. The joining method shall be done in strict accordance with the pipe manufacturer's written instructions. The pipe manufacturer shall visit the site and instruct the Contractor's personnel in the proper method(s) of connections and shall provide a certification that the Contractor's personnel have been properly instructed.

The pipe manufacturer shall provide recommendations relative to the storage and handling of pipes and fittings. At a minimum, pipe and fittings shall be stored on clean, level ground to prevent damage. As a result of shipment, any section found to have cuts or gouges shall not be installed and such sections shall be removed from the project.

The polyethylene gas main and fittings shall not be less than SDR 11 and shall be pressure rated for a maximum available operation pressure (MAOP) of not less than 80 psi as determined by formulae contained in the American Gas Association Plastic Pipe Manual for gas service and in part 192 of Federal Regulations or the U.S. Department of Transportation. Furthermore, upon installation, the P.E. pipe shall be tested in accordance with section 192.513 of the Federal Regulations.

The polyethylene gas main and fittings shall be manufactured by either Phillips Driscopipe, Inc., Plexco, Polypipe, or approved equal.

8. GAS VALVES FOR POLYETHYLENE GAS MAIN

The gas valves for this project shall be quarter- turn, plug or ball shut off valves, and of the size indicated on the Drawings. The valves shall meet the minimum requirements of the U.S. Department of Transportation's Part 192 including Section 192.145(b) 1 and 2. In accordance with this Section, the service pressure rating of the valves shall be 100 psig when operating at maximum service temperature of 73 degrees F. The manufacturer shall submit documentation that the valves have been manufactured, tested and are in full compliance with the requirements of this Section.

In addition, the valves shall be manufactured in compliance with ASTM D-2513 and Shall be otherwise suitable for butt fusion to SDR 11-2406 polyethylene pipe.

Valves shall be manufactured by Nordstom (plug valves), Perfection (ball valve), or Frialen (ball valve) or approved equal.

9. STEEL GAS PIPE

Steel gas pipe shall be manufactured, tested and otherwise supplied in complete accordance with America Petroleum Institute Specification API-5L (latest edition). Unless otherwise noted, steel gas pipe shall be manufactured using X42 steel having a specified minimum yield strength of 42,000 psi. All line pipe shall be furnished in at least forty-foot (40') lengths, with ends beveled in accordance with 7.9.3 of API-5L. The steel gas pipe shall meet all applicable requirements of Part 192 of the U.S. Department of Transportation's (DOT) Pipeline Safety Regulations.

Pipe fittings shall meet the pressure requirements of the steel gas pipe to which the fittings shall be connected and shall fully meet the requirements of 192.149 of the DOT's Pipe Safety Regulations.

All steel gas pipe and fittings, where appropriate, shall be externally coated for external corrosion control. The coating shall be Scotch-Cote 206 thin film fusion bonded epoxy as manufactured by 3M Corporation. Coating thickness shall be a minimum of 12 mils thickness and a maximum of 15 mils unless double coating is required, in which case the minimum coating thickness shall be 25 mils. The coating must be applied on a properly prepared surface and have sufficient adhesion to the metal surface to effectively resist underfilm migration of moisture. The coating must be sufficiently ductile to resist cracking and have sufficient strength to resist damage due to handling and soil stress. All weld joints, service tees, and any attached appurtenances shall be coated with Polyken #1027 pipeline primer, or equivalent, and field wrapped with Polyken #932 joint wrap tape, or equivalent. All external protective coating must be inspected just prior to lowering the pipe into the ditch and backfilling, and any damage detrimental to effective corrosion control must be repaired. If coated pipe is installed by boring, driving, or other similar method, precautions must be taken to minimize damage to the coating during installation.

The steel gas pipe and fittings shall be domestically manufactured and no foreign manufactured pipe and fittings will be accepted.

10. GAS VALVES FOR STEEL GAS MAINS

The gas valves for steel gas mains for this project shall be quarter turn, standard weld end and/or flange end, full-port opening, ball shut-off valves. The valves shall meet the minimum requirements of the U.S. Department of Transportation's Part 192 including Section 192.145 and the minimum requirements of American Petroleum Institute (API) Specification 60 (latest edition). The gas valves shall be Class 300 having the maximum operating pressure rating set forth in Table 2.1 of API-60 for a temperature of 100°F or less.

All valves shall be equipped with wrench and extended operating stem sufficient to locate the operating with one foot of the grade surface, position indicator and valve box. The valve box shall be of a type and shall be installed to avoid transmitting any external loads to the gas main and valve. All valve castings shall be made accurately to the required dimensions and shall be sound, smooth, clean, and free from blisters and other

defects. Contact surfaces of frames and covers shall be machined so that the covers rest securely in the frames with the cover in contact with the frames for the entire perimeter of the contact surface. All castings shall be thoroughly cleaned subsequent to machining and before rusting begins, painted with a bituminous coating.

The manufacturer shall submit certification documentation that the valves have been manufactured, tested, and otherwise are in full compliance with requirements of the Federal Pipeline Safety Regulation, Part 192 and American Petroleum Institute Specification 60.

Valves for the gas main transmission pipe shall be manufactured by Grove or approved equal. Valves for side lines and blow-offs shall be manufactured by Ball-O-Max or approved equal. Main line valves in valve vaults shall have gear operations with 2-inch square operating nut.

11. CATHODIC TEST STATIONS

At locations shown on the Drawings or as directed by the Engineer, cathodic test stations shall be furnished and installed. Test stations shall be two wire, Cathod-O-Flex test station type as manufactured by Carsonite International, 1301 Hot Springs Road, Carson City, Nevada 89706 (800-648-7974) or approved equal.

12. VALVE MARKERS

Where indicated on the Contract Drawings or as directed by the Engineer, markers for valves shall be one piece for driving or settling in the ground. Marker units shall be weather resistant with identifying color and permanently affixed marker identifying Gas Main Valve and shall be a minimum of 62 inches in length. Units shall be flexible and resistant to damage by vehicles, animals, or vandals. Marker units shall be Carsonite Utility Marker, manufactured by Carsonite International, Carson City, Nevada, or approved equal.

13. PLAIN STONE RIP-RAP

Plain stone rip-rap material shall be sound, durable, free from cracks, pyrite intrusion and other structural defects. Wear shall not exceed sixty by the Los Angeles Method. When crushed aggregate is subjected to five alternations of the sodium sulfate soundness test, the weighted percentage of loss shall not be more than fifteen. At least 90 percent of the stone shall not be less than 8 inches wide by 12 inches long by 12 inches deep and shall be approximately rectangular in shape.

GAS MAINS AND APPURTENANCES

SECTION 3

CONSTRUCTION

1. PRELIMINARY WORK

1.1 Location of Lines - The streets, roads, and easements in which lines shall be placed have been indicated on the Drawings. Final location of the pipe lines within these locations shall be made by the Engineer at the time of construction.

1.2 Location and Protection of Underground Utilities - Prior to trenching, the Contractor shall determine, insofar as possible, the actual location of all underground utilities in the vicinity of this operation and shall clearly mark their locations so that they may be avoided by equipment operators. Where such utility lines or services 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 trenching 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 and/or repair shall be such that the damaged structure 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 method and not in conflict with state or local ordinances.

Care shall be taken to avoid unnecessary cutting or damage to trees not in the construction area. The Contractor will be responsible for loss or damage to trees outside the permanent easement or rights-of-way.

2. EXCAVATION

2.1 General

The Contractor shall perform all required excavation and backfilling incidental to the installation of the gas mains and other appurtenances under this Contract. Excavation shall be carried to the depths indicated on the Drawings or as necessary to permit the 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 for structures. 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. In the event 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 pilings or other suitable special foundations.

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

The Contractor shall saw-cut pavements prior to excavation procedures.

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

2.2 Classification of Excavation

Excavation shall be unclassified and the cost of excavation shall be merged into the price per foot for the gas main. No distinction will be made between rock and earth excavation and no separate payment will be allowed thereof.

2.3 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 cut or 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.

2.4 Trench Excavation

Trenches shall be excavated in a neat and workmanlike manner, maintaining proper alignment except where necessary to make deviations to miss obstructions. Unless otherwise noted on the Construction Drawings, trenching for installation of gas transmission and distribution piping shall be such that the pipe will have a minimum cover of forty-eight inches (48") in easements and rights-of-way and forty-eight inches (48") of cover under drainage ditches, creeks and streams. The bottom of trenches must be shaped so that full length of pipe is resting on trench bottom. Blocking shall not be used.

Note: In many cases the gas main shall be required to have more than 48 inches of cover to get under existing utilities or to satisfy other situations. This additional depth, when required, shall be merged into the unit price bid per foot of gas main.

Trenches shall be opened up far enough ahead 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 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 and Police Departments and 911 agencies are notified before road is closed.

3. Suitable detours are provided and are clearly marked.

No driveways 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 to occupants' convenience and, except in case of emergency, drives shall not be blocked for a period of more than 8 hours.

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

Trench width shall be held to a minimum consistent with proper working space for assembly of pipe and, at a minimum, twice the outside diameter of the pipe to be contained in the trench. Maximum trench width up to a point one foot above top of pipe shall be limited to the outside pipe diameter plus 16 inches. Boulders, large stone, shale and rock shall be removed to provide clearance of 6 inches 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 and to comply with federal and state safety regulations.

Where unstable soil conditions are encountered at the trench bottom, the Contractor shall remove such 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 trench and in such a way as to avoid encroachment of private property.

2.5 Excavation for Structures

Excavation for metering pits or other appurtenance shall be only as large as may be required for the structure of appurtenance and for working room around the same. In earth, excavation shall generally extend to the outer limits of the structure at the bottom and shall slope outward at such angle as may be required for stability of excavated face. In rock, excavation shall be carried to a point 6 inches outside the structure so that no rock is left within 6 inches of the finished structure or appurtenance.

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 Class C concrete or other approved methods at the expense of the Contractor. The use of tamped earth backfill under foundations, footings or slabs will not be acceptable.

Where structures rest partially upon rock, the rock shall be excavated to a point 6 inches below bottom of structure and compacted crushed stone shall be used to bring the excavation back to grade. Where the structure will rest completely on sound solid rock, the rock shall be excavated to a point 4 inches below bottom of structure and compacted crushed stone 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, such condition shall be immediately called to the attention of the Engineer. The Engineer may direct that such unsuitable material be removed and replaced with concrete; he may modify the foundation design to suit the condition; or he may determine that the bearing capacity of the material for the load to be supported; but, in any case, he shall provide written instructions to the Contractor as to the procedure to be followed.

2.6 Disposal of Surplus Excavated Material

Excavated material that is unsuitable or unnecessary for backfilling shall be hauled to sites as directed by the Engineer for use as fill on the project. No surplus excavated material may be disposed of except as provided herein unless specifically authorized by the Engineer. Any material which is not suitable or not required for the fill on the project shall be disposed of by the Contractor.

2.7 Subsurface Obstructions

In excavating, backfilling and laying pipe, care must be taken not to remove, disturb or injure other pipes, conduits, or structures without the approval of the Engineer. If necessary, the Contractor, at his own expense, 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 subsurface structures are broken or damaged in the prosecution of the work, the Contractor shall immediately notify the proper authorities and shall be responsible for any damage to persons or property caused by such breaks.

When pipes or conduits providing service to adjoining buildings are broken during the progress of the work, the Contractor shall have them repaired at once. Delays, such as would result in buildings being without service 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 Drawings. 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 Engineer regarding the laying of pipe along State Highways and the latter will determine whether the pipe shall be laid over, under, or along the end of various drainage structures encountered.

2.8 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 in Section 6 - "Special Construction Items."

3. INSTALLATION OF GAS MAIN AND APPURTENANCES

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, the recommended practice of the pipe manufacturer, and the requirements of DOT Pipeline Safety Regulation. No person shall make a steel or polyethylene pipe joint unless that person has been qualified under the requirements of DOT Pipeline Safety Regulation, Subpart E 192.221 through 197.245 for steel pipe and Subpart F 192.271 through 192.287 for polyethylene pipe..

Care shall be exercised to ensure 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, and other accessories needed for proper assembly or installation of the pipe shall be provided at the site of the 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 pipe and fittings. Pipe and fittings shall be carefully lowered into the trench. Pipe and fittings shall be carefully inspected for defects and for dirt or other foreign material immediately before placing them in the trench. Suitable swabs shall be available at the site of laying operations, and any dirt or foreign material shall be removed from the pipe before it is lowered into the trench.

Trench bottoms shall be carefully prepared. 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 axis of pipe.

3.2 Removal of Water

The Contractor shall be responsible for handling run-off and groundwater 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.

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 Steel Pipe

3.3.1 Bending

Bending of the steel pipe shall be performed to conform to the shape of the trench. It is required to limit the number of bends to a minimum and still conform to the trench profile and alignment as well as maintaining required cover over the pipe. To conform to this requirement may require additional grading at crests of ridges, approaches to roads, water courses, other utilities, and other crossings. The Contractor shall eliminate unnecessary bending by varying the depth of the trench whenever practicable while still maintaining the required cover over the pipe.

The Contractor shall make all necessary field pipe bends required in the construction of the pipeline. Bends, such as 90°± elbow, shall be minimum of 3 radii long sweep to accommodate future pigging of pipeline. Miter the ell as needed. The Contractor shall not be paid for any fittings including those shown on the Drawings.

All bending shall be done by the cold-strength method. Bends shall be made by using a type of bending machine approved by the Owner. Pipe with buckles, wrinkles, or flat spots will not be permitted in the pipeline.

The distance between center lines of bending points shall be one (1) pipe diameter. The maximum degree of bending at each bending point shall be one and one-half degrees (1-1/2°). An accurate method of measurement shall be used. No bend shall be made nearer than four feet (4') to the end of the joint of pipe. When pipe is double jointed before bending, bend shall not be closer to the weld than three feet (3'). Departure from pipe roundness (the difference between the long and short diameters of the pipe) in any bend shall not exceed two and one-half percent (2-1/2%) of the nominal diameter of the pipe. On pipe containing a longitudinal weld, the longitudinal weld must be as near as practicable to the neutral axis of the bend.

All pups five feet (5') and over shall be moved ahead daily and installed in line. There shall be a full joint of pipe installed between pups.

Any pipe that is buckled, wrinkled, flattened, or distorted shall be cut out and replaced at Contractor's expense.

3.3.2 Welding

All welding done under these Specifications shall be in accordance with minimum Federal Safety Standards (D.O.T.) Part 192, Subpart E, and with the Standard for Welding Pipe Lines and Related Facilities, API Standard 1104, latest edition.

All welding shall be done by the manual, electric shield-arc process unless written approval of an alternate method has been obtained from the Owner prior

to commencement of the work. If alternate welding process is proposed by the Contractor, the Contractor shall submit a complete set of proposed welding specifications for review and approval by the Owner.

The Contractor shall, at all times, use only skilled workmen for welding. Each welder employed by the Contractor shall be required to satisfactorily pass a qualification test as outlined in Section 3 of API Standard 1104, latest edition. The Contractor shall, at its sole expense, prepare pipe specimens, furnish welding materials, beveling machine, coupon cutter, welding machine, and the testing of pipe specimen at an independent testing laboratory which shall be approved by the Owner. A representative of the Owner shall witness all test welding. Should any welder perform work that is not satisfactory to the Owner, such workman shall be immediately released or assigned other non-welding duties by the Contractor.

Line-up clamps will be used whenever practical. Internal line-up clamps will not be removed until the root bead (stringer) is one hundred percent (100%) completed. If an external line-up clamp is used, as much as possible of the root bead shall be completed and uniformly spaced around the circumference of the pipe and shall have an accumulative length of not less than fifty percent (50%) of the circumference before the clamp may be removed.

The adjoining lengths of pipe shall be accurately aligned so that all welding shall be at right angles to the axis of the pipe and accurately spaced before applying the stringer bead. Pipe shall be supported so that there is no strain on the stringer bead and so the pipe will be supported until the weld is complete and has cooled.

Before placing a joint of pipe in alignment, all dirt, mill scale and foreign materials shall be removed from the inside of the pipe by swabbing.

Preparatory to aligning pipe, all paint, rust, scale, dirt or other foreign materials that might affect the welding operation shall be removed by machine buffing and the entire circumference of the pipe joint. Contractor shall re-cut, trim or re-bevel all pipe ends as may be necessary to maintain correct alignment and spacing of the pipe using an approved type beveling machine.

The welding operation shall be protected from weather conditions that would impair the quality of the completed weld.

Welding shall be done by the shielded metal arc process and shall be performed in the vertical down direction. The current used for depositing the filler metal shall be direct reverse polarity. The pipe material shall be on the negative side of the line. The stringer bead shall be deposited using a drag technique so as to completely fuse the abutting edges of the lands and beveled parts of the joint. There shall be complete penetration with a minimum inside buildup. Stringer bead shall be made with 1/8-inch or 5/32-inch AWS Class E-6010 (Fleetweld 5, 5P or equivalent). The stringer bead shall be thoroughly cleaned before starting the Hot Pass. Power brushing may be sufficient; however, disc grinding may be required. The Hot Pass shall be started immediately after completion and cleaning of the stringer bead before the stringer bead can cool--always within five minutes. The 5/32-inch Hot Pass shall be made with AWS Class E-6010 (Fleetweld 5, 5P or equivalent) or AWS Class 7010 (Shield-Arc 85 or equivalent). The Hot Pass shall be cleaned by power brushing or disc grinding. Stripper passes may be used if required. The cover Pass shall be made using 5/32-inch

AWS Class E-6010 (Fleetweld 5, 5P or equivalent) or AWS Class E-7010 (Shield-Arc 85 or equivalent) using a weaving motion and should be 1/32-inch to 1/16-inch higher than the pipe wall and overlay the groove by 1/16-inch on each side. The completed weld shall be thoroughly brushed and cleaned. At the completion of the day's work, all welds that have been started shall be finished.

If more than one welder is used, then all welds shall be stenciled on top quarter of pipe by the Contractor according to numbers assigned to the welders by the Contractor. The Contractor shall furnish the Owner with a record of all numbers assigned. No numbers shall be reassigned. Metallic dies shall not be used to mark the pipe.

The Owner shall be privileged to have the Contractor cut out any questionable weld, and the Owner reserves the right to have any and all welds checked by x-ray or other non-destructive tests. The cost of such non-destructive testing shall be paid by the Owner unless the weld is found to defective, in which case the Contractor shall be responsible and shall pay the cost of such testing. The Contractor will also allow time to conduct tests prior to coating. The Contractor shall repair or replace any unsatisfactory weld at his own expense.

The intent and purpose of these Specifications is to ensure a one hundred percent (100%) weld strength, ductility, fusion and penetration. Each completed weld shall be free of scale, oxides, gas pockets, air pockets, pin holes, non-metallic inclusions, rivers, undercutting, dirt, slag, or other foreign inclusions or any other defects.

Arc burns outside the area of the area of the finished weld shall be cause for the rejection of the weld. Weld splatter from the welding process shall not be considered an arc burn. Cracked welds shall be rejected. Pin holes, cold laps, rivers, undercutting or any defects whatsoever occurring in any weld shall be repaired or cut out and completely re-welded at no expense to the Owner.

If a weld is repairable, the defective area will be completely removed and the area preheated before re-welding. If a defect is then observed in the repaired area, the entire weld shall be cut out and replaced. Replacement shall be made by welding into the line a pup joint having a minimum length of five feet (5'). Replacement shall be at the expense of the Contractor.

At the end of each day's work or at the end of sections of pipe not tied in, pipe shall be suitably capped in order to keep out foreign matter and shall remain capped until work is resumed or pipe sections are tied in.

3.3.3 Field Coating

All bare steel shall be free of dust, grease, oil, and other foreign matter. Particle removal can be accomplished by either power wire brushing or hand wire brushing. Remove grease and oil by use of a solvent that shall leave no oily or dusty film on the steel surface. All moisture must be removed prior to priming and taping.

Overlap onto factory epoxy coating shall be roughened to provide better adherence. This shall be done with a hand wire brush or 60 grit (or coarser) emery cloth.

Welds shall be cleaned of all welding slag, splatter, scale, sharp edges or burrs; these shall be removed by grinding or filing. Welds shall be no more than warm to the touch prior to priming and taping.

Tapecoat cold primer shall be applied sparingly after proper surface preparation. It shall be applied in a uniform continuous method to the steel surface and at least 4 inches onto the factory coating for at least 1 mil thickness. Apply by either brush or roller. Allow primer to dry to a tacky consistency before applying wrapping tape.

Prime only that amount of pipe that can be wrapped during the same workday; otherwise, the steel must be reprimed. Do not reprime until all dust, dirt and foreign matter has been removed.

Apply tapecoat H30 or polyken wrapping tape after proper surface preparation and priming by removing the release liner and spirally wrapping with a minimum 1/2-inch overlap.

Taping shall start and stop at least 4 inches onto the factory coating. Care shall be taken that the tape conforms to the cutback of the factory coating and the weld area. No voids or wrinkles shall be allowed.

3.3.4 Holiday Detection

Prior to installation of the pipe and subsequent to the installation of external coating, the entire pipe surface shall be tested for weak or defective coating. Two sweeps of the brush electrode may be required. Voltage setting shall be approximately 150 volts per mil thickness but holiday detection shall be field adjusted for proper detection.

3.3.5 Holiday Repairs

Hot melt patch compounds shall be used for holiday repair on fusion bonded epoxy pipe coating. The area around the holiday must be clean and dry. All dust, dirt, scale, and charred or disbonded coating shall be removed. Feather all sharp points, burrs, or rough edges by the use of a draw knife. The adjacent area should be roughened by a wire brush or 60 grit emery cloth to provide better bonding. Heat the area to be repaired to approximately 350 degrees with a non-contaminating heat source. While continuing to heat the cleaned and preheated area, apply the patch compound by rubbing the stick on the area to be repaired. A circular motion shall be used to achieve a smooth, neat patch having a thickness of no less than 15 mils. Do not burn the coating. Do not melt the patch stick directly with a heat source and allow to drip onto the holiday. The patched area must cool before handling.

3.3.6 Pipe Laying

The Contractor shall lay all pipe so that it conforms with the contour of the ditch. Overbends shall be made in such a manner that the middle of the bend shall clear the high point of the bottom of the ditch. Sag bends shall fit the bottom of the ditch. Side bends shall conform to the outside of the ditch. There shall be no points in the ditch where it is necessary to scrub or force the pipe into the ditch to obtain proper depth or lineup. Pipe shall fit the ditch without the use of external force to hold it in place until the backfill is completed.

Coated pipe shall be handled at all times with equipment designed to prevent damage to the coating. Chain or cable slings or other pipe handling equipment found to be injurious to the coating are not to be used. Contractor shall repair any coating damaged in the handling, lowering or removing of the pipe in the ditch so as to leave it in a condition equal to that of the undamaged coating. In lowering coated pipe in rock areas, 4-inch compacted dirt cushion, limestone dust, or sand shall be placed in the bottom of the ditch and the ditch shall be thoroughly padded above the pipe with 8 inches of compacted dirt, limestone dust, or sand to protect coating.

The pipeline must be installed with at least 12 inches of clearance from any other underground structure not associated with the pipeline. If this clearance cannot be attained, approval must be obtained from Engineer representative before installing the pipeline with less clearance. The pipeline must be protected from damage that might result from the proximity of the other structure.

Valves installed by Contractor shall be of the weld-end variety, unless otherwise noted on Contract Drawings, with proper blocking under the valve to prevent settlement.

Test wires shall be installed as required at no cost to the Owner. Contractor will furnish materials. Coating shall be repaired. All costs associated with these test wires, test stations shall be merged into the unit price bid for gas mains.

Contractor shall install the pipeline at all highway, street, and railroad crossings in strict accordance with the specifications required by state highway engineers, city engineers, railroad companies, or any other authority having proper jurisdiction over such installations after the Owner shall have first secured necessary permits for said work.

The pipe at all road crossings shall be buried to a depth to ensure that the top of the pipe or casing shall be at least forty-eight inches (48") below the lowest point in the bottom of the drainage ditch.

Note: For installation of PE gas main materials, the Contractor shall provide and install 3-inch detection tape along with 14-gauge trace wire as per specifications. This detection tape and trace wire shall be placed over the newly installed gas main as shown on the Standard Details included in the Contract Drawings.

3.4 Polyethylene Pipe

The Contractor shall provide all labor, materials, equipment, tools, and accessories necessary to join, install, and test polyethylene pipe and its appurtenant fittings and valves, and warning tape for a complete system. All polyethylene pipe and fittings shall be PE 2406.

The Contractor shall furnish all materials, including pipe, valves, etc., labor, tools, equipment, and transportation necessary to install these underground facilities. All pipe and fittings shall be jointed by the butt heat fusion process, and the Contractor's personnel performing the heat fusion shall be qualified in accordance with DOT Section 192.285.

The Contractor shall take every precaution in handling the PE pipe and fittings to ensure scratching, gouging or other damage does not occur. Pipe having a nominal diameter of 2 inches or less shall normally be installed by unrolling from a reel trailer to prevent

damage. If the pipe or fittings are scratched or gouged due to improper handling, the affected areas shall be replaced at the Contractor's expense.

All joining shall be made by qualified personnel and shall be the butt heat fusion process in accordance with the pipe manufacturer's written procedures. An approved butt fusion machine shall be used for the heat fusion process. The Engineer shall have the right to inspect the joining process to ensure it is being performed in accordance with the written procedure and shall have the right to inspect the completed fusion joint for proper appearance. If the Engineer determines the fusion joint was not made in accordance with proper procedure or if the joint does not exhibit the proper appearance, the joint shall be cut out and replaced at the Contractor's expense.

The trench shall be excavated according to this Specification. The pipe shall be installed loosely in the trench to minimize the expansion/contraction effects of temperature change. In no case shall the pipe be stretched during installation.

Polyethylene valves shall be butt fused into the pipeline at locations as shown on the Construction Drawings. Valves shall be installed in a manner such that the stem extends vertically upward at a right angle from the pipeline. Valves shall be left in the full-open position, unless otherwise directed by the Engineer.

The pipeline must be installed with at least 12-inches of clearance from any other underground structure not associated with the pipeline. If this clearance cannot be attained, approval must be obtained from Engineer representative before installing the pipeline. The pipeline must be protected from damage that might result from the proximity of the other structure.

Contractor shall install the pipeline at all highway, street, and railroad crossings in strict accordance with the specifications required by state highway engineers, city engineers, railroad companies, or any other authority having proper jurisdiction over such installations after the Owner shall have first secured necessary permits for said work.

If casings are required, they shall be furnished and installed by Contractor. Casing spacers and end seals shall be installed with the insulators spaced at proper intervals on the pipe between the pipe and casing. Vents to be installed at required locations.

The pipe at all road crossings shall be buried to a depth to insure that the top of the pipe or casing shall be at least thirty inches (30) below the lowest point in the bottom of the drainage ditch.

Note: For installation of PE gas main materials, the Contractor shall provide and install 3-inch detection tape along with 14-gauge trace wire as per specifications. This detection tape and trace wire shall be placed over the newly installed gas main as shown on the Standard Details included in the Contract Drawings.

3.5 Installation of Fittings

Fittings shall be placed in locations indicated on Drawings or designated by Engineer and shall be installed in accordance with provisions of these Specifications. 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 Vaults, and Valve Boxes

Valves and valve boxes and/or valve vaults shall be placed in the locations indicated on the Drawings or at locations designated by the Engineer. All valves and valve boxes 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.

All valves must be assembled to the gas main in strict accordance with the requirements and recommendations of the valve manufacturer.

Over each valve, except valve installations with a valve vault, shall be placed a valve box. All valves which, when properly set, have operating nuts deeper than 30 inches 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, valve stem, extension, operating nut or gas main at any point. Backfill around boxes shall be tamped to maintain centered and plumbed alignment of box.

Box shall be installed with top set flush with finished surface in paved areas and to 2 inches above natural ground level in unpaved areas.

For all steel valve installations on this project, the Contractor shall place 4"x4"x16" solid concrete blocks under steel valves for support.

All valve boxes shall be supported by blocks to assure no weight is exerted onto the new gas mains.

Upon completion of project, the Contractor shall operate all buried valves in the presence of the Engineer to verify proper operation.

3.7 Service Lines

The Contractor shall install and test service lines and accessories (if required) as indicated on the Drawings. This work involves the replacement of existing service lines and such work shall be coordinated with the Owner to maintain continuous gas service, unless otherwise approved by the Owner

Work shall include the furnishing, installation and testing of tapping tees onto the gas mains, service lines including protective sleeves, and service risers and tracer wire. Following the installation of the service line and service riser, the Contractor shall tap the gas mains and test the tapping tee, service line and service riser assembly. Installation of tapping tee and tapping of gas main shall be performed by the Contractor in strict accordance with the instructions of the manufacturer of the tapping tee. The tracer wire for the service line shall be connected to the tracer wire located above the gas main and shall terminate at the 3/4-inch service riser.

Generally, the service riser assembly shall be installed immediately adjacent to the existing metering assembly. The Owner shall locate the point of installation of the service riser. Upon installation of the service line assembly, the Owner shall reconnect the existing meter-regulatory assembly.

4. BACKFILL

4.1 General

Backfilling shall be carried out as expeditiously as possible but shall not be undertaken until the Engineer has been given the opportunity to inspect 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 one foot above top of pipe to within 12 inches of finished grade in unpaved areas, backfill may contain stones up to 6 inches in their greatest dimension, unless otherwise specified. Backfill containing rock must contain enough dirt to fill voids between rock.

When backfill material is not specified on Contract Drawings or elsewhere in these Specifications, Contractor may backfill with the excavated material provided material consists of loam, clay, sand, gravel, or other materials that, 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 the Kentucky Transportation Cabinet Standards for crushed stone used in road surfacing.

4.3 Backfilling Under Pipe

All trenches shall be backfilled by hand from bottom of trench to centerline of pipe. Approved backfill material shall be placed in 6-inch layers and thoroughly compacted by hand tamping. Backfill material shall be deposited in trench for its full width on each side of pipe, fittings and appurtenances simultaneously. Care must be taken to compact fill along sides of pipe and appurtenances adjacent to pipe wall.

4.4 Backfilling Under Pipe in Rock

Where trench is excavated in rock or shale, 6-inch space below pipe shall be backfilled with approved bedding material firmly compacted to form a cushion for pipe and appurtenances.

4.5 Backfilling Over Pipe

From centerline of pipe, fittings and appurtenances to a depth of 1 foot above top of pipe, trench shall be backfilled by hand or by approved mechanical methods of 6-inch layers and thoroughly compacted by hand tamping or by approved mechanical methods. Contractor shall use special care in placing this portion of backfill in order to avoid injuring or moving pipe.

After the backfill has been placed to a depth of at least 12 inches above top of pipe, additional backfill may be placed by means of front end loaders, bulldozers or other suitable mechanical equipment subject to a 9-inch limitation of maximum thickness of layers placed before compaction.

4.6 In Areas Subject to Vehicular Traffic or Under Sidewalks

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, backfill above the compacted pipe backfill zone (12 inches above pipe) shall be crushed stone (No. 57) or other approved backfill material which shall be placed in layers or lifts not exceeding 9 inches in thickness. After placing in layers, crushed stone shall be carefully compacted to maximum density or minimum volume. Such backfill, placed where called for on the Drawings or as directed by the Engineer, shall be designated as Crushed Stone Backfill.

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.

Note: This crushed stone shall be merged into the unit price bid for stone, asphalt, and/or concrete pavement, restoration items.

The last 8 to 10 inches of backfill shall be compacted pug mix 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, the Contractor shall, at direction of the Engineer, water streets, roads, etc. to settle dust where excessive dust has, in opinion of Engineer, been caused by the Contractor's operations. If the Contractor refuses or delays unnecessarily to obey direction of the Engineer, the Owner shall, after 24 hours written notice through the Engineer, be permitted to proceed with such work with cost to be billed to the Contractor.

4.7 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 not as critical, the Contractor may backfill trench from 1 foot above top of pipe to top of trench with approved excavated material using hand or approved methods. Backfill material shall be brought up to the original ground level in layers and walked in with suitable equipment. More restrictive compaction of this backfill material will not be required; however, the Contractor 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.

5. 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, bridges, 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. The Contractor will be required to re-grass lawns or neutral grounds where trenches are excavated in these locations or where the Contractor has damaged lawns or neutral grounds by his operations.

The Engineer shall be sole authority in determining time in which rough and final clean-up shall be prosecuted. Rough clean-up shall consist of removal of large rocks, grading of excess backfill material over pipeline 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 one day after pipe laying and backfilling or nor farther behind pipe laying operations than 1,000 feet; whichever time limit is shortest shall govern. Final clean-up consisting of pavement replacement, sidewalk replacement, removal of rocks, hand raking with seeding, strawing, etc. of lawns and neutral grounds, adjusting grade of ground over pipeline, property repairs, and other items shall be prosecuted as soon as is practical after pipe has been laid and backfilled. In general, this would be no later than 2 to 3 weeks after completion of backfilling.

5.2 Final Grading and Seeding

Final clean-up shall consist of, among other items, final grading of disturbed areas and seeding of areas where grass growth was damaged or destroyed by the Contractor's operation. In areas of established lawns, no rock shall be left in the top 6 inches of soil and the finished grade shall be that which existed before construction began. In all cases, lawn areas shall be left neat and in a condition so that hand 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 at least equal to the condition which existed before construction began. In established lawn areas, new grass shall be of the same type as originally present. Grass and other ground cover shall be properly applied, fertilized, strawed, and watered as necessary and required to establish a good stand of grass.

5.3 Pavement Replacement

In roadway areas, as soon as the pipe has been installed, the trench shall be backfilled as specified and, where directed by Engineer, a temporary pavement patch shall be provided in areas which have permanent paving. "Permanent paving" shall mean asphaltic concrete ("hot mix") or Portland cement concrete. Cold mix, surface treatments, crushed stone are excluded from the "permanent pavement" classification. The temporary pavement patch shall consist of at least 6 inches of compacted stone base brought to within 2 inches of the surface of the existing permanent pavement. A 1-inch layer of cold mix asphaltic concrete shall then be applied to protect the base, prevent "pot holes" or "chuck holes," and provide a reasonably smooth pavement surface until the permanent patch is made. The temporary pavement patch shall be placed within 48 hours of receipt of written instruction of the Engineer.

Pavement types shall be designated by Engineer for installation in specific location where such designation is not shown on Drawings. All street pavements, unless otherwise noted herein or directed by the Engineer, which have pipes installed parallel with the road, across streets, driveways or parking lots, shall be restored by the following:

Prior to placement of the pavement restoration, the Contractor shall reshape the street or roadway surface. Street preparation shall include all required scarifying, shaping, and rolling in pug mix of areas to be paved. This item will also include the removal of all pavement which is heaved by the Contractor's blasting operations. This street preparation shall return the streets to the template which existed prior to construction. This street preparation shall be satisfactory to the local street department or authority before the street is accepted for paving operations. No separate payment will be allowed for street preparation.

The Contractor shall be responsible for replacing all crushed stone surfacing damaged by his operation with measurement and payment to be described in these Specifications. The Contractor shall be responsible for maintaining temporary patches during construction and shall promptly repair any defects. Upon completion of the work, the paved surfaces shall be left in as good or better condition than before the start of construction.

In paved or improved roads, or where sidewalks, curbs, gutters or driveways have been damaged by the Contractor and where replacement of surfaces or damaged items is required, items shall be repaired or replaced without any needless delay and in the best workmanlike manner with same kind of materials as were removed or damaged in construction operation. Underlying foundation courses for roads, etc., finished surfaces, etc. shall conform to undisturbed item.

Decision of the Engineer shall be final as to classification of any form of pavement or surfacing not specified on Construction Drawings or of any forms of pavement or surfacing where classification is at all doubtful. Should the Contractor fail or refuse to repair any damage after receiving directions of the Engineer, the Owner may, after 24 hours written notice, employ such force and furnish such materials as may be necessary to do the work with cost to be billed to the Contractor.

All gas valves, water valves, and manholes will be adjusted to the final surface elevations by the Contractor.

Cost to be merged into price for pavement replacement.

1. Asphalt Pavement Replacement Type “A” or Special Type “A”

   This item of pavement restoration shall conform to the details included in the Contract Drawings. The leveling binder course and the surface course shall be furnished and placed in accordance with the Kentucky Department of Highways 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 Section 411 of the Kentucky Department of Highways Standard Specifications.

3. Crushed Stone Roadway Replacement or Driveway Replacement

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

4. Concrete Driveway Replacement

   Concrete driveway shall be replaced equal to that existing prior to construction but in no case less than 6 inches in depth with 4”x4” reinforcing wire mesh.

   The above pavement replacements will be measured for payment on linear foot basis unless otherwise indicated.

5. Type G – Pavement Replacement

   The above pavement replacement will be measured for payment on a linear foot basis. This is for Kentucky State Highways. Under this pavement replacement, the trench shall be backfilled with #57 crushed stone from the pipe envelope to the roadway subgrade. The top 9 inches of this backfill, to include the roadway base stone, shall be compressible stone (compact pug mix). The street shall then be cleaned and shaped. All heaved areas shall be removed to return the street to the original template.

   The trench cut shall then be primed and overlaid with 6¾-inches of Bituminous Base as per Kentucky Transportation Cabinet requirements and shown on the details included in the Contract Drawings. The final layer of pavement replacement shall include 1¼-inches of Bituminous Surface and 1½-inches of Bituminous Binder as required by the Transportation Cabinet for State Highway Pavement Replacement. All pavement replacement Type “G” for State Highways are to be done in accordance with the requirements of the Kentucky Transportation Cabinet Division 400 of the Standard Specifications.

NOTE: All gas valves, water valves, and manholes will be adjusted to the final surface elevations by the Contractor. Cost to be merged into price for pavement replacement.

The Contractor shall be responsible for replacing all crushed stone surfacing damaged by his operation with measurement and payment to be described in these Specifications.

The Contractor shall be responsible for maintaining temporary patches during construction and shall promptly repair any defects. Upon completion of the work, the

paved surfaces shall be left in as good or better condition than before the start of construction.

5.4 Dust Control

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 the direction of the Engineer, water or apply calcium chloride to streets, roads, etc. to settle dust where excessive dust has, in opinion of the Engineer, been caused by the Contractor's operations. If the Contractor refuses or delays unnecessarily to obey direction of the Engineer, the Owner shall, after 24 hours written notice through the Engineer, be permitted to proceed with such work with cost to be billed to the Contractor.

5.5 Sodding or Sprigging

Where shown on the Drawings or directed by the Engineer, Contractor shall install sodding or sprigging in lieu of seeding in order to establish ground cover. Normally this would be done in areas subject to erosion in soils that are difficult to hold.

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± inches of soil shall be pulverized to remove roots, sticks, etc. and smooth the surface. Area shall be fertilized at a minimum rate of 500 pounds per acre. Fertilizer shall be mixed into the top 3 inches of soil by raking, discing, or other acceptable method. Do not overfertilize areas in order to avoid damaging growth. Fertilizer shall be "Vertigreen," "Vigaro," or approved equal. It shall contain not less than 5% nitrogen, 10% phosphorus, and 4% potash. If the area soil requires, by test, 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 inches wide and 12 inches long with at least 3 inches of dirt on the roots. It shall be placed on the prepared surfaces with edges in close contact and, as just 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 a 1-inch 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). The 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. 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 flagmen as required by the Kentucky Transportation Cabinet.

6.2 Gas Main in Bore

The gas pipe in the bore shall be as specified in the Materials section of this Specification. All work performed beneath existing structures, across railroad rights-of-way, and under pavements shall be performed in accordance with the requirements of the parties or agencies having jurisdiction over these locations. The Contractor shall contact the parties or agencies prior to starting work and shall meet all requirements of the parties or agencies in regard to methods of construction and the safety precautions to be taken in performing the bore work. All costs involved in meeting these requirements shall be paid for by the Contractor and no additional compensation allowed.

Note: Steel casing pipes are required for bores with "PE" polyethylene gas lines.

Where steel casing pipes are required, the PE gas pipe shall be adequately secured in the bore casing by a method approved by the Engineer. At a minimum, the carrier pipe must be secured as indicated on the Drawings or material specifications. Excavation shall be unclassified and no distinction made between rock and other materials excavated, with the cost of excavation merged in the unit price per foot of gas line in bore.

7. SLOPE PROTECTION AND 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 Department of Environment and Conservation during the life of the Contract to control erosion and water pollution through the use of hay bales and other control devices.

The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.

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 material.

   Baled hay or straw checks shall be used where the existing ground slopes in ditches or other areas where siltation erosion or water run-off is a problem.

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. The based shall also be anchored securely to the ground by wooden stakes driven through the based into the ground. Bales can remain in place until they rot or can 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 clean-out will be considered routine maintenance.

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

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.

In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, and are ordered by the Engineer, such work shall be performed by the Contractor at his own expense.

e. Erosion control outside project area - Temporary pollution control 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 sites. 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 to which it reflects.

GAS MAINS AND APPURTENANCES

SECTION 4

TESTING AND ACCEPTANCE

1. GENERAL

Upon completion of the construction work, the Contractor shall conduct the necessary pressure tests. The Contractor shall furnish all labor, tools, equipment and materials for making the tests. In the event that the pressure test is unsatisfactory, 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 Engineer and shall be conducted in accordance with DOT pipeline safety regulations with particular reference to Sections 192.513, 192.515 and 192.517.

Any repairs required to be made by the Contractor due to faulty or inferior work performed by the Contractors shall be at the Contractor's expense. Any repairs to be made due to defective pipe or material shall be paid for by the Owner at the Contractor's actual cost.

The gas main shall be cleaned internally prior to any tapping or purging operation. Internal cleaning shall be done with cleaning pigs, propelled by compressed air. The number and type of pigs to be run shall be determined by the Engineer. All labor and equipment necessary for the cleaning shall be furnished by the Contractor at no additional cost to the Owner.

Upon completion of the internal cleaning and upon completion and acceptance of pressure test described hereinafter, the Contractor shall make all tie-ins shown on the Drawings to make a complete and operational gas main. Contractor shall submit for approval by the Engineer the method and procedure to be used for required connections. The timing of connections and tie-ins shall be approved by the Owner. The Contractor shall furnish all tapping equipment necessary to make "hot taps" that may be involved with the tie-in. As part of this tie-in, the Contractor shall perform all necessary welding operations, pipe work, and furnish all labor, equipment, and materials for a complete and operational tie-in/connection.

2. PRESSURE TEST

Each section of the completed gas main and service line shall be subjected to a pressure test. The section to be tested shall be valved or blocked off to substantiate the maximum allowable operating/test pressure. The test medium must be air or inert gas or other media as may be approved by the Engineer. Test requirements shall comply fully for Subpart J of the DOT Pipeline Safety Regulations Section 192.501 through 192.517. Relative to these requirements as well as other requirements of Part 192 of the DOT Pipeline, the MAOP established for this project will develop hoop stress of less than 20 percent of the Specified minimum yield strength.

The steel gas main shall be tested to 1,080 psig or as indicated on the Contract Drawings. The Contractor shall sustain the test pressure for a minimum of four hours. An hourly tabulation of test pressure logs and a recording chart of pressure readings shall be maintained by the Contractor suitable for the Owner's permanent record of the main line test. Pressure gauges and recorders shall be calibrated before and after each test using a dead weight tester to be furnished by the Contractor.

Polyethylene gas mains, including service, shall be tested to 120 psig. The Contractor shall sustain the test pressure for a minimum of four hours. An hourly tabulation of test pressure logs and a recording chart of pressure readings shall be maintained by the Contractor suitable for the Owner's permanent record of the main line test. Pressure gauges and recorders shall be calibrated before and after each test using a dead weight tester to be furnished by the Contractor.

Service line assemblies shall also be tested to 120 psig air test and that test pressure shall be sustained at the 120 psig pressure for a period to sufficiently demonstrate the capability of the service line assembly. Test pressure recording shall be the same as for gas main above, except hourly test readings may not be required.

The Contractor shall submit to the Engineer for approval the procedures and methods to be used to test the gas mains.

In general terms, a test compressor shall be used to build up the required test pressure. When the test pressure is obtained, the compressor shall be valved off and the pressure observed and recorded over the testing period. A drop in pressure during the test shall be taken as an indication of a leak.

In such case, the Contractor shall make necessary repairs and again conduct the pressure test. This process shall be continued until the acceptable results are obtained.

The Contractor shall provide suitable first quality pressure gauges with 5 lb. or smaller graduations. Pressure recording gauges shall be in good condition and shall be subject to such tests for proof of accuracy as the Engineer may require.

3. TESTING OF VALVES

Upon completion of this project, the Contractor shall operate all buried valves in the presence of the Engineer to verify proper operation of each valve.

GAS MAINS AND APPURTENANCES

SECTION 5

MEASUREMENT AND PAYMENT

1. GENERAL

The Contractor shall furnish all materials, labor, tools, equipment and materials to construct the proposed improvements complete as shown on the Drawings 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 do not necessarily reflect the extent of work to be performed. The cost of the incidental work such as clearing and grubbing, trenching, backfilling, testing, cleaning, pigging, curbs, curb and gutters, sidewalks, 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.

Gas piping, fittings, valves, and all other materials shall be provided by the Contractor. The Contractor shall merge in items most related to the material and all costs/expenses necessary to load, haul, handle, unload and store such material for subsequent installation.

2. GAS MAINS

A. Measurement - Gas mains shall be measured for payment by horizontal measurements or station distances along the centerline of the pipe to the nearest 0.1 foot. The cost to furnish and install all fittings/bends shall be merged with pipe most related to the fittings. Gas main and service line size shall be based on nominal pipe diameter as shown on the Drawings and/or included in the Bid Proposal.

B. Payment - Gas mains and service lines shall be paid for on the basis of the respective unit prices bid per linear foot for pipe of the various sizes.

For installing the gas mains, payment shall constitute compensation in full for furnishing all materials, labor, tools, equipment and materials and installing and testing the gas mains, fittings/bends complete, including incidental work such as location and protection of existing utilities, clearing, excavation (unclassified), dewatering trenches, bedding with selected material/sand, detectable/marking tape, cathodic test stations, coordination with the Owner for the Owner's non-destructive testing (x-raying), backfilling, disposal of surplus excavated material, 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 and placing of bulkheads,

the restoration of any utilities, parkways, trees, shrubbery, culverts, fences, and other items not covered under subsequent items.

Payment for gas main in bore shall be from face of bore to face of bore and to the limits and sizes established in the Proposal Section. Roadway bores are separated between bores under State Highways and bores under roadways and/or driveways. See Section for "Unit Price Items Ordered by the Engineer."

The Contractor's attention is directed to the fact that portions of the proposed gas mains are to be constructed under existing driveways, roadways, and/or parking lots. The Contractor shall be required to furnish and place crushed stone backfill at these locations from the gas main bedding and envelope to the roadway surface. All costs associated with furnishing and placing this crushed stone backfill shall be merged into the unit price for gas mains. No separate payment shall be made.

3. VALVES WITH VALVE BOX ASSEMBLIES

A. Measurement - Valves will be measured by actual count on each size and type of valve installed in the completed system.

B. Payment - Payment for furnishing and installing valves of the various sizes and classifications, together with any necessary joint accessories, flange and/or weld ends, adapters, valve box assemblies, extension stems and concrete support pad shall be made on the basis of the Contract unit price bid. Such payment shall constitute full compensation for installing the valves complete in full in accordance with the Drawings and Specifications.

4. TOPSOILING AND SEEDING OF TRENCHES

A. Measurement - Measurement for topsoiling and seeding of trenches will be made by the linear foot of trench along the centerline of the gas main.

B. Payment - Payment shall be made at the unit price bid and shall include all costs of labor and materials (including fine grading, mulching) for the completion of this item.

5. GAS LINE/VALVE MARKERS

A. Measurement - Measurement for gas line/valve markers will be made by actual count of each installed.

B. Payment - Payment shall be made at the unit price bid and shall include all costs of labor and materials.

6. ROADWAY MAINTENANCE, DRIVEWAY, AND ROADWAY REPLACEMENT

1. ROADWAY MAINTENANCE

A. Measurement - Roadway maintenance items shall be measured by the actual quantity used for the item as follows: bituminous "cold mix" per ton.

B. Payment - Payment for roadway maintenance items shall be made in accordance with the unit price bid for each item and shall include the cost of all labor and materials necessary for the application of these items.

2. DRIVEWAY REPLACEMENT

A. Measurement - Measurement for asphalt driveway or parking lot patch replacement, gravel driveway or concrete driveway or concrete ramp replacement shall be made by the linear foot along the centerline of the gas main for the actual quantity placed.

B. Payment - Payment for these items shall be made at the unit prices bid per linear foot and shall include the cost of all labor and materials necessary to construct these items at the locations and to the details shown on the Contract Drawings.

3. ROADWAY REPLACEMENT

A. Measurement - Measurement for Type "A" asphalt pavement replacement shall be made by the linear foot along the centerline of the gas main for the actual quantity placed.

B. Payment - Payment for roadway replacement items shall be made at the unit price bid and shall include the cost of all labor and materials necessary to construct these items at the locations and to the details shown on the Contract Drawings.

7. CATHODIC TEST STATIONS

Note: Cathodic test stations shall be merged into the unit price bid for gas mains. No separate payment shall be made.

8. PLAIN STONE RIP-RAP

A. Measurement - Measurement for plain stone rip-rap along stream banks will be made by the square yard of rip rap actually installed.

B. Payment - Payment shall be made at the unit price bid per square yard and shall include all costs of labor and materials (including plain stone rip-rap material) for the completion of this item.

9. CLASS “C” CONCRETE CAPS

A. Measurement - Class C concrete used in caps will be measured by linear foot along the centerline of the concrete cap in accordance with Standard Detail Drawings shown on the Construction Drawings. The length shall be the actual length of such concrete as installed at the Engineer's direction or as indicated on the Drawings.

B. Payment - Payment for Class C concrete shall be made on the basis of the unit price bid per cubic yard, and shall constitute full compensation for excavation, forming, furnishing and placing the concrete and other incidental work required to complete the project.

10. UNCLASSIFIED EXCAVATION FOR UNDERCUTS

A. Measurement - In areas where directed by the Engineer to remove unsuitable material below grade this, item shall be measured by the formula (4/3 pipe O.D. + 24)/12 x length x depth divided by 27.

B. Payment - Payment shall be made at the unit price bid and no distinction shall be made between rock and earth excavation as far as payment is concerned.

11. CRUSHED STONE REFILL FOR UNDERCUTS

A. Measurement - In areas (other than areas specifically designated by these Specifications) where directed by the Engineer to refill with crushed stone an undercut where the Engineer has directed that unsuitable material be removed, this item shall be measured for payment by the formula (4/3 O.D. + 24/12) (length (ft)) (depth (ft)) divided by 27.

B. Payment - Payment for crushed stone refill shall be at the unit price bid per cubic yard and such payment shall constitute complete compensation for all extra labor, materials, and equipment necessary to furnish, haul, place and compact the crushed stone backfill.

Note: This payment is only for refill. All bedding and backfill required is to be merged into the unit price bid for gas main and/or gas main under roadway.

12. LUMP SUM CONSTRUCTION ITEMS

Measurement and payment for special Lump Sum Items and/or Lump Sum Each Items shall be as indicated in the Contract Documents.

DIVISION H - WATER MAINS AND APPURTENANCES

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FOR

DIVISION H

WATER MAINS AND APPURTENANCES

WATER MAINS AND APPURTENANCES

SECTION 1

GENERAL REQUIREMENTS

1. GENERAL

1.1 Scope of Work

The water mains and appurtenances required on this Contract shall be furnished in full compliance with the Contract Specifications and the Contract Drawings.

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 and placing of bulkheads, the restoration of any utilities, parkways, trees, shrubbery, culverts, fences, and other items not covered under subsequent 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 installation not specifically included for payment under the Item of unit price payment Nos. described herein shall be merged with the various unit prices for the Unit Price Construction Items.

1.2 Standards

Where material and methods are indicated in the Specifications as being in conformance with the standard specification, it shall refer in all cases to the latest edition of the specifications and shall include all interim revisions. Listing of a standard specification without further reference indicates that the particular material or method shall conform with such listed specification.

2. WORK INCIDENTAL TO CONSTRUCTION

2.1 Work to be performed under this heading includes all the work designated as "Incidental to Construction" and shall be done in compliance with the Contract Drawings. The Contractor is hereby referred to the Agreement, General and Special Conditions Sections of these Specifications and the Contract Drawings. All work wherein there are not specified pay items shall be considered as "Incidental to Construction" and no additional compensation will be allowed.

2.2 In addition to the above referenced requirements, and unless otherwise noted the below listed work shall be considered incidental to construction.

2.3 Public and Private Utilities

Utilities. Where any utilities, such as water, sewer, telephone, power, oil and 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 endanger the foundation of any utility conduit, 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 conduits, poles, or structures.

The cost of any bracing or support of conduits, poles of structures as shown on the Contract Drawings shall be merged into the unit price per linear foot of water main.

When, in order to carry out the work, a pole (power or telephone) must be removed to a new location or moved and replaced after construction, the Contractor shall arrange for the moving of such pole or poles and lines thereof.

Where it is the policy of any utility owner to make his own repairs to damaged conduit, or other structures, the Contractor shall cooperate to the fullest extent with the utility owner and he shall see that his operations interfere as little as possible with the utility owner's operations.

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 such service will not be interrupted, and shall, at his own expense, make all 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 re-laying same at a new grade or line.

Existing Water Facilities. Where existing water mains are encountered in the work they shall be maintained in operation to the extent that water service is not interrupted.

Existing Gas Facilities. Where existing gas mains shown on the Contract Drawings are encountered, the Contractor shall arrange with the gas utility for any necessary re-laying.

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 selective use of "pop-shooting" with dynamite, which must be strictly controlled by the Contractor, may be allowed only at the discretion of the gas utility. The Contractor shall contact the gas utility for restrictions.

Before backfilling any 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.

When the proposed construction is completed on a particular street, the Contractor and/or the gas utility will check each particular street with natural gas detectors.

Existing Underground Electric and Telephone Facilities. Where existing underground electric or telephone facilities are encountered, the Contractor shall arrange with the electric company or telephone company for any necessary re-laying.

2.4 Dewatering

The Contractor shall perform all pumping, well pointing, ditching and any other necessary procedure to keep the excavation clear of groundwater, stormwater, 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, stormwater, or sewage will be allowed to build up over any concrete and/or masonry at manholes or structures for a period of 6 hours. This time period will be adjusted by the Engineer should temperature and curing conditions warrant.

All water pumped or drained from the work shall be disposed of in a manner satisfactory to the Engineer without damage to adjacent property or to other work under construction. The Contractor shall not dispose of storm or surface water through new or existing 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 integral part of pipe laying and manhole construction operations and no separate payment will be allowed therefore.

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 placed on each side of the manhole and/or at points in the trench down stream might be required. When required to protect the freshly placed concrete and/or masonry, timber or plywood forms will be positioned around 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 structure 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 ensure 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 and at least one free lane shall be available for all traffic. Contractors are to arrange operations in these areas to meet these requirements and secure approval of operating procedures from Green River Valley Water District, Hart County or Kentucky Department of Highways as the case may be.

Where water mains are constructed under paved roadway surfaces, within public rights-of-way, 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 water main installation, to regrade the street with pug mix to the template that existed prior to construction. This regrading shall be satisfactory to City of Edmonton, Metcalfe County or Kentucky Department of Highways before the street is released for paving operations.

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

The Contractor shall restore all curbs, gutters, sidewalks, ramps and private driveways or parking lots. Compensation for this work is detailed in other portions of this document and any item which must be removed as was evidence and necessary for the installation of the proposed water main, for which there is no specific pay item(s) 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 this (these) item(s).

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. 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 weathertight 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. SPECIAL CONDITIONS

The Contractor's attention is called to the special conditions indicated on the Drawings and described in this Section of the Specifications. The Drawings 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, railroad 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 at such times and in such a manner as approved by the Engineer.

(b) The Contractor shall submit a work schedule to the Engineer 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 upon request will be furnished with plans showing easements obtained for the construction of water mains and appurtenances. The Contractor shall exercise due care in staying within the easement indicated, and will be held strictly accountable for violations thereof. Any desired access points not shown on the Drawings must be acquired by the Contractor by negotiation with the property owner involved.

5. 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 of the test results.

The Owner 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 and pressure testing unless directed otherwise by the Engineer.

6. SUBMITTALS

Submittals for this work include: pipe supplier with information on pipe to be used including the joint design, recommended laying methods and material test reports; manufacturer's data on valves, valve boxes, fire hydrants, casing pipe and/or tunnel liner plate, and pea gravel to be used. Such submittals are to be made for approval by Engineer prior to incorporation of any materials into the work.

7. TEMPORARY FACILITIES/UTILITIES

Note: Field office for the Contractor is not required on this project.

Contractor shall be required to maintain suitable sanitary facilities for his workers.

8. 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 Owner or the Engineer requires immediate correction, the Contractor will be notified and requested to make the necessary repairs immediately. Should this be impractical, or if the Contractor should fail to respond to the request for corrective action within the specified period, the Owner 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, refuses, or neglects to pay the Owner, the Surety shall be liable for such charges.

9. 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.

10. PROJECT CLOSE-OUT

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, Engineer will inspect the work for completeness in accordance with the Contract Documents. Any deficiencies shall be promptly corrected by the Contractor.

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

Payment in full of the Final Application for Payment shall constitute acceptance of the work by the Owner subject to conditions of the Contract Documents.

DIVISION H

WATER MAINS AND APPURTENANCES

SECTION 2

MATERIALS

1. 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.

2. CONCRETE

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 C-150, latest revision. Cement shall be furnished in undamaged 94 pound, one cubic foot sacks, and shall show no evidence of lumping.

Concrete Fine Aggregate - Fine aggregate shall be clean, hard uncoated natural sand conforming to ASTM Designation C-33, latest revision, “Standard Specifications for Concrete Aggregate.”

Concrete Coarse Aggregate - Coarse aggregate shall consist of clean, hard, dense particles of stone or gravel conforming to ASTM Designation C-33, latest revision, “Standard Specifications for Concrete Aggregate”. Aggregate shall be well graded between 1-1/2-inch and #4 sieve sizes.

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

Ready-Mix Concrete - Ready-mix concrete shall be secured only from a source approved by the Engineer, and shall conform to ASTM Designation C-94, 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.

Class "A" Concrete - Class "A" concrete shall have a minimum compressive strength of 4,000 pounds per square inch in 28 days and shall contain not less than 5.5 sacks of cement per cubic yard.

Class "C" Concrete - Class "C" concrete shall have a minimum compressive strength of 2,000 pounds per square inch in 28 days and shall contain no less than 4.5 sacks of cement per cubic yard.

Metal Reinforcing - Reinforcing bars shall be intermediate grade steel conforming to ASTM Designation A-615, 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. CRUSHED STONE

Crushed stone for pipe bedding shall meet the quality requirements of ASTM D-692 and the grading requirements of AASHTO M-43 for Size 57.

Crushed stone for backfill shall meet the quality requirements of ASTM D-692 and the grading requirements of AASHTO M-43, size 57.

4. DUCTILE IRON PIPE

Ductile iron pipe for water shall be manufactured in accordance with USA Standard A21.51 for centrifugally case ductile iron pipe. The pipe shall be manufactured of iron having acceptance values of 60-42-10. Minimum allowable wall thickness shall be in accordance with the following table. Heavier pipe will be required where designated on the Drawings or required by Section 3 of these Specifications.

Nominal Dia., In.	Minimum Wall Thickness. In.	Minimum Thickness Class
4	0.29	52
6	0.31	52
8	0.33	52
10	0.35	52
12	0.34	51
16	0.37	51
18	0.38	51
20	0.39	51
24	0.41	51
30	0.43	51

Pipe shall be furnished in lengths of 18 feet to 20 feet and, unless otherwise indicated, shall be provided with a compression type slip joint equal to the Fastite joint as manufactured by American. Gaskets and lubricants shall be furnished with the pipe.

Pipe shall be furnished with standard thickness cement lining on the inside with a bituminous steel coat and a bituminous coating on the outside. Cement lining shall conform to USA Standard A21.4. The exterior of the pipe shall be clearly marked to indicate the manufacturer, date of manufacture, the pipe class and weight. Exterior markings shall also positively identify the pipe as being Ductile Iron.

5. PVC WATER PIPE

PVC pipe for water shall be manufactured in accordance with ASTM D-2241 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 D-2412. 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 D-2152. There shall be no 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-inch and smaller, once each 2 hours in accordance with ASTM D-2444.

Wall Thickness and Outside Dimensions Test: Once per hour in accordance with ASTM D-2122.

Bell Dimensions Test: Once per hour in accordance with ASTM D-3139.

If any specimen fails to meet any of the above mentioned tests, all pipe of that size 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 he has manufactured such pipe and done so in sufficient quantities to be certain that it will meet all normal field conditions. 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 may be furnished in the manufacturer's standard laying lengths of 20 feet. The Contractor's methods of storing and handling the pipe shall be approved by the Engineer. All pipe shall be supported within 5 feet of each end; in between the end supports, there shall be additional supports at least every 5 feet. The pipe shall be stored away from heat or direct sunlight. The practice of stringing pipes out along the proposed water line routes will not be allowed.

Certain information shall be applied to 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.

Detectable tape shall be 3 inches wide and shall be an inert, bonded layer plastic with a metalized foil core and shall be highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. The tape shall be blue in color and shall bear the imprint "CAUTION - WATER LINE BURIED BELOW". This detection tape shall be placed over the water main at a level of 15 inches below the finished ground surface.

NOTE: The Contractor's attention is directed to the requirement of the Owner for the furnishing and installation of #14 insulated copper trace wire for water pipe on this project. This trace wire shall be stubbed up at al valve boxes for use by the Owner.

Prior to ordering water pipe or detectable tape the Contractor shall submit proposed materials to the Engineer for approval.

6. Polyethylene (PE) WATER PIPE AND FITTINGS

Pipe and fittings required or shown on the Contract Drawings shall conform to AWWA C906, latest revision; ASTM D- 1248, latest revision; and ASTM D-3350, latest revision. All PE pipe shall be 4710 IPS pipe as manufactured by Performance Pipe, Dura-Line Polypipe, WL Plastics, or GSC Energy Pro.

Material used for the manufacturer of pipe and fittings shall meet the following latest requirements of ASTM and the Plastics Pipe Institute.

Property	Unit	Procedure	Requirements
Material Designation	-	PPI/ASTM	PE 4710
PPI Material Listing	-	PPI	PLEXCE P34CH
Material Classification	-	D-1248	III Driscope Series 4000
Cell Classification	-	D-3350	345434C
Density (3)	gm/cm^3	D-1505	0.955
Melt Flow (4)	gm/10 min.	D-1238	0.4 max
Flexural Modulus (5)	psi	D-790	133,000
Tensile Strength (4)	psi	D-638	3,500
ESCR (3)	Failure % Hrs.	D-1693	F_o 5000
HDB (4)	psi	D-2837	1600
UV Stabilizer (C)	% Carbon Black	D-1603	2 to 3
Elastic Modulus	psi	D-638	110,000
Brittleness Temperature	^oF	D-746	-180
Vicat Softening Temperature	^oF	D-1525	255
Thermal Expansion	$in/in/^oF$	D-696	8×10^{-5}
Hardness	Shore D	D-2240	64
Molecular Weight Category	-		Extra High
Molecular Weight	-	GPC	330,000
HDB @ 73.4 ^oF	psi	D-2837	1600
HDB @ 140 ^oF	psi	D-2837	800
Heat joining of thermoplastic pipe	-	ASTM D-2657	-

Pipe and fittings shall be manufactured from identical materials meeting the above requirements. The pipe manufacturer shall furnish a certificate stating that he is fully competent to manufacture PE pipe of uniform texture and strength and in full compliance with these Specifications and further stating that he has manufactured such pipe and done so in sufficient quantities to be certain that it will meet all normal field conditions. In addition, the manufacturer's equipment and quality control facilities must be adequate to ensure that pipe and fittings are 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.

Testing and inspection of all pipe shall be done at the factory with a certified copy of test results furnished to the Engineer prior to any pipe being installed. Tests shall be done in accordance with ASTM D-2837 and validated in accordance with latest revision of PPI TR-3. The Owner may take random samples and have them tested by an independent

laboratory. Samples that fail to comply with the requirements set forth in these Specifications shall be rejected.

Pipe and fittings shall be manufactured in accordance with ASTM F-714. Pipe and fittings unless otherwise indicated on the Contract Drawings shall be butt fusion type meeting the requirements of ASTM D-3261. All fittings shall be pressure rated to match the system piping and the outside diameter and minimum wall thickness shall meet the outside diameter and minimum wall thickness specification of ASTM F-714.

The joining method shall be done in strict accordance with the pipe manufacturer's written instructions. The pipe manufacturer shall provide a minimum of 16 hours of instruction time to observe and instruct the Contractor's personnel in the proper pipe jointing method and installation of the pipe system. In addition, the pipe manufacturer shall provide a minimum of 8 hours of observation time throughout the duration of the pipe laying operation of the project. The pipe manufacturer shall provide a written report to the Contractor and to the Engineer of his observation including comments on proper procedure being followed.

Pipe and fittings shall be stored and handled in accordance with the manufacturer's recommendations. At a minimum, pipe and fitting shall be stored on clean, level ground to prevent damage. Any sections found to have cuts or gouges shall not be installed and such sections shall be removed from the project.

The polyethylene pipe and fittings shall be not less than the DR class or pressure class listed below. This is based on hydrostatic design basis at 73.4 degrees F.

Nominal Pipe Size	O.D. of Polyethylene	DR and Pressure
4"	4.80"	DR-11: 160 PSI
6"	6.90"	DR-11: 160 PSI
8"	9.05"	DR-11: 160 PSI
12”	13.20"	DR-11: 160 PSI

*Note: Unless otherwise indicated on the Contract Drawings.

Fittings for PE piping shall be molded (PE) (or fabricated if molded not available) with electrofusion couplings in accordance with manufacturer’s recommendations. All Elctro Fusion fittings shall be as manufactured by Central Plastics or approved equal.

All fittings shall be pressure rated to match the piping.

Detectable tape shall be 3 inches wide and shall be an inert, bonded layer plastic with a metalized foil core and shall be highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. The tape shall be blue in color and shall bear the imprint "CAUTION - WATER LINE BURIED BELOW". This detection tape shall be placed over the water main at a level of 15 inches below the finished ground surface.

NOTE: The Contractor's attention is directed to the requirement of the Owner for the furnishing and installation of #14 insulated copper trace wire for water pipe on this project. This trace wire shall be stubbed up at al valve boxes for use by the Owner.

Prior to ordering water pipe, fittings, or detectable tape, the Contractor shall submit proposed materials to the Engineer for approval.

7. FITTINGS

All fittings shall be cast gray iron or ductile iron, cement lined, bituminous coated, and manufactured in accordance with USA 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.

Fitting manufacturer shall furnish certificates that fittings were manufactured in compliance with ANSI A21.53-84, latest revision.

8. GATE VALVES

All gate valves shall be iron body bronze mounted, double disc valves with non-rising stems. Valves shall be furnished with mechanical joint ends in accordance with USA Standard A21.11 unless otherwise shown or directed. Valves shall be suitable for installation in approximately vertical position in buried pipe lines. Stem seal shall consist of O-ring seals. All valves shall be open to the left (counterclockwise), and shall be provided with a 2-inch square operating nut. Valve supplier shall furnish two standard stem iron wrenches for turning nut operated valves.

Valves shall be for working pressures up to 200 psi and shall be equal to latest specifications of AWWA C500 in all respects. Valves shall be equal to Mueller A-2380-20, unless shown otherwise on Drawings.

9. RESILIENT SEAT GATE VALVES

Resilient seat gate valves shall be iron body, machined surface, modified wedge disc, resilient rubber seat ring type valves with non-rising stems (NRS). Resilient seat gate valves shall have the bronze stem nut cast integrally with the cast iron valve disc. The valve shall have machined seating surface and capable of being installed and operated in either direction. Valves shall be furnished with mechanical joint ends in accordance with USA Standard A21.11 unless otherwise shown or directed. Valves shall be suitable for installation in approximately vertical position in buried pipe lines. Stem seal shall consist of O-ring seals. All valves shall open to the left (counterclockwise), and shall be provided with a 2-inch square operating nut. All underground gate valves which have nuts deeper than 30 inches below the valve box top shall have extended stems with nuts located within one foot of the valve box cap.

Valves shall be for working pressures up to 200 psi and shall be equal to latest specifications of AWWA C509 in all respects. Valves shall be equal to Mueller A-2370-20, unless shown otherwise on Drawings.

Iron body resilient seat gate valves shall be as manufactured by Mueller, or equal.

10. TAPPING SLEEVES AND VALVES

Tapping sleeves shall consist of a mechanical joint tapping sleeve Mueller H-615, or approved equal, and a valve with mechanical joint outlet Mueller H-667, or approved equal. The valve shall conform to all applicable specifications for gate valves.

11. 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 can be made of cast iron housings. Valves shall

be of similar construction to APCO 200A or approved equal. Inlet size shall be 1 inch in diameter.

12. VALVE BOX FRAMES AND COVERS

Valve box frames and covers shall be made of heavy cast iron and shall meet the requirements of ASTM A-48, Class 30.

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. Contact surfaces of frames and covers shall be machined so that the covers rest securely in the frames with no rocking or movement. The cover shall be in contact with the frame for the entire perimeter of the contact surface.

The valve box frames and covers shall be as manufactured by John Bouchard and Sons Company, Nashville, Tennessee, No. 8004 Roadway Type, or approved equal. The cover shall be marked "WATER".

A minimum 2-foot diameter concrete collar shall be placed around the top of the valve box in non-paved areas to provide support of the box. The collar shall be a minimum of 4 inches thick and sloped to drain away from the box (see the Standard Detail for Gate Valve on Drawings).

13. SERVICE CLAMPS

Where designated on the Drawings or required by the Engineer, service clamps shall be used for all taps made to the water line. Service clamps shall be all bronze construction with neoprene gasket.

14. PIPELINE DETECTION TAPE

Detectable pipeline location tape shall be plastic composition film containing one layer of metalized foil laminated between two layers of inert plastic film specifically formulated for prolonged use underground. Tape shall be minimum 5.5 mils thickness, blue in color, and continuously printed in permanent ink to indicate caution for a buried water main. This detection tape shall be placed over the water main at a level of 15 inches below the finished ground surface.

Tape shall be a minimum of 3 inches in width with a minimum tensile strength of 5,000 psi. Tape shall be Terra-Tape as manufactured by Reef Industries, Inc. or approved equal.

In addition to detectable tape described above, a tracer wire shall also be installed by taping to the top of the water main. This tracer wire shall be #14 copper wire. All splices shall be by the solder or compression fitting methods. Wire nuts are not permitted.

15. TRACER WIRE

The tracer wire shall also be installed by taping to the top of the water main. This tracer wire shall be 14-gauge insulated copper wire. All splices shall be by the solder or compression fitting methods. Wire nuts are not permitted.

16. CASING PIPE

Where noted on the Drawings or required by these Specifications, roadway, railroad or other 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 or described in these Specifications.

Casing pipe and joints shall be of leakproof construction. The steel casing pipe shall have a minimum yield strength of 35,000 psi and shall have the minimum wall thickness shown in the following table or as shown on the Drawings.

TABLE OF MINIMUM WALL THICKNESS
FOR STEEL CASING PIPE
(COOPER E-80 LOADING)

Casing Diameter, inches	Wall Thickness with approved protective coating, inches	Wall Thickness without approved protective coating, inches
Under 14	0.188	0.251
14 & 16	0.219	0.282
18	0.250	0.313
20	0.281	0.344
22	0.312	0.375
24	0.344	0.407
30	0.406	0.469
36	0.469	0.532
42	0.500	0.563

The casing pipe shall extend to the points indicated on the Drawings. The ends of the casing shall be protected against the entrance of foreign material but not tightly sealed, in a manner approved by the Engineer.

17. WATER SERVICE TUBING

Water line pipe and service line pipe shall be 1-1/2-inch, 1-inch and/or 3/4-inch polyethylene P.E.-3408-P-X ASTM D-2737; SDR-9/200 PSI-CTS with tracer wire for locating purposes.

Working pressure shall be 200 PSI at 73° F.

18. SERVICE LINE ITEMS

Service lines shall consist of a corporation stop, line, dual check valve, meter box and a meter herein described.

a. Dual Check Valve - Dual check valve coppersetter Ford model VHH72-7W-44-33 or approved equal.

b. Corporation Stop - Ford Brass, or approved equal (size equal to service line size).

c. Meter - Sensus Model SR2 or approved equal

d. Meter Box - 24-inch polyethylene pipe as designated on Drawings.

19. BLOW-OFF / FLUSH HYDRANT

Special flush type hydrants shall be #77 Mainguard Hydrants with locking capability minimum size shall be 2-inch as manufactured by the Kupferie Foundry Company of St. Louis, Missouri, or Engineer-approved equal. The locking cover on the flush hydrant shall be modified by the Contractor and/or material supplier to accommodate the standard lock size of the Green River Valley Water District.

20. WATER LINE / VALVE MARKERS

Where indicated on the Contract Drawings, markers for valves and/or water lines shall be one piece for driving or settling in the ground. Marker units shall be weather resistant with identifying color and permanently affixed marker identifying water main and/or water valve and shall be a minimum of 62 inches in length. Units shall be flexible and resistant to damage by vehicles, animals, or vandals. Marker units shall be Carsonite Utility Marker, manufactured by Carsonite International - Carson City, Nevada or approved equal.

21. RIP-RAP

Rip-Rap stone material shall be sound, durable, free from cracks, pyrite intrusion and other structural defects. Wear shall not exceed sixty by the Los Angeles Method. When crushed aggregate is subjected to five alternations of the sodium sulfate soundness test, the weighted percentage of loss shall not be more than fifteen. At least 90 percent of the stone shall not be less than 8 inches wide by 12 inches long by 12 inches deep and shall be approximately rectangular in shape.

DIVISION H

WATER MAINS AND APPURTENANCES

SECTION 3

CONSTRUCTION

1. PRELIMINARY WORK

1.1 Location of Lines - The streets, roads and easements in which lines shall be placed have been indicated on the Drawings. Final location of the pipe lines within these locations shall be made by the Engineer at the time of construction.

1.2 Location and Protection of Underground Utilities - Prior to trenching, the Contractor shall determine, insofar as possible, the actual location of all under ground utilities in the vicinity of this operation and shall clearly mark their locations so that they may be avoided by equipment operators. Where such utility lines or services 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 trenching 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 and/or repair shall be such that the damaged structure 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 method and not in conflict with state or local ordinances.

Care shall be taken to avoid unnecessary cutting or damage to trees not in the construction area. The Contractor will be responsible for loss or damage to trees outside the permanent easement or rights-of-way.

2. EXCAVATION

2.1 General - The Contractor shall perform all required excavation and backfilling incidental to the installation of the water lines, air release valve installations, and other appurtenances under this Contract. Excavation shall be carried to the depths indicated on the Drawings or as necessary to permit the 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 for structures.

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 facility to be placed thereon). In the event 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 pilings or other suitable special foundations.

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

The Contractor shall saw-cut pavements prior to excavation procedures.

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

2.2 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 earth excavation and no separate payment will be allowed thereof.

2.3 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 cut or 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.

2.4 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 installation of water distribution piping shall be such that the pipe will have a minimum cover of 48 inches for 12-inch to 16-inch water mains and 30 inches for 10-inch and smaller water mains except as noted on Drawings. The bottom of trenches must be shaped by hand and bell holes must be dug so that full length of pipe is resting on trench bottom. Blocking shall not be used.

Note: In many cases the water main shall be required to have more than 48 or 30 inches of cover to get under existing utilities or to satisfy other requirements. This additional depth, when required, shall be merged into the unit price bid per foot of water main.

Trenches shall be opened up far enough ahead 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 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 and Police Departments are notified before road is closed.

3. Suitable detours are provided and are clearly marked.

No driveways 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 to occupants' convenience and, except in case of emergency, drives shall not be blocked for a period of more than 8 hours.

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

Trench width shall be held to a minimum consistent with proper working space for assembly of pipe. Maximum trench width up to a point one foot above top of pipe shall be limited to the outside pipe diameter plus 16 inches. Boulders, large stone, shale and rock shall be removed to provide clearance of 6 inches 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 unstable soil conditions are encountered at the trench bottom, the Contractor shall remove such 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 trench and in such a way as to avoid encroachment of private property.

2.5 Excavation for Structures - Excavation for air release valve installations, metering pits or other appurtenance shall be only as large as may be required for the structure of appurtenance and for working room around the same. In earth, excavation shall generally extend to the outer limits of the structure at the bottom, and shall slope outward at such angle as may be required for stability of excavated face. In rock, excavation shall be carried to a point 6 inches outside the structure so that no rock is left within 6 inches of the finished structure or appurtenance.

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 Class C concrete at the expense of the Contractor. The use of tamped earth backfill under foundations, footings, or slabs will not be acceptable.

Where structures rest partially upon rock, the rock shall be excavated to a point 6 inches below bottom of structure and compacted crushed stone shall be used to bring the excavation back to grade. Where the structure will rest completely on sound solid rock, the rock shall be excavated to a point 4 inches below bottom of structure and compacted crushed stone 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, such condition shall be immediately called to the attention of the Engineer. The Engineer may direct that such unsuitable material be removed and replaced with concrete, he may modify the foundation design to suit the condition, or he may determine that the bearing capacity of the material for the load to be supported; but in any case shall provide written instructions to the Contractor as to the procedure to be followed.

2.6 Rock Excavation - Rock excavation shall consist of loosening, removing and disposing of all rock larger than 9 cubic feet in volume, which in the opinion of the Engineer can only be removed by blasting or other equivalent methods. Such materials to be classified as solid rock shall include boulders, bed rock, or solid concrete but shall not include pavement or shaley materials that can be loosened by other methods.

Where rock excavation is encountered in trenches the excavation shall be carried to a depth of 6 inches below the bottom of the pipe. The rock shall also be removed to a width of at least 6 inches beyond the outside of 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.

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 men. Careless shooting, resulting in the ejection of stones or other debris during blasting, shall be corrected immediately by the Contractor's representative.

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 property.

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 ensure protection of these structures. Care shall be taken in blasting operations to see that pipe or other structures previously installed are not damaged by blasting. In general, blasting shall not be done within 25 feet of the completed pipeline or any existing structure.

All excavation on this project is on an unclassified basis. Rock excavation <u>is not</u> a separate pay item.

2.7 Disposal of Surplus Excavated Material - Excavated material that is unsuitable or unnecessary for backfilling shall be hauled to sites as directed by the Engineer for use as fill on the project. No surplus excavated material may be disposed of except as provided herein unless specifically authorized by the Engineer. Any material which is not suitable or not required for the fill on the project shall be disposed of by the Contractor.

2.8 Subsurface Obstructions - In excavating, backfilling, and laying pipe, care must be taken not to remove, disturb or injure other pipes, conduits, or structures, without the approval of the Engineer. If necessary, the Contractor, at his own expense, 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 subsurface structures are broken or damaged in the prosecution of the work, the Contractor shall immediately notify the proper authorities and shall be responsible for any damage to persons or property caused by such breaks.

When pipes or conduits providing service to adjoining buildings are broken during the progress of the work. the Contractor shall have them repaired at once. Delays, such as would result in buildings being without service 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 Drawings. Where ordered by the Engineer, the Contractor shall uncover subsurface obstructions in advance of construction so that the method of avoiding same may be deter mined before pipe laying reaches the obstructions.

The Contractor shall be governed by instructions of the Engineer regarding the laying of pipe along State Highways and the latter will determine whether the pipe shall be laid over, under, or along the end of various drainage structures encountered.

2.9 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 there from. 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 in Section 6 - Special Construction Items.

3. INSTALLATION OF WATER LINE AND APPURTENANCES

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 ensure 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 the 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 pipe and fittings. Pipe and fittings shall be carefully lowered into the trench piece by piece. Pipe and fittings shall be carefully inspected for defects and for dirt or other foreign material immediately before placing them in the trench. Suitable swabs shall be available at the site of laying operations, and any dirt or foreign material shall be removed from the pipe before it is lowered into the trench.

Bell holes for bell and spigot and mechanical joint pipe shall be dug in 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.

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 axis of 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 Ductile Iron Pipe - Provision of AWWA Specifications C600, latest revision, “AWWA Standard for Installation of Gray and Ductile Cast Iron Water Mains” shall apply. Laying conditions shall be Type 2 (flat bottom trench without blocks) with tamped backfill.

Joints shall be an approved slip-on type or mechanical joint. Unless otherwise indicated on Drawings, lines laid below ground shall have approved slip-on joints, lines laid above ground shall have mechanical joints. Flanged joints shall be used only where designated on Drawings. Cement joints will not be permitted.

Mechanical joint and slip-on type or mechanical joint. Unless otherwise indicated on Drawings, lines laid below ground shall have approved slip-on joints; lines laid above ground shall have mechanical joints. Flanged joints shall be used only where designated on Drawings. Cement joints will not be permitted.

Mechanical joint and slip-on type water line shall be jointed together in trench according to recommendations of pipe manufacturer. Inside of bell and outside of spigot end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. Circular rubber gasket shall be flexed inward and inserted in gasket recess of bell socket. Thin film of gasket lubricant shall be applied to inside surface of gasket or spigot end of pipe or both. Gasket lubricant shall be as supplied by pipe manufacturer and approved by Engineer. Spigot end of pipe shall be inserted into socket, with care used to keep joint end to bottom of socket with forked tool, jack-type tool, or other device approved by Engineer. Pipe not furnished with depth mark shall be marked before assembly to assure that spigot and is inserted to full depth of joint. Field cut pipe lengths shall be filled or ground to resemble spigot end as manufactured.

Whenever it is desirable to deflect slip-on joint pipe in order to form long-radius curve, amount of deflection shall not to exceed maximum limits as follows:

Diameter	Joint Length	Deflection
4” thru 12”	18 ft.	18 in.
14” thru 30”	18 ft.	10 in.

3.4 Polyvinyl Chloride Pipe (Class 200; SDR 21 PVC) - Installation of polyvinyl chloride pipe shall conform to ASTM 2321 and AWWA C900, latest revision. Pipe shall be bedded in compacted granular material to centerline of pipe and compacted granular material to a point 8 inches over pipe. Type 5 Trench Condition as set forth in AWWA C600-87. The bedding material shall be shaped to provide continuous support for the PVC pipe throughout its length except at bells. 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 in accordance with recommendations of the manufacturer.

Note: For installation of PVC water main materials, the Contractor shall provide and install 3-inch detection tape as per specifications. This detection tape shall be placed over the newly installed water main at a level of 15 inches below the finish ground surface.

Additionally, the Contractor shall provide and install a 14-gauge insulated copper wire directly on top of the newly installed water main. This copper wire shall be stubbed up into each valve box along the water main alignment. This stub-up shall be suitably secured in the valve box to be readily attached to pipe-locating equipment. Any splices of this wire shall be performed in a manner approved by the Engineer.

3.5 Polyethylene Pipe

Polyethylene (PE) Pipe - Installation of PE pipe shall conform to ASTM 2321 and AWWA C900, latest revision. Pipe shall be bedded in compacted select excavated material to centerline of pipe and compacted select excavated material to a point 8 inches over pipe. Type 5 Trench Condition as set forth in AWWA C600, latest revision. The bedding material shall be shaped to provide continuous support for the pipe throughout its length except at bells. Blocking shall not be used to bring the pipe to grade.

Assemble all joints in accordance with recommendations of the manufacturer.

Note: For installation of PE water main materials, the Contractor shall provide and install 3-inch detection tape as per specifications. This detection tape shall be placed over the newly installed water main at a level of 15 inches below the finish ground surface.

Additionally, the Contractor shall provide and install a 14-gauge insulated copper wire directly on top of the newly installed water main. This copper wire shall be stubbed up into each valve box along the water main alignment. This stub-up shall be suitably secured in the valve box to be readily attached to pipe-locating equipment. Any splices of this wire shall be performed in a manner approved by the Engineer.

The Contractor shall provide all labor, materials, equipment, tools, and accessories necessary to join, install, and test polyethylene pipe and its appurtenant fittings and valves, and warning tape for a complete system. All polyethylene pipe and fittings shall be PE 4710 IPS.

The Contractor shall furnish all materials, including pipe, valves, etc., labor, tools, equipment, and transportation necessary to install these underground facilities. All pipe and fittings shall be jointed by the butt heat fusion process, and the Contractor's

personnel performing the heat fusion shall be qualified in accordance with DOT Section 192.285.

The Contractor shall take every precaution in handling the PE pipe and fittings to ensure scratching, gouging or other damage does not occur. Pipe having a nominal diameter of 2 inches or less shall normally be installed by unrolling from a reel trailer to prevent damage. If the pipe or fittings are scratched or gouged due to improper handling, the affected areas shall be replaced at the Contractor's expense.

All joining shall be made by qualified personnel and shall be the butt heat fusion process in accordance with the pipe manufacturer's written procedures. An approved butt fusion machine shall be used for the heat fusion process. The Engineer shall have the right to inspect the joining process to ensure it is being performed in accordance with the written procedure and shall have the right to inspect the completed fusion joint for proper appearance. If the Engineer determines the fusion joint was not made in accordance with proper procedure or if the joint does not exhibit the proper appearance, the joint shall be cut out and replaced at the Contractor's expense.

The trench shall be excavated according to this Specification. The pipe shall be installed loosely in the trench to minimize the expansion/contraction effects of temperature change. In no case shall the pipe be stretched during installation.

Polyethylene valves shall be butt fused into the pipeline at locations as shown on the Construction Drawings. Valves shall be installed in a manner such that the stem extends vertically upward at a right angle from the pipeline. Valves shall be left in the full-open position, unless otherwise directed by the Engineer.

The pipeline must be installed with at least 12-inches of clearance from any other underground structure not associated with the pipeline. If this clearance cannot be attained, approval must be obtained from Engineer representative before installing the pipeline. The pipeline must be protected from damage that might result from the proximity of the other structure.

Contractor shall install the pipeline at all highway, street, and railroad crossings in strict accordance with the specifications required by state highway engineers, city engineers, railroad companies, or any other authority having proper jurisdiction over such installations after the Owner shall have first secured necessary permits for said work.

If casings are required, they shall be furnished and installed by Contractor. Casing spacers and end seals shall be installed with the insulators spaced at proper intervals on the pipe between the pipe and casing. Vents to be installed at required locations.

The pipe at all road crossings shall be buried to a depth to insure that the top of the pipe or casing shall be at least forty-two inches (42) below the lowest point in the bottom of the drainage ditch.

<u>Directional Boring Fluids Containment and Disposal:</u>

- Precautions shall be taken to ensure drilling fluids do not enter roadways, waterways, storm water or sanitary sewer structures, drainage way or water body, etc. These precautions can include but not limited to berms, silt fences, liners, etc.

- Excess fluids shall be confined to entry and exit pits until recycled or removed from the site. Drilling fluids not recycled and reused shall be removed from the site.
- In the event of “surfacing”, the drilling fluids shall be contained at the point of discharge and recycled or removed from the site.
- All drilling fluids shall be removed from the site prior to backfilling and restoration of the site. Collection, transportation, and disposal of drilling fluids shall be in accordance with all applicable environmental regulations.

3.6 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 in stalled in accordance with provisions of these Specifications dealing with laying of Ductile Iron Pipe. Joints shall be as designated under Section 2, Materials.

Note: Thrust blocks are not required for PE pipe.

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.

3.7 Installation of Valves, Valve Boxes - Valves shall be placed in the locations indicated on the Drawings 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 30 inches below the top of the valve box shall have extension stems with operating nuts located within one foot of the valve box cap.

See Special Detail on Contract Drawings concerning the pipeline trace wire stub-ups at all valve boxes.

The valve box shall not come in contact with valve, valve stem, extension, or operating nut at any point. Backfill around boxes shall be tamped to maintain centered and plumbed alignment of box.

Box shall be installed with top set flush with finished surface in paved areas and to 2 inches above natural ground level in unpaved areas.

Upon completion of project, the Contractor shall operate all buried valves in the presence of the Engineer to verify proper operation.

3.8 Installation of Fire Hydrants - Hydrants shall be located generally as shown on the Drawings subject to review and approval by the Fire Department. Location shall provide

complete accessibility and minimize possibility of damage from vehicles or injury to pedestrians.

Hydrants shall stand plumb (vertically) with pump nozzle facing street or public rights-of-way. Hydrants shall be set so that groundline, as indicated on hydrant barrel, is within 4 inches of finished grade. Hydrants with out ground lines marked on barrel shall be set so that barrel flange is no more than 2 inches below finished grade. Hydrant barrels shall be minimum bury of 36 inches. Greater bury depths might be required to accomplish the above described grade setting. It is desired to accomplish the proper grade setting without the use of barrel extensions. All cost for barrel extensions and greater depth of bury shall be included in the unit price bid for the fire hydrant assemblies.

A hydrant drain consisting of at least 7 cubic feet of clean, washed gravel or crushed stone shall be placed around base of hydrant. After installation is complete, hydrant will be tested for drainage and Contractor must correct situation if hydrant does not drain satisfactorily.

Concrete thrust block shall be poured at base of hydrant with care taken not to plug hydrant drains. Blocks must be poured in addition to retained glands, locked joint base fittings, anchoring fittings, or pipe clamps and tie rods.

Painting of hydrants after installation shall be required if factory finish is not satisfactory or has been damaged. All hydrants shall be red unless otherwise directed by the Engineer.

In case of damaged or otherwise unsatisfactory paint, Contractor shall apply two (2) coats of approved enamel.

Hydrant installation shall conform to details in Contract Drawings.

4. BACKFILL

4.1 General - Backfilling shall be carried out as expeditiously as possible, but shall not be undertaken until the Engineer has been given the opportunity to inspect 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 one foot above top of pipe to within twelve inches of finished grade in unpaved areas, back fill may contain stones up to six inches in their greatest dimension, unless otherwise specified. Backfill containing rock must contain enough dirt to fill voids between rock.

When backfill material is not specified on Project Drawings or elsewhere in these Specifications, Contractor may backfill with the excavated material provided material consists of loam, clay, sand, gravel, or other materials that, 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 the Kentucky Department of Highways Standards for crushed stone used in road surfacing.

Select Excavated Material for use as pipe bedding and envelope from 12 inches under the pipe to a point 12 inches above the pipe in outside roadway areas shall be identified as select clay soil material excavated from the trench, or select tailings from a rock trencher, or select material brought in from off-site, provided all such materials are free of deleterious substances such as rocks (larger than 1-½ inches), roots, stumps, humus material, frozen earth, other organic material and any other objectionable material around the pipe. The envelope shall be placed and compacted around the pipe as set forth in Paragraph 3.4 for Type 5 Trench Condition for PVC pipe in accordance with AWWA-C-600-87. Consolidation by jetting will not be allowed. The furnishing and installation of the select material bedding and select material envelope shall be considered as an integral part of the job and its cost merged into the unit price bid for water main pipe. No separate payment shall be allowed.

4.3 Backfilling Under Pipe - All trenches shall be backfilled by hand from bottom of trench to centerline of pipe. Approved backfill material (Select Excavated Material or Crushed Stone No. 57) shall be placed in 6-inch layers and thoroughly compacted by hand tamping. Backfill material shall be deposited in trench for its full width on each side of pipe, fittings and appurtenances simultaneously. Care must be taken to compact fill along sides of pipe and appurtenances adjacent to pipe wall.

4.4 Backfilling Under Pipe in Rock - Where trench is excavated in rock or shale, a 6-inch space below pipe shall be backfilled with approved bedding material (Select Excavated Material or Crushed Stone No. 57) firmly compacted to form a cushion for pipe and appurtenances.

4.5 Backfilling Over Pipe - From centerline of pipe, fittings and appurtenances to a depth of 1 foot above top of pipe, trench shall be backfilled by hand or by approved mechanical methods of 6-inch layers and thoroughly compacted by hand tamping or by approved mechanical methods. Contractor shall use special care in placing this portion of backfill in order to avoid injuring or moving pipe.

After the backfill has been placed to a depth of at least 12 inches above top of pipe, additional backfill may be placed by means of front end loaders, bulldozers or other suitable mechanical equipment subject to a 9-inch limitation of maximum thickness of layers placed before compaction.

4.6 In Areas Subject to Vehicular Traffic or Under Sidewalks - 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) which shall be placed in layers or lifts not exceeding 9 inches in thickness.

After placing in layers, crushed stone shall be carefully compacted to maximum density or minimum volume. Such backfill, placed where called for on the Drawings or as directed by the Engineer, shall be designated as Crushed Stone Backfill.

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 8-10 inches of backfill shall be compacted pug mix 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, the Contractor shall, at direction of the Engineer, water streets, roads, etc. to settle dust where excessive dust has, in opinion of the Engineer, been caused by the Contractor's operations. If the Contractor refuses or delays unnecessarily to obey direction of the Engineer, the Owner shall, after 24 hours written notice through the Engineer, be permitted to proceed with such work with cost to be billed to the Contractor.

The Contractor's attention is directed to the fact that water main items on this project are established as "under" and "outside" of roadway. Therefore, crushed stone backfill for pipe indicated to be under roadway shall not be a separate pay item.

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 not as critical, the Contractor may backfill trench from 1 foot above top of pipe to top of trench with approved excavated material using hand or approved methods. Backfill material shall be brought up to the original ground level in layers and walked in with suitable equipment. More restrictive compaction of this backfill material will not be required, however, the Contractor 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.

5. 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, bridges, 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 regrass lawns or neutral grounds where trenches are excavated in these locations or where Contractor has damaged lawns or neutral grounds by his operations.

The Engineer shall be sole authority in determining time in which rough and final clean-up shall be prosecuted. 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 1,000 feet; whichever time limit is shortest shall govern. Final clean-up consisting of pavement replacement, sidewalk replacement, removal of rocks, handraking with seeding, strawing, etc., of lawns and neutral grounds, adjusting grade of ground over pipeline, property repairs, and other items shall be prosecuted as soon as is practical after pipe has been laid and backfilled. In general, this would be no later than 2 to 3 weeks after completion of backfilling.

5.2 Final Grading and Seeding - Final clean-up shall consist of, among other items, final grading of disturbed areas and seeding of areas where grass growth was damaged or destroyed by the Contractor's operation. In areas of established lawns no rock shall be left in the top 6 inches of soil and the finished grade shall be that which existed before construction began. In all cases, lawn areas shall be left neat and in a condition so that hand 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 at least equal to the condition which existed before construction began. In established lawn areas new grass shall be of the same type as originally present. Grass and other ground cover shall be properly applied, fertilized, strawed, and watered as necessary and required to establish a good stand of grass.

5.3 As soon as the pipe has been installed, the trench shall be backfilled as specified and, where directed by Engineer, a temporary pavement patch shall be provided in areas which have permanent paving. "Permanent paving" shall mean asphaltic concrete ("hot mix") or Portland cement concrete.

Cold mixes, surface treatments, crushed stone are excluded from the "permanent pavement" classification. The temporary pavement patch shall consist of at least 6 inches of compacted stone base brought to within 2 inches of the surface of the existing permanent pavement. A 1-inch layer of cold mix asphaltic concrete shall then be applied to protect the base, prevent "pot holes" or "chuck holes," and provide a reasonably smooth pavement surface until the permanent patch is made. The temporary pavement patch shall be placed within 48 hours of receipt of written instruction of the Engineer.

Prior to placement of the pavement restoration, the Contractor shall reshape the street or roadway surface. Street preparation shall include all required scarifying, shaping, and rolling in pug mix of areas to be paved. This item will also include the removal of all pavement which is heaved by the Contractor's blasting operations. This street preparation shall return the streets to the template which existed prior to construction. This street preparation shall be satisfactory to the Department of Public Works before the street is accepted for paving operations. No separate payment will be allowed for street preparation.

Pavement types shall be designated by Engineer for installation in specific location where such designation is not shown on Drawings. All street pavements, unless otherwise noted herein or directed by the Engineer, which have water mains installed parallel with the road, across streets, driveways or parking lots, shall be restored by the following:

1. Asphalt Pavement Replacement Type “A” or Special Type “A”

   This item of pavement restoration shall conform to the details included in the Contract Drawings. The leveling binder course and the surface course shall be furnished and placed in accordance with the Kentucky Department of Highways 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 Section 411 of the Kentucky Department of Highways Standard Specifications.

3. Crushed Stone Roadway Replacement or Driveway Replacement

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

4. Concrete Driveway Replacement

Concrete driveway shall be replaced equal to that existing prior to construction but in no case less than 6 inches in depth with 4”x4” reinforcing wire mesh.

The above pavement replacements will be measured for payment on linear foot basis unless otherwise indicated.

5. Type G – Pavement Replacement

The above pavement replacement will be measured for payment on a linear foot basis. This is for Kentucky State Highways. Under this pavement replacement, the trench shall be backfilled with #57 crushed stone from the pipe envelope to the roadway subgrade. The top 9 inches of this backfill, to include the roadway base stone, shall be compressible stone (compact pug mix). The street shall then be cleaned and shaped. All heaved areas shall be removed to return the street to the original template.

The trench cut shall then be primed and overlaid with 6¾-inches of Bituminous Base as per Kentucky Transportation Cabinet requirements and shown on the details included in the Contract Drawings. The final layer of pavement replacement shall include 1¼-inches of Bituminous Surface and 1½-inches of Bituminous Binder as required by the Transportation Cabinet for State Highway Pavement Replacement. All pavement replacement Type “G” for State Highways are to be done in accordance with the requirements of the Kentucky Transportation Cabinet Division 400 of the Standard Specifications.

NOTE: All gas valves, water valves, and manholes will be adjusted to the final surface elevations by the Contractor. Cost to be merged into price for pavement replacement.

The Contractor shall be responsible for replacing all crushed stone surfacing damaged by his operation with measurement and payment to be described in these Specifications.

The Contractor shall be responsible for maintaining temporary patches during construction and shall promptly repair any defects. Upon completion of the work, the paved surfaces shall be left in as good or better condition than before the start of construction.

5.4 Sodding or Sprigging - Where shown on the Drawings or directed by the Engineer, the Contractor shall install sodding or sprigging in lieu of seeding in order to establish ground cover. Normally this would be done in areas subject to erosion in soils that are difficult to hold.

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± inches of soil shall be pulverized to remove roots, sticks, etc. and smooth the surface. Area shall be fertilized at a minimum rate of 500 pounds per acre. Fertilizer shall be mixed into the top 3 inches of soil by raking, disking, or other acceptable method. Do not

overfertilize areas in order to avoid damaging growth. Fertilizer shall be "Vertigreen," "Vigaro," or approved equal. It shall contain not less than 5% nitrogen, 10% phosphorus, and 4% potash. If the area soil requires, by test, 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 inches wide and 12 inches long with at least 3 inches of dirt on the roots. It shall be placed on the prepared surfaces with edges in close contact and, as just 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 a 1-inch 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. 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 Department of Highways.

When working in or near lines of traffic, the Contractor shall provide warning signals or flagmen as required by the Kentucky Department of Highways.

6.3 Maintaining Traffic while Crossing Streets and Highways - At various locations on this project (in addition to what might be specifically shown on the Contract Drawings) the nature of construction and traffic conditions will require that the Contractor utilize and maintain heavy steel plates to facilitate traffic. These steel plates shall be of sufficient size and thickness to be utilized for varying trenching conditions.

All costs associated with furnishing, placing, maintaining and using these steel plates shall be merged into the Contractor’s unit price bid for water mains.

6.4 Water Mains in Bores - All bore crossings underneath railroads or highways shall be performed in accordance with the requirements of the parties or agencies having jurisdiction of these locations. The Contractor shall contact these parties or agencies prior to starting work and shall meet all requirements of these parties or agencies in regard to methods of construction and safety precautions to be taken in performing the bore work. All costs involved in meeting these requirements shall be pain for by the Contractor and no additional compensation will be allowed.

Excavation for all bores on this project shall be unclassified and no distinction made between rock and other materials excavated, with the cost of excavation merged into the unit price per foot of pipe in bore. Refer to casing pipe specifications in Materials.

7. SLOPE PROTECTION AND 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 Commonwealth of Kentucky Division of Natural Resources during the life of the Contract to control erosion and water pollution through the use of hay bales and other control devices.

The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.

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 material.

   Baled hay or straw checks shall be used where the existing ground slopes in ditches or other areas where siltation erosion or water run-off is a problem.

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. The bales shall also be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales can remain in place until they rot or can 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 clean-out will be considered routine maintenance.

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

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.

   In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, and are ordered by the Engineer, such work shall be performed by the Contractor at his own expense.

e. Erosion control outside project area - Temporary pollution control 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 sites. 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 to which it reflects.

DIVISION H

WATER MAINS AND APPURTENANCES

SECTION 4

TESTING AND ACCEPTANCE

1. 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 in complete, 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 Engineer.

2. PRESSURE AND LEAKAGE TESTS

Each section of the completed water line 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 200 psi at the point of maximum pressure in the test section. Each valved section of pipe shall be slowly filled with water and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. The system shall be allowed to stabilize at the test pressure before conducting any leakage test. The test pump shall then be valved off from the system and the pressure shall be observed over a period of at least 2 hours.

Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the Owner.

Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to the Owner.

No pipe installation will be accepted if the leakage is greater than that established in AWWA C600. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

A drop in pressure of 5 psi or more during the one hour test shall be taken as an 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 at least 2 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 AWWA C600, latest revision, and reproduced on the following page. 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 Engineer may require.

Allowable Leakage per 1,000 feet (305 m) of Pipeline* - gph+

Avg. Test Pressure psi (Bar)	Nominal Pipe Diameter - in.															
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54
450 (31)	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60
400 (28)	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11
350 (24)	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58
300 (21)	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02
275 (19)	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72
250 (17)	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41
225 (16)	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03
200 (14)	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
175 (12)	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
150 (10)	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97
125 (9)	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
100 (7)	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

*** If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.**

+ To obtain leakage in liters/hour, multiply the values in the table by 3.785

Copied from AWWA C600.

3. DISINFECTION

All water line extensions and appurtenances shall be disinfected upon completion. After the lines have been flushed or otherwise suitably cleaned to remove dirt or debris which may have been introduced into the lines during construction, disinfection shall be accomplished in accordance with the provisions of AWWA Standard for Disinfecting Water Mains: AWWA C651, latest revision.

The basic disinfection procedure consists of: (1) Preventing contaminating materials from entering water lines and appurtenances during storage, construction or repair; (2) Removing, by flushing or other means, those materials that may have entered the water lines and appurtenances; (3) Chlorinating any residual contamination that may remain and flushing the chlorinated water from the lines; and (4) Determining the bacteriological quality by laboratory testing after disinfection.

3.1 Preventing Contamination During Construction

Heavy particulate matter and debris generally contain bacteria and can prevent even very high chlorine concentrations from contacting and killing such organisms. It is, therefore, essential that the Contractor utilize procedures to assure that the water lines and appurtenances are thoroughly clean for the final disinfection by chlorination. Toward that end, it is important for the Contractor to prevent contamination of water lines and appurtenances during storage and installation.

All openings in the pipelines shall be closed with watertight plugs when pipe laying is stopped for any reason. Rodent proof plugs may be used when it is determined that watertight plugs are not practicable, where their use could result in pipe flotation if water enters the trench, or where thorough cleaning will be performed by flushing or other means. Workmen need to routinely check the pipeline for contaminating material and keep the pipeline as clean as practicable.

Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry enough to prevent trench water from entering the pipeline. All jointing material and lubricates shall be as recommended by the pipe manufacturer and shall be suitable for use in potable water lines. Trench water shall be kept out of the pipelines, if possible, by the use of plugs or other suitable means. Protect the jointing material and lubricates from contamination. Lubricates shall be delivered to the Project site in closed containers and shall be kept clean.

3.2 Flushing or Cleaning by Other Means

If dirt or debris does find its way into the pipeline and it is likely that it will not be removed by flushing, the interior of the pipe shall be cleaned by mechanical means and then shall be swabbed with one (1) percent hypochlorite disinfecting solution. Cleaning with a swab, pig or similar device should be undertaken only when it has been determined that such operation will not force mud or debris into pipe joint spaces where removal is difficult or impossible.

Velocities of about 2.5 feet per second (fps) or higher are generally required to adequately flush a pipeline. The Contractor is cautioned that the flow rate necessary to reach these velocities is not always practical or even possible. Other methods of cleaning must be employed, and it is even more important to take extra precautions to keep the pipeline clean during the pipe laying operation. This is especially true of large diameter pipes. The following tabulation shows the approximate gallons per minute required to reach a velocity of 2.5 fps for various pipe diameters.

Pipe Diameter, Inches	Gallons per Minute Required
4	100
6	200
8	400
10	600
12	900
16	1,600
20	2,500
24	3,500
30	5,500
36	7,900
42	10,800
48	14,100

When flushing is used to clean pipelines, the Contractor must use care and caution concerning the disposal of water flushed from the lines.

3.3 Chlorination for Disinfection

The forms of chlorine that may be used for disinfection are: (1) liquid chlorine; (2) sodium hypochlorite solution; and (3) calcium hypochlorite granules or tablets. Liquid chlorine must meet the requirements of AWWA B301 and sodium and calcium hypochlorites must meet the requirements of AWWA B300.

Three methods are approved for use under the AWWA standard: (1) the tablet method; (2) the continuous feed method; and (3) the slug method. Each has its advantages under certain situations. The method to be used on this project must be approved by the Engineer before implementation by the Contractor. The continuous feed method is suitable for general application. The slug feed method is suitable for use in large diameter lines where the volume of chlorinated water which must be flushed to waste is of concern and where chemical costs are a consideration. The tablet method is generally more suitable for small diameter pipelines; but the line must be kept dry during installation, preliminary flushing for cleaning is not possible, and the chlorine concentration tends to be less uniform.

(a) The Tablet Method - This method consists of placing granules or tablets in the pipeline as it is being installed and filling the pipeline with potable water when the installation is completed. Only use this method if the pipes and appurtenances are kept clean and dry during construction.

Granules - during construction, granules are placed at the upstream end of the first section of pipe, then at the upstream end of each branch pipeline, and along

the pipeline at intervals of 500 feet. The quantity shall be as shown in AWWA C651 and as approved by the Engineer. Do not use this method on solvent-weld plastic or on screwed-joint steel pipe because of the danger of fire or explosion from a reaction of the joint compounds with the calcium hypochlorite.

Tablets - During construction, 5 gram calcium hypochlorite tablets shall be placed in each section of pipe and also one such tablet in each fire hydrant, fire hydrant branch and other appurtenances. The number of tablets shall be as required in AWWA C651 and as approved by the Engineer. The tablets shall be attached by an adhesive such as Permatex No. 1, or approved equal. there shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all tablets to the inside of the pipe at the top with approximately an equal number of tablets at each end of a given pipe length. Make sure the tablets end up at the top of the pipe as installed in the trench.

Filling and Contact - when pipe installation is complete, the pipeline shall be filled with potable water at such a rate that the water within the pipeline will flow at a velocity no greater than one foot per second (1 fps). Precautions shall be taken to assure that air pockets are eliminated. This water shall remain in the pipeline for at least 24 hours. If the temperature is less than 41 degrees F (5 degrees C), the water shall remain in the pipeline at least 48 hours. During this period of contact, all valves and hydrants in the treated section shall be operated to ensure disinfection of these appurtenances. Valves shall be positioned so that the strong chlorine solution in the treated pipeline will not flow into pipelines in active service

(b) Continuous Feed Method - This method consists of placing calcium hypochlorite granules in the pipeline during construction (Contractor's option), completely filling the pipeline with potable water in order to remove all air pockets, flushing the completed pipeline if necessary to remove particulates, then filling the pipeline with potable water chlorinated so that after 24 hour holding period in the pipeline there will be free chlorine residual of not less than 10 milligrams per liter (mg/l).

Placing Hypochlorite Granules - This procedure shall be as outlined under "Tablet Method" above and is at the Contractor's option. Its purpose is to provide a strong chlorine concentration in the first flow of flushing water passing through the pipeline.

Preliminary Flushing - Before being chlorinated, the pipeline shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity shall not be less than 2.5 fps. Part 3.2 above contains a table showing the rates of flow required to produce this velocity in pipelines of various sizes. Flushing is no substitute for keeping the pipeline clean during construction because some contaminants resist removal by flushing at any feasible velocity. For pipelines of 24-inch diameter and larger, broom sweeping and careful removal of all debris, silt and other contaminants is an acceptable alternative to flushing.

Chlorinating the Pipeline and Appurtenances - Water from existing distribution system or other approved source shall be made to flow at a constant, measures rate of flow into the newly laid pipeline. The regulation of this rate of flow is important and shall be as approved by the Engineer.

At a point not more than 10 feet downstream from the beginning of the new pipeline, water entering this line shall receive a dose of chlorine fed at a constant

rate such that the water will have not less than 25 mg/l free chlorine. To assure that this concentration is provided, the concentration shall be measured at regular intervals in accordance with procedures established in AWWA C651.

The devices and methods used to measure rates of flow, apply the chlorine solution and test the concentration shall be as approved by the Engineer and in accordance with AWWA C651.

During the application of chlorine, valves shall be positioned so that the strong chlorine solution in the pipeline being treated will not flow into water lines in active service. Chlorine application shall not cease until the entire pipeline is filled with heavily chlorinated water. The chlorinated water shall be retained in the pipeline for at least 24 hours, during which time all valves and hydrants in the treated section shall be operated to ensure disinfection of the appurtenances. At the end of this 24-hour period, the treated water in all portions of the pipeline shall have a residual of not less than 10 mg/l free chlorine.

(c) Slug Method - This method differs from the Continuous Feed Method described above in that the disinfection is accomplished by a slug of water containing highly concentrated chlorine (100 mg/l) flowing slowly through the length of the pipeline. The slow flow ensures that all parts of the pipeline and the appurtenances will be exposed to the highly chlorinated water for a period of not less than 3 hours.

For the execution of this method, refer to Part 3.3(b) above for all procedures except as described below.

Chlorinating the Pipeline and Appurtenances - At a point not more than 10 feet downstream from the beginning of the new pipeline, water entering the new pipeline shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 100 mg/l free chlorine. To ensure that this concentration is provided, the chlorine concentration should be measured at various intervals. The chlorine shall be applied continuously and for a sufficient period to develop a solid column, or “slug”, of chlorinated water that will, as it moves through the pipeline, expose all surfaces to a concentration of approximately 100 mg/l for at least 3 hours.

The free chlorine residual shall be measured in the slug as it moves through the pipeline. If at any time it drops below 50 mg/l, the flow shall be stopped, chlorination equipment shall be located to the head of the slug; and, as flow is resumed, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 mg/l.

As the chlorinated water flows past fittings and valves, these valves, hydrants and other appurtenances shall be operated so as to disinfect these items.

(d) Final Flushing - After the applicable retention period (contact time), heavily chlorinated water should not remain in prolonged contact with the pipeline or appurtenances. To prevent damage to the pipe lining, the pipe itself or to appurtenances, the heavily chlorinated water shall be flushed from the pipeline until chlorine measurements show that the concentration in the water leaving the pipeline is no higher than that generally prevailing in the water system or is acceptable for domestic water use.

Disposal of Heavily Chlorinated Water - The environment to which the chlorinated water will be discharged shall be inspected. If there is any question that discharge of the water flushed from the pipeline will cause damage to the environment, then a reducing agent shall be applied to the water to be wasted in order to neutralize the chlorine residual remaining in the water. Where necessary, federal, state or local regulatory agencies should be contacted to determine specific provisions for the disposal of heavily chlorinated water. The procedure used for disposal shall be subject to review and approval by the Engineer prior to initiating any disposal.

3.4 Bacteriological Testing

upon completion of the disinfection and flushing procedures, samples of the water from the treated pipeline shall be taken using methods in accordance with AWWA C651 and as approved by the Engineer. Samples shall show the absence of coliform organisms before the testing is considered complete and the new pipeline put in service.

In the event that the samples show the presence of coliform bacteria or an excessive total count, the disinfection procedure shall be repeated by the Contractor until samples of satisfactory bacteriological quality are obtained.

The Contractor shall furnish all equipment, material and labor necessary for this testing procedure and shall perform the sampling. The samples shall be turned over to the Owner for testing at a laboratory designated by the Owner.

(a) Procedures - All sampling and testing shall be done in accordance with AWWA C651 and Standard Methods for the Examination of Water and Wastewater.

At least one sample shall be collected from the new pipeline and one from the branch. In the case of long pipelines, samples shall be taken along its length as well as at its end. Sample spacing shall generally not exceed 2,500 feet.

If, during construction, trench water has entered the pipeline or excessive quantities of dirt or debris have entered the pipeline, bacteriological samples shall be taken at intervals of approximately 200 feet and shall be identified by location. In these cases, samples shall not be taken until water has stood in the pipeline for at least 16 hours after completion of the flushing.

Samples shall be collected in sterile bottles furnished by the Owner for the purpose of bacteriological sampling (treated with sodium thiosulfate).

No hose or fire hydrant shall be used in the collection of the samples. A corporation cock installed in the pipeline with a copper tube gooseneck assemble, or other arrangement as approved by the Engineer, may be used.

(b) Redisinfection - If the initial disinfection fails to produce satisfactory bacteriological samples, the pipeline may be reflushed and shall be resampled. If check samples show the presence of coliform organisms, the pipeline shall be rechlorinated by the continuous feed method or by the slug feed method until satisfactory results are obtained.

3.5 Acceptance

When testing of the samples shows that there is no presence of coliform organisms or, in the case of the standard plate count, there is not an excessive total count, the disinfection procedure is considered successful and the pipeline and appurtenances may be put in service provided all other Contract provisions, necessary or required for putting the pipeline in service, have been met.

4. TESTING OF VALVES AND OTHER APPURTENANCES

Upon completion of installation, all valves, fire hydrants, service connections, meters, and other appurtenances shall be operated in the presence of the Engineer to verify proper operation.

5. TESTING OF WATER SERVICES, IF APPLICABLE

The Contractor shall test all new water services at the same time that the water main is tested or the Contractor shall expose all connections, taps, curb cocks, unions, and any other fittings when the system water pressure is restored to the meter. These fittings shall be inspected by the Contractor in the presence of the Engineer. If any leaks are found, these leaks shall be repaired in a manner approved by the Engineer.

DIVISION H

WATER MAINS AND APPURTENANCES

SECTION 5

MEASUREMENT AND PAYMENT

1. GENERAL

The Contractor shall furnish all labor, tools, equipment and materials to construct the proposed improvements complete as shown on the Drawings 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 extent of work to be performed. The cost of the incidental work such as clearing and grubbing, trenching, backfilling, testing, curbs, curb and gutters, sidewalks, 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. WATER MAINS

A. Measurement - Water mains shall be measured for payment the centerline of the pipe to the nearest 0.1 foot as shown on the Drawings.

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.

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, backfilling, disposal of surplus excavated material, 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 and placing of bulkheads, the restoration of any utilities, parkways, trees, shrubbery, culverts, fences, and other items not covered under subsequent items and testing.

Backfill shall be in accordance with Section 3 (Construction), Paragraph 4. Water main pipe shall be classified as under roadway if the waterline is under or within three feet of the edge of the pavement. Any water line located more than three feet from the edge of the pavement shall be classified as outside roadway.

Pavement for water lines under roadway shall include backfill with crushed stone (No. 57) as per specifications.

Payment for water mains in tunnel/bore shall be on the basis of linear foot measured from face of tunnel/bore to face of tunnel/bore. No payment for additional footage over the established quantity shall be made without prior approval of the Engineer.

3. FITTINGS

A. Measurement - Pipe fittings for water mains shall be compact ductile iron pipe fittings and will be measured for payment by multiplying the number of fittings in each classification by the standard weight of the fitting as shown in appropriate tables of ANSI/AWWA C153/A21.53-84 “Ductile Iron Compact Fittings 3" Through 12" for Water and Other Liquids.” Pipe fittings for larger sizes may be Cast Iron or Ductile Iron and will be measured for payment based on appropriate weight tables of USA Specification A21.53-84, “American Standard for Cast Iron Fittings 3” through 48” for Water and Other Liquids”. Weights of fittings shall be inclusive of bolts, gaskets, or other appurtenances and shall be as shown in the above specification rather than actual invoice weights.

B. Payment - Payment for furnishing and installing compact ductile iron pipe fittings complete in accordance with these Specifications will be made on the basis of contract unit price bid per pound for pipe fittings and shall constitute compensation in full for furnishing and installing the fittings together with all incidental and related work except as specifically covered by other pay items.

4. VALVE AND BOX (Gate Valves)

A. Measurement - Valves and boxes will be measured by actual count on each size and type of valve installed in the completed system.

B. Payment - Payment for furnishing and installing valves and boxes of the various sizes and classifications, together with any necessary joint accessories, retainer glands, adapters, extension stems (when required) and concrete support pad shall be made on the basis of the Contract unit price bid. Such payment shall constitute full compensation for furnishing and installing the valves and boxes complete in full in accordance with the Drawings and Specifications.

5. CONNECTIONS AND/OR TAPPING SLEEVE AND VALVE CONNECTIONS

A. Measurement - The tapping sleeve and valve connections will be measured by actual count each for each size and type installed and connected for a completed system.

B. Payment - Payment for furnishing, installing, connections, and/or connecting tapping sleeve and valves together with any necessary joint accessories, tapping machine, adapters, retainer glands, valve boxes, extension stems, and all other labor, materials, and work to complete the connection with the existing water main. Such payment shall constitute full compensation for furnishing and installing the tapping sleeve and valve connections and tie-ins in full compliance with the Drawings and Specifications.

6. WATER SERVICE LINE

Measurement and payment for water service lines ¾-inch thru 2-inch in size shall be as indicated in Paragraph 2 – WATER MAINS (above). The Contractor shall backfill with crushed stone (#57) where water service is installed under roadway. Costs for this stone backfill shall be merged into the unit price bid for water service lines under roadway.

7. SERVICE LINE AND/OR RECONNECTION ITEMS

A. Measurement - Service line taps on the water mains will be measured by the actual count of each size tap installed. Service lines shall be measured by the linear foot from the center of the water main along a line perpendicular to the water main to the inside edge of the meter box, or to a point as designated by the Engineer.

B. Payment - Payment for taps shall be made at the unit price bid and shall be full compensation for all labor and materials required to complete the installation. No separate payment shall be made for curb stops or meter boxes on this project.

8. FIRE HYDRANT ASSEMBLY INSTALLATION

A. Measurement - The fire hydrant assembly installation shall be measured by actual count of each installed in the completed system. The 6-inch gate valve shown in the standard detail will be measured and paid under a separate item in this Contract.

B. Payment - Payment for furnishing and installing the fire hydrant assembly shall be based on the Contract unit price bid for each installation. The unit price bid shall include all labor, materials, including extensions and rodding or retainer glands as required, equipment necessary to complete the fire hydrant installation as shown on the Drawings (including the hydrant, increased bury depths exceeding 42 inches when required, excavation, stone, concrete backfill and other necessary work incidental for a complete installation).

9. ROADWAY MAINTENANCE, DRIVEWAY AND ROADWAY REPLACEMENT

1. ROADWAY MAINTENANCE

A. Measurement - Roadway maintenance items shall be measured by the actual quantity used for the item as follows: bituminous “cold mix” per square yard.

B. Payment - Payment for roadway maintenance items shall be made in accordance with the unit price bid for each item and shall include the cost of all labor and materials necessary for the application of these items.

2. DRIVEWAY REPLACEMENT

A. Measurement - Measurement for asphalt driveway or parking lot patch replacement, gravel driveway or concrete driveway or concrete ramp replacement shall be made by the linear foot along the centerline of the water main for the actual quantity placed.

B. Payment - Payment for these items shall be made at the unit prices bid per linear foot and shall include the cost of all labor and materials necessary to construct these items at the locations and to the details shown on the Contract Drawings.

3. ROADWAY REPLACEMENT

A. Measurement - Measurement for Type "A" asphalt pavement replacement shall be made by the linear foot along the centerline of the water main for the actual quantity placed.

B. Payment - Payment for roadway replacement items shall be made at the unit prices bid and shall include the cost of all labor and materials necessary to construct these items at the locations and to the details shown on the Contract Drawings.

10. TOPSOIL AND SEEDING OF TRENCHES

A. Measurement - Measurement for topsoil and seeding of trenches will be made by the linear foot of trench along the centerline of the water main.

B. Payment - Payment shall be made at the unit price bid and shall include all costs of labor and materials (including fine grading, mulching) for the completion of this item.

11. CUT AND CAP OF EXISTING WATER MAINS

A. Measurement - The cut and cap of existing water lines shall be measured by actual count of each size and type installed.

B. Payment – Payment for cutting and capping of existing water lines shall be based on the Contract unit price bid for each type installation. The unit price bid shall include all labor, materials and equipment necessary to complete the cut and cap installation as shown on the Drawings (including excavation, backfill, and incidental work necessary for a complete installation).

12. CLASS C CONCRETE THRUST BLOCKS AND/OR ENCASEMENT

A. Measurement - Class C concrete used in thrust blocks, encasement, or caps will be measured by computing the theoretical volume of concrete required to construct the item in accordance with Standard Detail Drawings shown on the Construction Drawings. The length shall be the actual length of such concrete as installed at the Engineer's direction. Measurement for Class C concrete used in pads, low piers, or blocks shall be placed on the theoretical volume required for the dimensions of the structure as shown on the Drawings or as directed by the Engineer.

B. Payment - Payment for Class C concrete shall be made on the basis of the unit price bid per cubic yard, and shall constitute full compensation for excavation, forming, furnishing and placing the concrete and other incidental work required to complete the project.

13. UNCLASSIFIED EXCAVATION FOR UNDERCUTS

A. Measurement - In areas where directed by the Engineer to remove unsuitable material below grade this item shall be measured by the formula (4/3 pipe O.D. + 24)/12 x length x depth divided by 27 for sewer mains and outside diameter plus 36 inches x depth divided by 27 for manholes.

B. Payment - Payment shall be made at the unit price bid and no distinction shall be made between rock and earth excavation as far as payment is concerned.

14. CRUSHED STONE REFILL FOR UNDERCUTS

A. Measurement - In areas (other than areas specifically designated by these Specifications) where directed by the Engineer to refill with crushed stone an undercut where the Engineer has directed that unsuitable material be removed, this item shall be measured for payment by the formula (4/3 O.D. + 24/12) (length (ft)) (depth (ft)) divided by 27.

B. Payment - Payment for crushed stone refill shall be at the unit price bid per cubic yard and such payment shall constitute complete compensation for all extra labor, materials, and equipment necessary to furnish, haul, place and compact the crushed stone backfill.

Note: This payment is only for refill. All bedding and backfill required is to be merged into the unit price bid for water main and/or water main under roadway.

15. TIE-IN AND CONNECTION TO EXISTING WATER MAIN

A. Measurement - The tie-in and connection to existing water mains will be measured by actual count of each size and type.

B. Payment - Payment for tie-in and connection to existing water mains shall include schedule of shut-downs, excavation, materials (except fittings), tools, labor, equipment, cutting pipe, backfill, refilling water mains, and all other work not covered under subsequent unit price items.

16. WATER VALVE / WATER LINE MARKERS

A. Measurement - Measurement shall be by actual count of water valve / water line markers installed.

B. Payment - Payment for water valve / water line markers shall be on the basis of the unit price bid per each (EA) water valve / water line marker and shall constitute payment in full for furnishing and installing the water valve / water line marker(s) as described in the Specifications and Contract Drawings.

17. PLAIN STONE RIP-RAP

A. Measurement - Measurement for plain stone rip-rap shall be made by the square yard as measured in place.

B. Payment - Payment shall be made at the unit price bid and shall include the cost of labor and materials necessary to construct the item at the locations on the Contract Drawings or as directed by the Engineer.

18. LUMP SUM CONSTRUCTION ITEMS

Measurement and payment for special Lump Sum Items and/or Lump Sum Each Items shall be as indicated in the Contract Documents.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE KY 40201-0059
FAX: (502) 315-6677
http://www.lrl.usace.army.mil/

September 30, 2013

Operations Division
Regulatory Branch (South)
ID No. LRL-2013-254-mlc

Mr. Adam Michels
Kentucky Transportation Cabinet
Division of Environmental Analysis
200 Mero Street
Frankfort, Kentucky 40622

Dear Mr. Michels:

This is in regard to your application for a Department of the Army (DA) permit dated July 2, 2013, concerning a plan to construct a new interchange at the intersection of US 68 and the Cumberland Parkway (Louie B. Nunn Parkway) located in Edmonton, Metcalfe County, Kentucky. We have reviewed your application and submitted information and have made the following determinations: the work is minor in nature, will not have a significant impact on the environment and should encounter no opposition.

Based on these determinations, the proposed work satisfies the Letter of Permission (LOP) criteria, as specified in our regulations and the procedures outlined in the LOP No. 200600259-pgj. Therefore, you are authorized, in accordance with Section 404 of the Clean Water Act (CWA), to impact 1,147 linear feet of intermittent streams, 868 linear feet of ephemeral streams, and 0.205 acre of open water located on unnamed tributaries to Douglas Creek and unnamed tributaries to South Fork of the Little Barren River. This permission is granted with the following conditions:

1. The project shall be constructed in accordance with plans included in the July 2, 2013, application for Kentucky Transportation Cabinet, Item No. 3-8505.0.

2. The permittee shall provide receipt of payment from the Kentucky Department of Fish and Wildlife Resources (KDFWR) Stream and Wetland Mitigation Program for the purchase of 1,534.00 credits. Adjusted Mitigation Units (AMU's) must be purchased prior to the discharge of fill into "waters of the United States". Inquiries regarding credit purchase may be made directly to KDFWR by calling Mr. Mike Hardin (502) 564-7109 ext. 4471, by email at: mike.hardin@ky.gov, or in writing at: Assistant Director, Division of Fisheries #1 Sportsman's Lane, Frankfort, Kentucky, 40601.

3. The permittee shall adhere to the Indiana Bat Programmatic Agreement (September 2012) as outlined in the Memorandum of Agreement between the Federal Highways Administration, U.S. Fish and Wildlife Service-Kentucky Field Office and Kentucky Transportation Cabinet.

4. The time limit for completing the work authorized ends on **September 30, 2018.** If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least 1 month before the above date is reached.

5. Upon completion of construction, you are to notify the District Engineer. The enclosed Completion Report form must be completed and returned to this office.

6. You must agree to comply with the enclosed General Conditions.

This authorization will be effective as soon as we receive your signed acceptance of these conditions. Please sign and date the duplicate copy of this letter in the space provided and return the signed copy in the enclosed envelope. Please note that we also perform periodic inspections to ensure compliance with our permit conditions and appropriate Federal laws.

This letter contains a proffered permit for the construction of a new interchange. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address.

US Army Corps of Engineers
ATTN: Appeal Review Officer CELRD-PD-REG
550 Main Street RM 10524
Cincinnati, OH 45202-3222
TEL (513) 684-6212; FAX (513) 684-2460

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within **60 days** of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **November 30, 2013.** It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter.

Also enclosed with this proffered permit is a preliminary jurisdictional determination (JD). A preliminary jurisdictional determination is not appealable and impacting "waters of the U.S." identified in the preliminary JD will result in you waiving the right to request an approved JD at a later date. An approved JD may be requested (which may be appealed), by contacting me for further instruction.

Copies of this letter will be sent to the appropriate coordinating agencies (see enclosure for addresses).

FOR THE DISTRICT ENGINEER:

Lee Anne Devine
Chief, South Section
Regulatory Branch

Enclosures

(I accept the conditions of this authorization):

Kentucky Transportation Cabinet

10-1-2013
Date

GENERAL CONDITIONS:

1. Discharges of dredged or fill material into "waters of the U.S." must be minimized or avoided to the maximum extent practicable at the project site (i.e. on-site). In determining the minimal impact threshold, the Districts will consider the direct, secondary, and cumulative impacts of the fill or work and any mitigation measures.

2. The permittee shall provide a mitigation/monitoring plan for impacts resulting from the placement of fill into "waters of the U.S." in excess of 300 linear feet of intermittent or perennial stream; the filling of greater than 0.10 acre (4,356 sq. feet) of waters of the U.S; or work causing more than minimal effects, to compensate for impacts to the "waters of the U.S." These impact thresholds are applied for each crossing. When mitigation is required, the permittee will develop the mitigation site concurrently with, or in advance of, the site construction unless the Corps determines on a project specific basis that it is not practical to do so. This will ensure that aquatic functions are not lost for long periods of time (e.g. temporal loss) which could adversely affect water quality and wildlife. The requirement for conservation easements or deed restrictions will be determined on a project specific basis.

3. The permittee shall ensure that sedimentation and soil erosion control measures are in place prior to commencement of construction activities. These measures will remain in place and be properly maintained throughout construction. Sedimentation and soil control measures shall include the installation of straw bale barriers, silt fencing and/or other approved methods to control sedimentation and erosion. Sedimentation and erosion controls will not be placed in "waters of the U.S." except if specifically approved by the District.

4. The permittee shall ensure that areas disturbed by any construction activity, including channel and stream banks, are immediately stabilized and revegetated with a combination of non-invasive plants (grasses, legumes and shrubs) which are compatible with the affected area and will not compete with native vegetation.

5. The permittee shall ensure that no in-stream construction activity is performed during periods of high stream flow or during the fish spawning season (April 1 through June 30) without first contacting the Kentucky Department of Fish and Wildlife Resources (KDFWR) for their expertise on impacts to the fishery resource. Additionally, the discharge of dredged and/or fill material in known waterfowl breeding and wintering areas must be avoided to the maximum extent practicable.

6. The permittee will ensure that the activity authorized will not disrupt movement of those aquatic species indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's specific purpose is to impound water.

7. The permittee shall ensure that all construction equipment is refueled and maintained on an upland site away from existing streams, drainageways and wetland areas. Heavy equipment working in wetlands must be placed on mats or other measures must be taken to minimize soil disturbance.

8. The permittee must comply with any case specific special conditions added by the Corps or by the State Section 401 Water Quality Certification (WQC). The conditions imposed in the State Section 401 WQC are also conditions of this LOP.

9. The permittee shall ensure that no activity authorized by the LOP may cause more than a minimal adverse effect on navigation.

10. The permittee shall ensure proper maintenance of any structure or fill authorized by the LOP, in good condition and in conformance with the terms and conditions of the LOP, including maintenance to ensure public safety. The permittee is not relieved of this requirement if the permitted activity is abandoned, although the permittee may make a good faith transfer to a third party. Should the permittee wish to cease to maintain the authorized activity or desire to abandon it without a good faith transfer, the permittee must obtain a modification to the LOP from the Corps, which may require restoration of the area.

11. The permittee shall not perform any work within any Wild and Scenic Rivers or in any river officially designated as a "study river" for possible inclusion in the system, unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity authorized by the LOP will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal Land Management agency in the area (e.g. U.S. Forest Service, Bureau of Land Management, the National Parks Service, or the U.S. Fish and Wildlife Service).

12. The permittee shall not perform any work under the LOP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. The permittee shall notify the Corps and coordinate the proposed action with the USFWS to determine if any listed species or critical habitat might be affected and/or adversely modified by the proposed work. No activity is authorized under the LOP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. At the direction of the Corps, the permittee shall complete the necessary consultation with the USFWS, satisfying the requirements of Section 7(a)(2) of the Endangered Species Act. The permittee shall not begin work until notified by the District Engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. Authorization of an activity under the LOP does not authorize the "take" of a threatened or endangered species as defined under the Federal Endangered Species Act. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. Fish and Wildlife Service, both lethal and non-lethal "takes" of protected species are in violation of the Endangered Species Act.

Obligations under Section 7 of the Act must be reconsidered by the Corps Districts if (1) new information reveals impacts of the proposed action may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during consultation, or (3) new species are listed or critical habitat designated that might be affected

by the proposed action.

13. The permittee shall not perform any activity under the LOP which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places until the District Engineer has complied with the provisions of 33 CFR Part 325, Appendix C. The permittee must notify the District Engineer if the activity authorized by the LOP may affect any historic properties listed, determined to be eligible or which the permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin construction until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the Kentucky Heritage Council.

If the permittee discovers any previously unknown historic or archaeological remains while accomplishing the activity authorized by the LOP, work must be immediately stopped and this office immediately notified regarding the discovery. The District will initiate the Federal, Tribal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

14. The permittee shall not perform any work under the LOP where the discharge of dredged and/or fill material will occur in the proximity of a public water supply intake.

15. No activity, including structures or work in "waters of the U.S." or discharges of dredged or fill material may consist of unsuitable materials (e.g. trash, debris, car bodies, asphalt, etc.) and that materials used for construction or discharge must be free from toxic pollutants in toxic amounts.

16. The permittee shall, to the maximum extent practicable, design the project to maintain pre-construction downstream flow conditions. Furthermore, the work must not permanently restrict or impede the passage of normal or expected high flows and the structure or discharge of fill must withstand expected high flows. The project must provide, to the maximum extent practicable, for retaining excess flows from the site and for establishing flow rates from the site similar to pre-construction conditions.

17. The permittee shall ensure that all temporary fills, authorized under the LOP, be removed in their entirety and the affected areas returned to pre-construction elevation.

18. Representatives from the Corps of Engineers and/or the State of Kentucky may inspect any authorized activity or mitigation site at any time deemed necessary to ensure compliance with the terms and conditions of the LOP, Section 401 WQC, and applicable laws.

19. All work authorized by this LOP must be completed within five years after the date of the Corps authorization letter. If you find you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least three months before the expiration date.

20. The permittee, after completion of work under the LOP, shall submit a signed certification letter regarding the completed work and required mitigation, if applicable. The certification letter will include a statement that the work was done in accordance with the LOP authorization including compliance with all general and special conditions and completion of mitigation work.

21. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of the LOP.

22. For Section 10 waters, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

US ARMY CORPS OF ENGINEERS
LOUISVILLE DISTRICT
REGULATORY BRANCH
P. O. BOX 59
LOUISVILLE, KY 40201-0059
(502) 315-6733

COMPLETION REPORT

COE ID No. LRL-2013-254-mlc **Date.** _____

Permittee Name: _____
Corporate Name: _____
Address: _____
_____
_____
City State Zip Code
Telephone No. _____

Agent Name: _____
Corporate Name: _____
Address: _____
_____
_____
City State Zip Code
Telephone No. _____

Location Description: _____
_____
_____

County _____ **State** _____

Linear Feet of Stream Impact: _____ **Acres of Wetland Impact:** _____

Has all the work on this project been completed according to plans, specifications, and conditions of the permit? Yes _____ **No** _____

If not, explain: _____
_____
_____
_____
_____
_____
_____
_____

_____
Permittee Signature

Applicant: Kentucky Transportation Cabinet	File Number: LRL-2013-254	Date: 30 SEPT 13
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Ms. Meagan Chapman US Army Corps of Engineers – Louisville District PO Box 59 Louisville, KY 40201-0059 (502) 315-6709	US Army Corps of Engineers ATTN: Appeal Review Officer CELRD-PD-REG 550 Main Street RM 10524 Cincinnati, OH 45202-3222 TEL (513) 684-6212; FAX (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): April 2, 2013

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Adam Michels, Kentucky Transportation Cabinet, 200 Mero Street Frankfort, KY 40622

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Louisville District, US 68 and Louie B. Nunn Parkway Interchange Reconstruction, LRL-2013-254-mlc

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: METCALFE COUNTY; CONSTRUCT INTERCHANGE AT US68 AND THE CUMBERLAND PARKWAY TO IMPROVE PUBLIC ACCESS.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:KY County: Metcalfe City: Edmonton
Center coordinates of site (lat/long in degree decimal format): Lat. **37.000734** N, Long. W-**85.616213 W.**
Universal Transverse Mercator:
Name of nearest waterbody: Douglas Creek and South Fork of Little Barren River

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 4,382 linear feet and 0.40 acres.
Cowardin Class: Riverine – R
Stream Flow: Intermittent, Ephemeral, and open water pond (0.205 acre)

Non-wetland waters: 0.205 acre.
Cowardin Class: Lacustrine-L
Stream Flow: open water pond (0.205 acre)

Wetlands: 0 acres.
Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal:
Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): 04/02/13

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit

applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.
This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 – Greenup
☐ USDA Natural Resources Conservation Service Soil Survey. Citation:.
☐ National wetlands inventory map(s). Cite name:National Wetland Inventory Polygons – GIS coverage.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Photos submitted by KYTC and FSA Color Ortho Imagery 2006 – 2 foot coverage.
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☒ Other information (please specify): Photos from Corps staff site visit on April 2, 2013.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

9/16/13
Signature and date of
Regulatory Project Manager
(REQUIRED)

9-16-13
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the signature is impracticable

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource in review area
SW1: ephemeral Main Line Sta. 498+00- Station 513+90 See sheets R11 & R9 in the Plan Set	36.999265	-85.616727	R	1,480 Linear feet 0.17 acres	non-section 10 – non-wetland
SW2: intermittent Harvey Hurt Rd. Sta. 34+98- Station 35+20 See sheet R11	36.999295	-85.619640	R	390 Linear feet 0.027 acres	non-section 10 – non-wetland
SW3: Open Water (intermittent) Harvey Hurt Rd. Sta. 35+10- Station 36+30 See sheet R11	36.999077	-85.619462	L	Open Water- 0.205 acre	non-section 10 – non-wetland
SE1: intermittent Ramp 1 Sta. 122+10- Station 123+15 See sheet R17	37.001681	-85.610380	R	170 Linear feet 0.023 acres	non-section 10 – non-wetland
NE1:ephemeral Ramp 3 Sta. 318+30- Station 318+35 See sheet R24	37.002192	-85.615871	R	165 Linear feet 0.0076 acres	non-section 10 – non-wetland
NE2: intermittent Ramp 3 Sta. 311+50- Station 318+45 See sheet R24	37.001715	-85.614438	R	712 Linear feet 0.082 acres	non-section 10 – non-wetland
NE3: intermittent Ramp 3 Sta. 310+50- Station 312+40 See sheet R24 & R17	37.002370	-85.613585	R	1,205 Linear feet 0.083 acres	non-section 10 – non-wetland
NE4: ephemeral Ramp 3 Sta. 312+15- Station 312+40 See sheet R24	37.002258	-85.613705	R	260 Linear feet 0.012 acres	non-section 10 – non-wetland

ADDRESSES FOR COORDINATING AGENCIES

Mr. Duncan Powell
Wetlands Regulatory Section
USEPA, Region IV
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303

Mr. Virgil Lee Andrews, Field Supervisor
U.S. Fish & Wildlife Service
J.C. Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601

Ms. Sandra Gruzesky, Director
Kentucky Environmental and
Public Protection Cabinet
Division of Water
200 Fair Oaks Lane, 4th Floor
Frankfort, KY 40601

Dr. Jon Gassett, Commissioner
Kentucky Department of Fish
and Wildlife Resources
#1 Game Farm Road
Frankfort, KY 40601

Mr. Craig Potts
Executive Director
State Historic Preservation Officer
Kentucky Heritage Council
300 Washington Street
Frankfort, KY 40601

Kentucky Transportation Cabinet

Highway District 3 (1)

And

_____(2), Construction

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

Groundwater protection plan

For Highway Construction Activities

For Item No. 3-8505.00

New Interchange from US-68 South onto the Cumberland Parkway

Project: PCN ## - #### (2)

Project information

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

1. Owner – Kentucky Transportation Cabinet, **District 3**(1)
2. Resident Engineer: (2)
3. Contractor name: (2)
   Address: (2)

   Phone number: (2)
   Contact: (2)
   Contractors agent responsible for compliance with the KPDES permit requirements (3):
4. Project Control Number (2)
5. Route (Address) **US 68 Edmonton KY 42129**
6. Latitude/Longitude (project mid-point) **37° 00' 01'' N; -85° 36' 58'' W** (1)
7. County **Metcalfe** (1)
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

A. Site description:

1. Nature of Construction Activity: **New Interchange on Cumberland Parkway at US 68 north of Edmonton**

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

3. Projected volume of material to be moved **Embankment 400,003 Cubic Yards & Excavation 354,954 Cubic Yards** (1)

4. Estimate of total project area **72 acres** (1)

5. Estimate of area to be disturbed **72 acres** (1)

6. Post construction runoff coefficient will be included in the project drainage folder. **Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information**.(1)

7. Data describing existing soil condition **Mountainview Silt Loam 2 to 6% slope. This soil is deep, well drained and gently sloping. It's has a low strength creating an erosion hazard. Baxter cherty silt loam 6 up to 20% slopes is a deep, sloping, well drained soil on rolling uplands. This is an easily erodible soil type.** (1) & (2)

8. Data describing existing discharge water quality **average** (1) & (2)

9. Receiving water name **Douglas Creek to the South Fork of Little Barren River** (1)

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

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

12. Potential sources of pollutants:

The primary source of pollutants is solids that are mobilized during storm events. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes and trash/debris. (3)

B. Sediment and Erosion Control Measures:

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

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

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

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

   - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.

- At the beginning of the project, all DDAs for the project will be inspected for areas that are a source of storm water pollutants. Areas that are a source of pollutants will receive appropriate cover or BMPs to arrest the introduction of pollutants into storm water. Areas that have not been opened by the contractor will be inspected periodically (once per month) to determine if there is a need to employ BMPs to keep pollutants from entering storm water.
- Clearing and Grubbing – The following BMP's will be considered and used where appropriate.
    - Leaving areas undisturbed when possible.
    - Silt basins to provide silt volume for large areas.
    - Silt Traps Type A for small areas.
    - Silt Traps Type C in front of existing and drop inlets which are to be saved
    - Diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
    - Brush and/or other barriers to slow and/or divert runoff.
    - Silt fences to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence may be considered.
    - Temporary Mulch for areas which are not feasible for the fore mentioned types of protections.
    - Non-standard or innovative methods.
- Cut & Fill and placement of drainage structures - The BMP Plan will be modified to show additional BMP's such as:
    - Silt Traps Type B in ditches and/or drainways as they are completed
    - Silt Traps Type C in front of pipes after they are placed
    - Channel Lining
    - Erosion Control Blanket
    - Temporary mulch and/or seeding for areas where construction activities will be ceased for 21 days or more.
    - Non-standard or innovative methods
- Profile and X-Section in place – The BMP Plan will be modified to show elimination of BMP's which had to be removed and the addition of new BMP's as the roadway was shaped. Probably changes include:
    - Silt Trap Type A, Brush and/or other barriers, Temporary Mulch, and any other BMP which had to be removed for final grading to take place.
    - Additional Silt Traps Type B and Type C to be placed as final drainage patterns are put in place.
    - Additional Channel Lining and/or Erosion Control Blanket.
    - Temporary Mulch for areas where Permanent Seeding and Protection cannot be done within 21 days.
    - Special BMP's such as Karst Policy

- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
  - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.
  - Permanent Seeding and Protection
  - Placing Sod
  - Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are: **NONE**

C. Other Control Measures

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

2. Waste Materials

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

3. Hazardous Waste

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

4. Spill Prevention

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

- **Good Housekeeping:**

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

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

- **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

- **Petroleum Products:**

Vehicles and equipment that are fueled and maintained on site will be monitored for leaks, and receive regular preventative maintenance to reduce the chance of

leakage. Petroleum products onsite will be stored in tightly sealed containers, which are clearly labeled and will be protected from exposure to weather.

The contractor shall prepare an Oil Pollution Spill Prevention Control and Countermeasure plan when the project that involves the storage of petroleum products in 55 gallon or larger containers with a total combined storage capacity of 1,320 gallons. This is a requirement of 40 CFR 112.

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

- **Fertilizers:**

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

- **Paints:**

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

- **Concrete Truck Washout:**

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

- **Spill Control Practices**

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

- Manufacturers' recommended methods for spill cleanup will be clearly posted. All personnel will be made aware of procedures and the location of the information and cleanup supplies.

- Materials and equipment necessary for spill cleanup will be kept in the material storage area. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contract with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate state/local agency as required by KRS 224 and applicable federal law.
- The spill prevention plan will be adjusted as needed to prevent spills from reoccurring and improve spill response and cleanup.
- Spills of products will be cleaned up promptly. Wastes from spill clean up will be disposed in accordance with appropriate regulations.

D. Other State and Local Plans

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

F. Inspections

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

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

G. Non – Storm Water discharges

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

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

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

H. Groundwater Protection Plan (3)

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

- Contractors statement: (3)

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

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

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

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

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

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

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

_____ 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.

SPECIAL NOTE

KPDES Stormwater Permit

eNOI Process

Metcalfe County

Item No. 3-8505.00

Effective August 1, 2009 , the Kentucky Division of Water implemented a new process for obtaining coverage under the Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Stormwater Discharge Associated with Construction Activities (KYR10). Notice of Intent should be submitted electronically using their form (eNOI) which is located at the following link:

https://dep.gateway.ky.gov/eForms/default.aspx?FormID=7

The eNOI for this project has been initiated by the District 3 KYTC Project Development Branch and can be retrieved for completion using the following transaction ID number:

4e12ac93-0092-4a68-8ebb-b8bb00c1e1b8

Please be advised that the eNOI will be completed by the contractor and submitted by the contractor at sometime after the project has been let to construction. No earth-disturbing activities can occur on the project until an official approval is obtained from the Kentucky Division of Water.

KENTUCKY TRANSPORTATION CABINET
COMMUNICATING ALL PROMISES (CAP)
ACTIVE

Item No. 3 - 8505 **Project Mgr.** kytc\jim.hudson

County METCALFE **Route** US-68

CAP #	Date of Promise	Promise made to:	Location of Promise
1	02-AUG-13	Jim Hudson	D-3 Highway Design

CAP Description

There are no CAPS for this project.

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 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 September 27, 2013 Letting

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
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.
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: **Revision:**	208.03.06 Curing and Protection. 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: **Revision:**	208.03.06 Curing and Protection. Replace paragraph nine with the following: At no expense to the Department, repair any damage to the subgrade caused by freezing.
Subsection: **Part:** **Number:** **Revision:**	212.03.03 Permanent Seeding and Protection. A) Seed Mixtures for Permanent Seeding. 2) 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.
Subsection: **Part:** **Number:** **Revision:**	212.03.03 Permanent Seeding and Protection. A) Seed Mixtures for Permanent Seeding. 3) 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: **Revision:**	213.03.02 Progress Requirements. 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: **Part:** **Revision:**	213.03.05 Temporary Control Measures. E) Temporary Seeding and Protection. Delete the second sentence of the first paragraph.
Subsection: **Table:** **Revision:**	304.02.01 Physical Properties. Required Geogrid Properties 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.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	D) Testing Responsibilities.
Number:	5) Gradation.
Revision:	Delete the second paragraph.
Subsection:	402.03.02 Contractor Quality Control and Department Acceptance.
Part:	H) Unsatisfactory Work.
Number:	1) Based on Lab Data.
Revision:	Replace the second paragraph with the following: When the Engineer determines that safety concerns or other considerations prohibit an immediate shutdown, continue work and the Department will make an evaluation of acceptability according to Subsection 402.03.05.

Subsection: **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.
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.
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:
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.
Subsection: **Revision:**	615.08.01 Type of Test Specimen. 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: **Revision:**	615.08.02 Compression Testing. Delete the second sentence.
Subsection:	615.08.04 Acceptability of Core Tests. Delete the entire subsection.
Subsection: **Revision:**	615.12 Inspection. 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: **Revision:**	716.02.02 Paint. Replace sentence with the following: Conform to Section 821.
Subsection: **Revision:**	716.03 CONSTRUCTION. 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: **Revision:**	716.03.02 Lighting Standard Installation. 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: **Part:** **Revision:**	716.03.02 Lighting Standard Installation. A) Conventional Installation. 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: **Part:** **Number:** **Revision:**	716.03.02 Lighting Standard Installation. A) Conventional Installation. 1) Breakaway Installation and Requirements. 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: **Part:** **Revision:**	716.03.02 Lighting Standard Installation. B) High Mast Installation Replace the first sentence with the following: Install each high mast pole as noted on plans.
Subsection: **Part:** **Number:** **Revision:**	716.03.02 Lighting Standard Installation. B) High Mast Installation 2) Concrete Base Installation Modification of Chart and succeeding paragraphs within this section:

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: **Part:** **Revision:**	716.03.03 Trenching. A) Trenching of Conduit for Highmast Ducted Cables. 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.
Subsection: **Part:** **Revision:**	716.03.03 Trenching. B) Trenching of Conduit for Non-Highmast Cables. 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: **Revision:**	716.03.10 Junction Boxes. Replace subsection title with the following: Electrical Junction Box.

Subsection: **Revision:**	716.04.07 Pole with Secondary Control Equipment. 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: **Revision:**	716.04.08 Lighting Control Equipment. 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: **Revision:**	716.04.09 Luminaire. Replace the first sentence with the following: The Department will measure the quantity as each individual unit furnished and installed.
Subsection: **Revision:**	716.04.10 Fused Connector Kits. Replace the first sentence with the following: The Department will measure the quantity as each individual unit furnished and installed.
Subsection: **Revision:**	716.04.13 Junction Box. Replace the subsection title with the following: Electrical Junction Box Type Various.
Subsection: **Part:** **Revision:**	716.04.13 Junction Box. A) Junction Electrical. Rename A) Junction Electrical to the following: A) Electrical Junction Box.
Subsection: **Revision:**	716.04.14 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:**	716.04.18 Remove Lighting. 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
20391NS835	Electrical Junction Box Type C	Each

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:	723.02.02 Paint.
Revision:	Replace sentence with the following: Conform to Section 821.
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.
Subsection:	723.03.03 Trenching.
Part:	A) Under Roadway.
Revision:	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:	723.03.11 Wiring Installation.
Revision:	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:	723.03.12 Loop Installation.
Revision:	Replace the fifth sentence 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:	723.04.02 Junction Box.
Revision:	Replace subsection title with the following: Electrical Junction Box Type.
Subsection:	723.04.03 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.
Subsection:	723.04.10 Signal Pedestal.
Revision:	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:	723.04.15 Loop Saw Slot and Fill.
Revision:	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:	723.04.16 Pedestrian Detector.
Revision:	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:	723.04.18 Signal Controller- Type 170.
Revision:	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.

Subsection: **Revision:**	723.04.20 Install Signal Controller - Type 170. 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: **Revision:**	723.04.22 Remove Signal Equipment. 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: **Revision:**	723.04.28 Install Pedestrian Detector Audible. 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: **Revision:**	723.04.29 Audible Pedestrian Detector. 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: **Revision:**	723.04.30 Bore and Jack Conduit. 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: **Revision:**	723.04.31 Install Pedestrian Detector. 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: **Revision:**	723.04.32 Install Mast Arm Pole. 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: **Revision:**	723.04.33 Pedestal Post. 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.

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 20391NS835 — Electrical Junction Box Type C — Each
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:	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: **Revision:**	816.07.02 Wood Posts and Braces. Delete the second sentence of the first paragraph.
Subsection: **Revision:**	818.07 Preservative Treatment. First paragraph, replace all references to "AWPA C14" with "AWPA U1, Section A".
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.
Subsection: **Revision:**	834.14.03 High Mast Poles. *Remove the second and fourth sentence from the first paragraph. *Replace the third paragraph with the following: Provide calculations and drawings that are stamped by a Professional Engineer licensed in the Commonwealth of Kentucky. *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. The handhole frame width shall be 0.4 times the diameter of the bottom tube. 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.

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 fist to numbers of the wattage.
Subsection: **Revision:**	834.21.01 Waterproof Enclosures. *Add the following sentence in the second paragraph in the thirteenth sentence: Provide a cabinet door with a louvered air vent, Filter-retaining brackets and an easy clean metal filter. *Replace sentence sixteen with the following: Use a 120-volt fixture and utilize a compact fluorescent or L.E.D. bulb (equivalent to 60 watt minimum).
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 plats 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 second 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.
Subsection: **Revision:**	835.07 Traffic Poles. *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: **Revision:**	835.07.01 Steel Strain Poles. 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: **Revision:**	835.07.01 Steel Strain Poles. 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: **Revision:**	835.07.02 Mast Arm Poles. 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: **Revision:**	835.07.02 Mast Arm Poles. 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: **Revision:**	835.07.03 ANCHORS. 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: **Revision:**	835.16.05 Optical Units. Replace the 3rd paragraph with the following: The list of certified products can be found on the following website: http://www.intertek.com.
Subsection: **Revision:**	835.19.01 Pedestrian Detector Body. Replace the first sentence with the following: Provide a four holed pole mounted aluminum rectangular housing that is a compatible with the pedestrian detector.

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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

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SPECIAL NOTE FOR ROCK BLASTING

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. This work consists of fracturing rock and constructing stable final rock cut faces using presplit blasting and production blasting techniques.

2.0 MATERIALS. Deliver, store, and use explosives according to the manufacturer's recommendations and applicable laws. Do not use explosives outside their recommended use date. Verify date of manufacture and provide copies of the technical data sheets (TDS) and material safety data sheets (MSDS) to the Engineer. Explosives and initiating devices include, but are not necessarily limited to, dynamite and other high explosives, slurries, water gels, emulsions, blasting agents, initiating explosives, detonators, blasting caps, and detonating cord.

3.0 CONSTRUCTION. Furnish copies or other proof of all-applicable permits and licenses. Comply with Federal, State, and local regulations on the purchase, transportation, storage, and use of explosive material. Regulations include but are not limited to the following:

1) KRS 351.310 through 351.9901.
2) 805 KAR 4:005 through 4:165
3) Applicable rules and regulations issued by the Office of Mine Safety and Licensing.
4) Safety and health. OSHA, 29 CFR Part 1926, Subpart U.
5) Storage, security, and accountability. Bureau of Alcohol, Tobacco, and Firearms (BATF), 27 CFR Part 181.
6) Shipment. DOT, 49 CFR Parts 171-179, 390-397.

3.1 Blaster-in-Charge. Designate in writing a blaster-in-charge and any proposed alternates for the position. Submit documentation showing the blaster-in-charge, and alternates, have a valid Kentucky blaster's license. Ensure the blaster-in-charge or approved alternate is present at all times during blasting operations.

3.2 **Blasting Plans.** Blasting plans and reports are for quality control and record keeping purposes. Blasting reports are to be signed by the blaster-in-charge or the alternate blaster-in-charge. The general review and acceptance of blasting plans does not relieve the Contractor of the responsibility whatsoever for conformance to regulations or for obtaining the required results. All blasting plans shall be submitted to the Engineer. The Engineer will be responsible for submitting the plan to the Central Office Division of Construction and the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at the following address: 2 Hudson Hollow, Frankfort, Kentucky, 40601.

A) General Blasting Plan. Submit a general blasting plan for acceptance at least 15 working days before drilling operations begin. Include, as a minimum, the following safety and procedural details:

1) Working procedures and safety precautions for storing, transporting, handling, detonating explosives. Include direction on pre and post blast audible procedures, methods of addressing misfires, and methods of addressing inclement weather, including lightning.
2) Proposed product selection for both dry and wet holes. Furnish Manufacturer's TDS and MSDS for all explosives, primers, initiators, and other blasting devices.
3) Proposed initiation and delay methods.
4) Proposed format for providing all the required information for the site specific blasting shot reports.

B) Preblast Meeting. Prior to drilling operations, conduct a preblast meeting to discuss safety and traffic control issues and any site specific conditions that will need to be addressed. Ensure, at a minimum, that the Engineer or lead inspector, Superintendent, blaster-in-charge, and all personnel involved in the blasting operation are present. Site specific conditions include blast techniques; communication procedures; contingency plans and equipment for dealing with errant blast material. The conditions of the General Blasting plan will be discussed at this meeting. Record all revisions and additions made to the blasting plan and obtain written concurrence by the blaster-in-charge. Provide a copy of the signed blast plan to the Engineer along with the sign in sheet from the preblast meeting.

3.3 Preblast Condition Survey and Vibration Monitoring and Control. Before blasting, arrange for a preblast condition survey of nearby buildings, structures, or utilities, within 500 feet of the blast or that could be at risk from blasting damage. Provide the Engineer a listing of all properties surveyed and any owners denying entry or failing to respond. Notify the Engineer and occupants of buildings at risk at least 24 hours before blasting.

Limit ground vibrations and airblast to levels that will not exceed limits of 805 KAR 4:005 through 4:165. More restrictive levels may be specified in the Contract.

Size all blast designs based on vibration, distance to nearest building or utility, blast site geometry, atmospheric conditions and other factors. Ground vibrations are to be controlled according to the blasting standards and scaled distance formulas in 805 KAR 4:020 or by the use of seismographs as allowed in 805 KAR 4:030. The Department will require seismographs at the nearest allowable location to the protected site when blasting occurs within 500 feet of buildings, structures, or utilities.

3.4 Blasting. Drill and blast at the designated slope lines according to the blasting plan. Perform presplitting to obtain smooth faces in the rock and shale formations. Perform the presplitting before blasting and excavating the interior portion of the specified cross section at any location. The Department may allow blasting for fall benches and haul roads prior to presplitting when blasting is a sufficient distance from the final slope and results are satisfactory to the Engineer. Use the types of explosives and blasting accessories necessary to obtain the required results.

Free blast holes of obstructions for their entire depth. Place charges without caving the blast hole walls. Stem the upper portion of all blast holes with dry sand or other granular material passing the 3/8-inch sieve. Dry drill cuttings are acceptable for stemming when blasts are more than 800 feet from the nearest dwelling.

Stop traffic during blasting operations when blasting near any road and ensure traffic does not pass through the Danger Zone. The blaster-in-charge will define the Danger Zone prior to each blast. Ensure traffic is stopped outside the Danger Zone, and in no case within 800 feet of the blast location.

Following a blast, stop work in the entire blast area, and check for misfires before allowing worker to return to excavate the rock.

Remove or stabilize all cut face rock that is loose, hanging, or potentially dangerous. Leave minor irregularities or surface variations in place if they do not create a hazard. Drill the next lift only after the cleanup work and stabilization work is complete.

When blasting operations cause fracturing of the final rock face, repair or stabilize it in an approved manner at no cost to the Department.

Halt blasting operations in areas where any of the following occur:

1) Slopes are unstable;
2) Slopes exceed tolerances or overhangs are created;
3) Backslope damage occurs;
4) Safety of the public is jeopardized;
5) Property or natural features are endangered;
6) Fly rock is generated; or
7) Excessive ground or airblast vibrations occur in an area where damage to buildings, structures, or utilities is possible.
8) The Engineer determines that materials have become unsuitable for blasting

Blasting operations may continue at a reasonable distance from the problem area or in areas where the problems do not exist. Make the necessary modifications to the blasting operations and perform a test blast to demonstrate resolution of the problem.

A) Drill Logs. Maintain a layout drawing designating hole numbers with corresponding drill logs and provide a copy of this information to the blaster prior to loading the hole. Ensure the individual hole logs completed by the driller(s) show their name; date drilled; total depth drilled; and depths and descriptions of significant conditions encountered during drilling that may affect loading such as water, voids, changes in rock type.

B) Presplitting. Conduct presplitting operations in conformance with Subsection 204.03.04 of the Standard Specifications for Road and Bridge Construction.

3.5 Shot Report. Maintain all shot reports on site for review by the Department. Within one day after a blast, complete a shot report according to the record keeping requirements of 805 KAR 4:050. Include all results from airblast and seismograph monitoring.

3.6 Unacceptable Blasting. When unacceptable blasting occurs, the Department will halt all blasting operations. Blasting will not resume until the Department completes its investigation and all concerns are addressed. A blast is unacceptable when it results in fragmentation beyond the final rock face, fly rock, excessive vibration or airblast, overbreak, damage to the final rock face or overhang. Assume the cost for all resulting damages to private and public property and hold the Department harmless.

11D

When an errant blast or fly rock causes damage to or blocks a road or conveyance adjacent to the roadway, remove all debris from the roadway as quickly as practicable and perform any necessary repairs. Additionally, when specified in the Contract, the Department will apply a penalty.

Report all blasting accidents to the Division of Mine Reclamation and Enforcement, Explosives and Blasting Branch at 502-564-2340.

4.0 MEASUREMENT AND PAYMENT. The Department will not measure this work for payment and will consider all items contained in this note to be incidental to either Roadway Excavation or Embankment-in-Place, as applicable. However, if the Engineer directs in writing slope changes, then the Department will pay for the second presplitting operation as Extra Work.

The Department will measure for payment material lying outside the typical section due to seams, broken formations, or earth pockets, including any earth overburden removed with this material, only when the work is performed under authorized adjustments.

The Department will not measure for payment any extra material excavated because of the drill holes being offset outside the designated slope lines.

The Department will not measure for payment any material necessary to be removed due to the inefficient or faulty blasting practices.

June 15, 2012

11E

SPECIAL NOTE FOR BORING JACKING STEEL PIPE WITHOUT CARRIER PIPE

This Special Note will apply where indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Bore and jack steel pipe. Use this note when no carrier pipe will be encased.

2.0 MATERIALS.

2.1 Pipe. Provide plain end steel pipe with a specific minimum yield strength, SMYS, of at least 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 well process as specified in API –5L. Certification of 35,000 psi SMYS shall be furnished by the supplier through the Contractor to the Engineer to retain 3 copies.

MINIMUM WALL THICKNESS FOR STEEL PIPE	
Nominal Diameter (Inches)	Wall Thickness (Inches)
18 or less	0.375
24	0.500
30	0.500
36	0.532
42	0.625

2.2 Grout. Conform to Subsection 601.03.03.

2.3 High Grade Bentonite. Conform to the following:

API 13A Section 4		
Requirement	Specification	Result
Viscometer Dial Reading at 600 rpm	30, minimum	40
Yield Point/Plastic Viscosity Ratio	3, maximum	3.00 maximum
Filtrate Volume	15 cm3, maximum	14.50 maximum
Residue greater than 75 micrometers	4.0 wt percent maximum	1.0-1.5 %
Moisture	10.0 wt percent maximum	9.0-9.5%

3.0 CONSTRUCTION. Perform the following:

1. Locate a suitable pit and obtain the Engineer's approval.
2. Excavate the pit or trenches for the BORE AND JACK operation and for placing the end joints of pipe, when required. Securely sheet and brace the pits or trenches to prevent caving, where necessary.

3. When installing pipe under railroads, highways, streets, or other facilities by Bore and Jack, perform construction without interfering with the facility operation or weakening the roadbed or structure.
4. Place excavated material near the top of the working pit and dispose of it as required. Use water or other fluids with the boring operation to lubricate the cuttings. Do not perform jetting.
5. In unconsolidated soil formations, use a gel-forming collodial drilling fluid with at least 10 percent of high grade bentonite to consolidate excavated material, seal the walls of the hole, and lubricate subsequent removal of material and immediate pipe installation.
6. Ensure that the diameter of the excavation conforms to the outside diameter of the pipe as closely as possible.
7. Pressure grout voids that develop during the installation operation and that the Engineer determines are detrimental to the Work.
8. To force the pipe through the roadbed into the bored space, use a jack with a head constructed to apply uniform pressure around the ring of the pipe, which shall be square cut.
9. Set the pipe to be jacked on guides, braced together to properly support the pipe section and to direct it to the proper line and grade.
10. When the installation is made by concurrent boring and jacking, solidly weld all joints. Ensure the weld is strong enough to withstand the forces exerted from the boring and jacking operations as well as the vertical loading imposed on the pipe after installation and that it provides a smooth, non-obstructing joint in the interior of the pipe.
11. When the pipe is installed in open trench, bed and backfill according to Section 701.
12. The line and grade from the pipe's final position, as shown on plans, may vary no more than 2 percent in lateral alignment and one percent in vertical grade. Ensure that the final grade of the flow line is in the direction indicated on the Plans.
13. Use a cutting edge around the head end. Extend it a short distance beyond the pipe end with inside angles or lugs to keep the cutting edge from slipping back into the pipe.
14. Once the pipe installation begins, proceed with the operation without interruption to prevent the pipe from becoming firmly set in the embankment.
15. Remove and replace pipe damaged in jacking operations.
16. After completing the installation, backfill the excavated pits and trenches with flowable fill according to Section 601.03.03 B) 5 a) if the pit is in median area where it will have pavement over it.

4.0 MEASUREMENT. The Department will measure the completed length of Bore and Jacked pipe through the flowline from end to end in linear feet. The Department will not measure pressure grouting voids or removal and replacement of pipe damaged in jacking operations for payment and will consider it incidental to Bore and Jack. When abandoning a bore hole due to mechanical malfunction, improper alignment, or other problems due to construction operations, the Department will not measure the backfill and relocation for payment and will consider it incidental to this item of work. When abandoning a bore hole due to an unforeseen physical obstruction or situation, the Department will measure the work according to a negotiated supplemental agreement.

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

11E

Code	Pay Item	Pay Unit
----	Bore and Jack, Size Pipe	Linear Foot

The Department will consider payment as full compensation for all materials, earthwork, shoring, pipe and work required under this section.

June 15, 2012

11F

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs. Section references herein are to the Department's 2008 Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS.

2.1 Turf Reinforcement Mat (TRM). Use a Turf Reinforcement Mat defined as permanent rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh and/or other elements, processed into a three-dimensional matrix of sufficient thickness and from the Department's List of Approved Materials. Mats must be 100% UV stabilized materials. For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting exclusively. Ensure product labels clearly show the manufacturer or supplier name, style name, and roll number. Ensure labeling, shipment and storage follows ASTM D-4873. The Department will require manufacturer to provide TRMs that are machine constructed web of mechanically or melt bonded nondegradable fibers entangled to form a three dimensional matrix. The Department will require all long term performance property values in table below to be based on non degradable portion of the matting alone. Approved methods include polymer welding, thermal or polymer fusion, or placement of fibers between two high strength biaxially oriented nets mechanically bound by parallel stitching with polyolefin thread. Ensure that mats designated in the plans as Type 4 mats, are not to be manufactured from discontinuous or loosely held together by stitching or glued netting or composites. Type 4 mats shall be composed of geosynthetic matrix that exhibits a very high interlock and reinforcement capacities with both soil and root systems and with high tensile modulus. The Department will require manufacturer to use materials chemically and biologically inert to the natural soil environments conditions. Ensure the blanket is smolder resistant without the use of chemical additives. When stored, maintain the protective wrapping and elevate the mats off the ground to protect them from damage. The Department will not specify these materials for use in heavily acidic coal seam areas or other areas with soil problems that would severally limit vegetation growth.

A) Dimensions. Ensure TRMs are furnished in strips with a minimum width of 4 feet and length of 50 feet.
B) Weight. Ensure that all mat types have a minimum mass per unit area of 7 ounces per square yard according to ASTM D 6566.
C) Performance Testing: The Department will require AASHTO's NTPEP index testing. The Department will also require the manufacturer to perform internal MARV testing at a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory for tensile strength, tensile elongation, mass per unit area, and thickness once every 24,000 yds of production or whatever rate is required to ensure 97.7% confidence under ASTM D4439& 4354. The Department will require Full scale testing for slope and channel applications shear stress shall be done under ASTM D 6459, ASTM D 6460-07 procedures.

2.2 Classifications

The basis for selection of the type of mat required will be based on the long term shear stress level of the mat of the channel in question or the degree of slope to protect and will be designated in the contract. The Type 4 mats are to be used at structural backfills protecting critical

structures, utility cuts, areas where vehicles may be expected to traverse the mat, channels with large heavy drift, and where higher factors of safety, very steep slopes and/or durability concerns are needed as determined by project team and designer and will be specified in the plans by designer.

Turf Reinforcement Matting					
Properties[1]	Type 1	Type 2	Type 3	Type 4	Test Method
Minimum tensile Strength lbs/ft	125	150	175	3000 by 1500	ASTM D6818[2]
UV stability (minimum % tensile retention)	80	80	80	90	ASTM D4355[3] (1000-hr exposure)
Minimum thickness (inches)	0.25	0.25	0.25	0.40	ASTM D6525
Slopes applications	2H:1V or flatter	1.5H:1V or flatter	1H:1V or flatter	1 H: 1V or greater	
Shear stress lbs/ft^2 Channel applications	6.0[4]	8.0[4]	10.0[4]	12.0[4]	ASTM D6459 ASTM D6460-07

[1] For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting alone.
[2]Minimum Average Roll Values for tensile strength of sample material machine direction.
[3]Tensile Strength percentage retained after stated 1000 hr duration of exposure under ASTM D4355 testing. Based on nondegradable components exclusively.
[4]Maximum permissible shear design values based on short-term (0.5 hr) vegetated data obtained by full scale flume testing ASTM D6459, D6460-07. Based on nondegradable components exclusively. Testing will be done at Independent Hydraulics Facility such as Colorado State University hydraulics laboratory, Utah State University hydraulics laboratory, Texas Transportation Institute (TTI) hydraulics and erosion control laboratory.

2.3 Quality Assurance Sampling, Testing, and Acceptance

A) Provide TRM listed on the Department's List of Approved Materials. Prior to inclusion on the LAM, the manufacturer of TRM must meet the physical and performance criteria as outlined in the specification and submit a Letter Certifying compliance of the product under the above ASTM testing procedures and including a copy of report from Full Scale Independent Hydraulics Facility that Fully Vegetated Shear Stress meets shear stress requirements tested under D6459 and D6460-07.

B) Contractors will provide a Letter of Certification from Manufacturer stating the product name, manufacturer, and that the product MARV product unit testing results meets Department criteria. Provide Letters once per project and for each product.

C) Acceptance shall be in accordance with ASTM D-4759 based on testing performed by a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory using Procedure A of ASTM D-4354.

Current mats meeting the above criteria are shown on the Department's List of Approved Materials.

2.4 Fasteners. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils as directed by Engineer or Manufacturer's Representative. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. When requested by the Engineer, provide a Manufacturer's Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from the Manufacturer approving the installation. When there is a conflict between the Department's criteria and the Manufacturer's criteria, construct using the more restrictive. The Engineer and Manufacturer's Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer's recommendations and the following as minimum installation technique:

3.1 Site Preparation. Grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, roots, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil.

3.2 Installation. Install mats according to Standard Drawing Sepias "Turf Mat Channel Installation" and "Turf Mat Slope Installation." Install mats at the specified elevation and alignment. Anchor the mats with staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils as directed by the Engineer or Manufacturer's Representative. The mat should be in direct contact with the soil surface.

4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed, providing a Manufacturer's Representative, topsoil, or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat. Seeding and protection will be an incidental item.

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

Code	Pay Item	Pay Unit
23274EN11F	Turf Reinforcement Mat 1	Square Yard
23275EN11F	Turf Reinforcement Mat 2	Square Yard
23276EN11F	Turf Reinforcement Mat 3	Square Yard
23277EN11F	Turf Reinforcement Mat 4	Square Yard

SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

1.0 DESCRIPTION. Install barcode label on sign as specified in the Contract. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS. The Department will provide the Contractor with a 2 inch x 1 inch foil barcode label for each permanent sign. A unique number will be assigned to each barcode label.

The Contractor shall contact the Operations and Pavement Management Branch in the Division of Maintenance at (502) 564-4556 to obtain the barcode labels.

3.0 CONSTRUCTION. Apply foil barcode label in the lower right quadrant of the sign back. Signs where the bottom edge is not parallel to the ground, the lowest corner of the sign shall serve as the location to place the barcode label. The barcode label shall be placed no less than one-inch and no more than three inches from any edge of the sign. The barcode must be placed so that the sign post does not cover the barcode label.

Barcodes shall be applied in an indoor setting with a minimum air temperature of 50°F or higher. Prior to application of the barcode label, the back of the sign must be clean and free of dust, oil, etc. If the sign is not clean, an alcohol swab shall be used to clean the area. The area must be allowed to dry prior to placement of the barcode label.

Data for each sign shall include the barcode number, MUTCD reference number, sheeting manufacturer, sheeting type, manufacture date, color of primary reflective surface, installation date, latitude and longitude using the North American Datum of 1983 (NAD83) or the State Plane Coordinates using an x and y ordinate of the installed location.

Data should be provided electronically on the TC 71-229 Sign Details Information and TC 71-230 Sign Assembly Information forms. The Contractor may choose to present the data in a different format provided that the information submitted to the Department is equivalent to the information required on the Department TC forms. The forms must be submitted in electronic format regardless of which type of form is used. The Department will not accept PDF or handwritten forms. These completed forms must be submitted to the Department prior to final inspection of the signs. The Department will not issue formal acceptance for the project until the TC 71-229 and TC-230 electronic forms are completed for all signs and sign assemblies on the project.

4.0 MEASUREMENT. The Department will measure all work required for the installation of the barcode label and all work associated with completion and submission of the sign inventory data (TC 71-229 and TC 71-230).

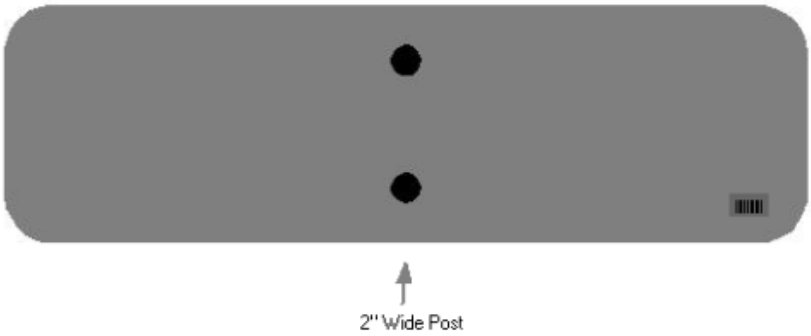
The installation of the permanent sign will be measured in accordance to Section 715.

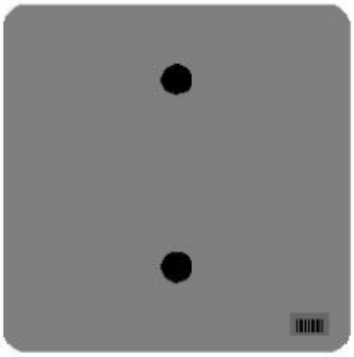
5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

Code	Pay Item	Pay Unit
24631EC	Barcode Sign Inventory	Each

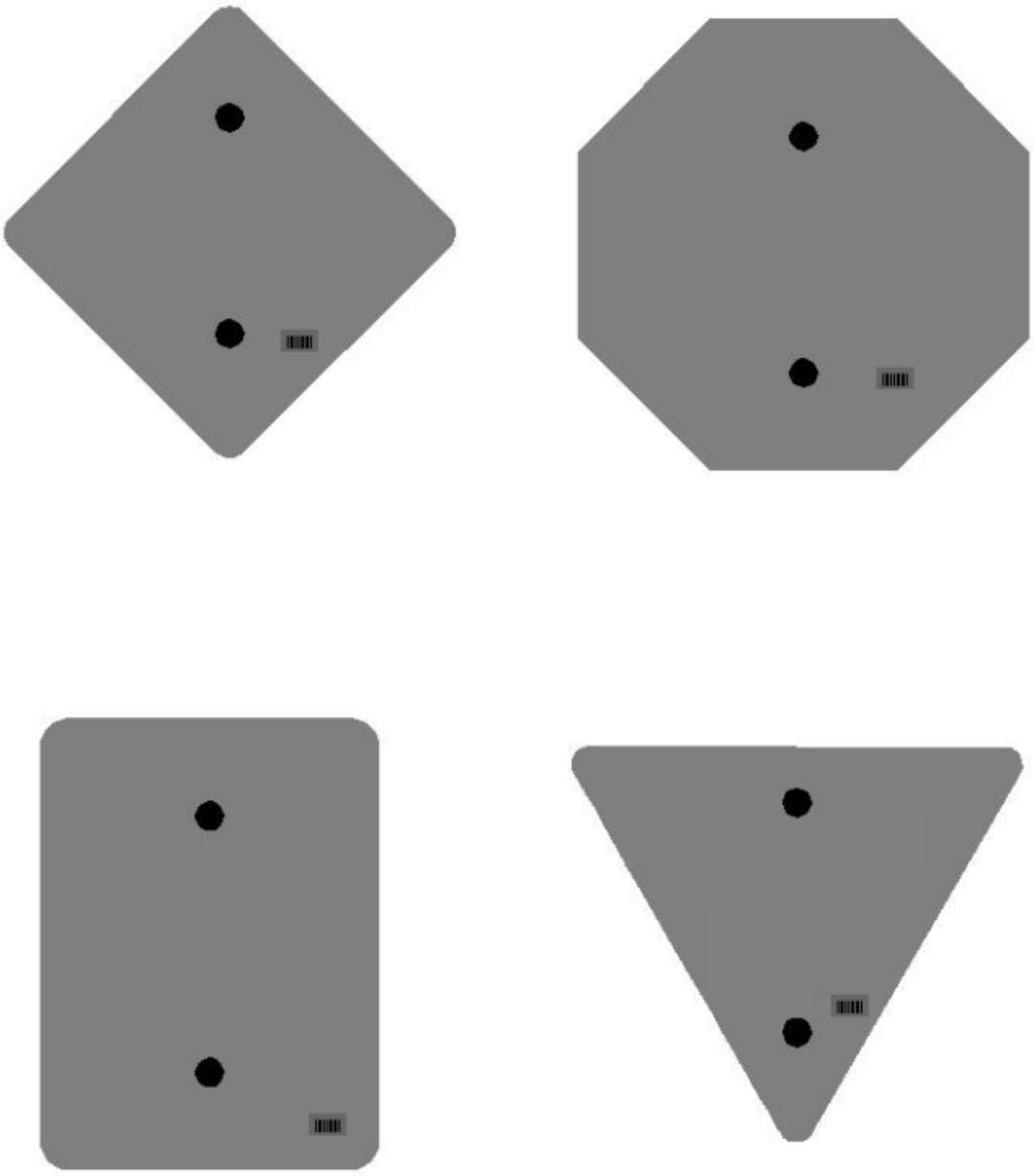
The Department will not make payment for this item until all barcodes are installed and sign inventory is complete on every permanent sign installed on the project. The Department will make payment for installation of the permanent sign in accordance to Section 715. The Department will consider payment as full compensation for all work required under this special note.

One Sign Post

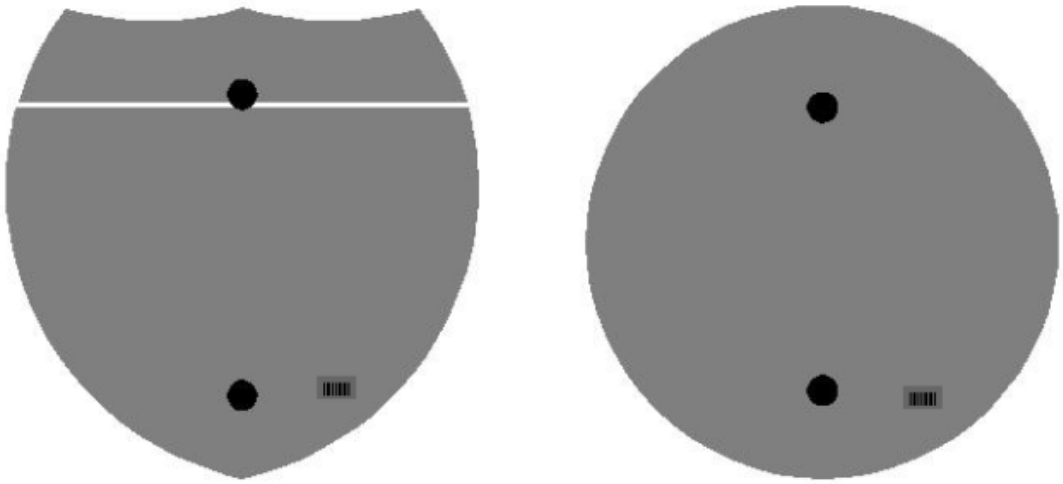


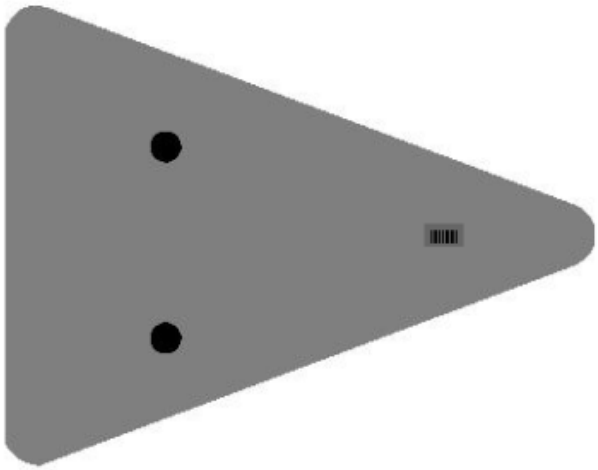


One Sign Post

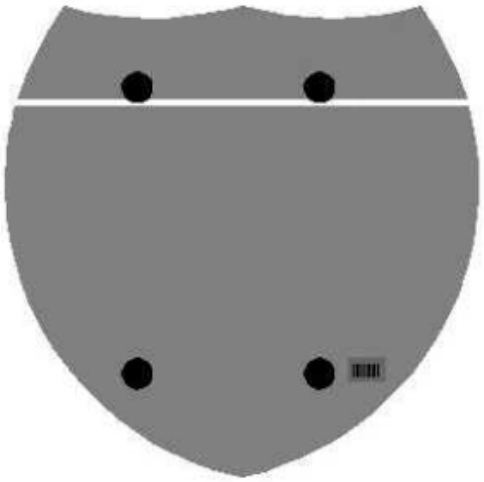


One Sign Post

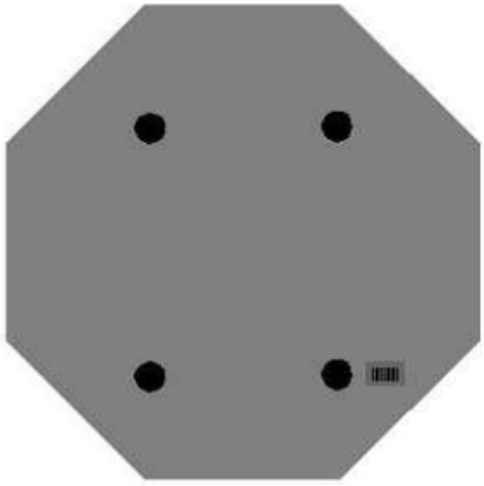




Double Sign Post

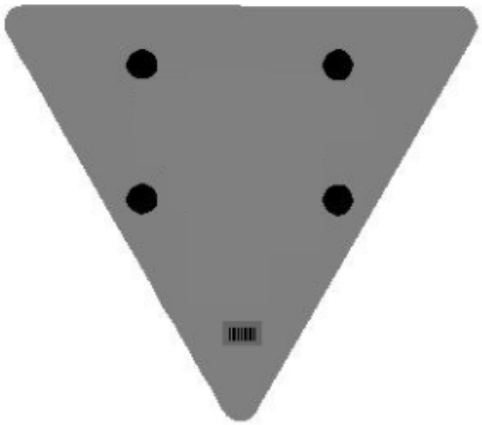


Interstate
Shield



48" Stop

2 Post Signs



SPECIAL PROVISION FOR EMBANKMENT AT BRIDGE END BENT STRUCTURES

This Special Provision will apply when indicated on the plans or in the proposal. Section references herein are to the Department's 2012 Standard Specifications for Road and Bridge Construction.

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with granular or cohesive pile core and place structure granular backfill, as the Plans require. Construct the embankment according to the requirements of this Special Provision, the Plans, Standard Drawing RGX 100 and 105, and the 2012 Standard Specifications.

2.0 MATERIALS.

2.1 Granular Embankment. Conform to Subsection 805.10. When Granular Embankment materials are erodible or unstable according to Subsection 805.03.04, use the Special Construction Methods found in 3.2 of the Special Provision.

2.2 Rock Embankment. Provide durable rock from roadway excavation that consists principally of Unweathered Limestone, Durable Shale (SDI equal to or greater than 95 according to KM 64-513), or Durable Sandstone.

2.3 Granular Pile Core. Select a gradation of durable rock to facilitate pile driving that conforms to Subsection 805.11. If granular pile core material hinders pile driving operations, take appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

2.4 Cohesive Pile Core. Conform to Section 206 of the Standard Specifications and use soil with at least 50 percent passing a No. 4 sieve having a minimum Plasticity Index (PI) of 10. In addition, keep the cohesive pile core free of boulders, larger than 6 inches in any dimension, or any other obstructions, which would interfere with drilling operations. If cohesive pile core material interferes with drilling operations, take appropriate means necessary to maintain excavation stability, at no expense to the Department.

2.5 Structure Granular Backfill. Conform to Subsection 805.11

2.6 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843 as required in the plans.

3.0 CONSTRUCTION.

3.1 General. Construct roadway embankments at end bents according to Section 206 and in accordance with the Special Provision, the Plans, and Standard Drawings for the full embankment section. In some instances, granular or rock embankment will be required for embankment construction for stability purposes, but this special provision does not prevent the use of soil when appropriate. Refer to the plans for specific details regarding material requirements for embankment construction.

Place and compact granular or cohesive pile core, soil, granular or rock embankment, and structure granular backfill according to the applicable density requirements for the project. When constructing granular or rock embankments, use granular pile core for driven pile foundations and use cohesive pile core for pre-drilled pile or drilled shaft foundations. Place geotextile fabric, Type IV between cohesive pile core and structure

granular backfill and granular or rock embankment.

When granular or rock embankment is required for embankment construction, conform to the general requirements of Subsection 206.03.02 B). In addition, place the material in no greater than 2-foot lifts and compact with a vibrating smooth wheel roller capable of producing a minimum centrifugal force of 15 tons. Apply these requirements to the full width of the embankment for a distance of half the embankment height or 50 feet, whichever is greater, as shown on Standard Drawing RGX-105.

When using granular pile core, install 8-inch perforated underdrain pipe at or near the elevation of the original ground in the approximate locations depicted on the standard drawing, and as the Engineer directs, to ensure positive drainage of the embankment. Wrap the perforated pipe with a fabric of a type recommended by the pipe manufacturer.

After constructing the embankment, excavate for the end bent cap, drive piling or install shafts, place the mortar bed, construct the end bent, and complete the embankment to finish grade according to the construction sequence shown on the Plans or Standard Drawings and as specified hereinafter.

Certain projects may require widening of existing embankments and the removal of substructures. Construct embankment according to the plans. Substructure removal shall be completed according to the plans and Section 203. Excavation may be required at the existing embankment in order to place the structure granular backfill as shown in the Standard Drawings.

After piles are driven or shafts installed (see design drawings), slope the bottom of the excavation towards the ends of the trench as noted on the plans for drainage. Using a separate pour, place concrete mortar, or any class concrete, to provide a base for forming and placing the cap. Place side forms for the end bent after the mortar has set sufficiently to support workmen and forms without being disturbed.

Install 4-inch perforated pipe in accordance with the plans and Standard Drawings. In the event slope protection extends above the elevation of the perforated pipe, extend the pipe through the slope protection.

After placing the end bent cap and removing adjacent forms, fill the excavation with structure granular backfill material to the level of the berm prior to placing beams for the bridge. For soil embankments, place Type IV geotextile fabric between embankment material and structure granular backfill. After completing the end bent backwall, or after completing the span end wall, place the structure granular backfill to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill at no expense to the Department. Do not place backfill before removing adjacent form work. Place structure granular backfill material in trench ditches at the ends of the excavation. Place Geotextile Fabric, Type IV over the surface of structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means the Engineer approves. Thoroughly compact the backfill under the overhanging portions of the structure to ensure that the backfill is in intimate contact with the sides of the structure.

Do not apply seeding, sodding, or other vegetation to the exposed granular embankment.

3.2 Special Construction Methods. Erodible or unstable materials may erode even when protected by riprap or channel lining; use the special construction method described below when using these materials.

Use fine aggregates or friable sandstone granular embankment at “dry land” structures only. Do not use them at stream crossings or locations subject to flood waters.

For erodible or unstable materials having 50 percent or more passing the No. 4 sieve, protect with geotextile fabric. Extend the fabric from the original ground to the top of slope over the entire area of the embankment slopes on each side of, and in front of, the

end bent. Cover the fabric with at least 12 inches of non-erodible material.

For erodible or unstable materials having less than 50 percent passing a No. 4 sieve, cover with at least 12 inches of non-erodible material.

Where erodible or unstable granular embankment will be protected by riprap or channel lining, place geotextile fabric between the embankment and the specified slope protection.

4.0 MEASUREMENT.

4.1 Granular Embankment. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment any Granular Embankment that is not called for in the plans.

The Department will not measure for payment any special construction caused by using erodible or unstable materials and will consider it incidental to the Granular Embankment regardless of whether the erodible or unstable material was specified or permitted.

4.2 Rock Embankment. The Department will not measure for payment any rock embankment and will consider it incidental to roadway excavation or embankment in place, as applicable. Rock embankments will be constructed using granular embankment on projects where there is no available rock present within the excavation limits of the project.

4.3 Granular Pile Core. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment furnishing and placing 8-inch perforated underdrain pipe and will consider it incidental to the Granular pile core. The Department will not measure for payment any granular pile core that is necessary because the contractor elects to use granular or rock embankment when it is not specified in the plans.

4.4 Cohesive Pile Core. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204.

4.5 Structure Granular Backfill. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure any additional material required for backfill outside the limits shown on the Plans and Standard Drawings for payment and will consider it incidental to the work.

The Department will not measure structure excavation at the end bent or an existing embankment for payment and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the 4-inch perforated underdrain pipe and will consider it incidental to the Structure Granular Backfill.

4.6 Geotextile Fabric. The Department will measure the quantities as specified in Section 214. The Department will not measure the quantity of fabric used for separating granular or rock embankment and cohesive pile core and will consider it incidental to cohesive pile core.

4.7 End Bent. The Department will measure the quantities according to the

Contract. The Department will not measure furnishing and placing the 2-inch mortar or concrete bed for payment and will consider it incidental to the end bent construction.

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

Code	Pay Item	Pay Unit
02223	Granular Embankment	Cubic Yards
20209EP69	Granular Pile Core	Cubic Yards
20210EP69	Cohesive Pile Core	Cubic Yards
02231	Structure Granular Backfill	Cubic Yards
02596, 02599	Geotextile Fabric, Type	See Section 214

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

June 15, 2012

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

LABOR AND WAGE REQUIREMENTS
APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS

I. APPLICATION

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

II. NONDISCRIMINATION OF EMPLOYEES

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.

III. PAYMENT OF PREDETERMINED MINIMUM WAGES

1. These special provisions are supplemented elsewhere in the contract by special provisions which set forth certain predetermined minimum wage rates. The contractor shall pay not less than those rates.

2. The minimum wage determination schedule shall be posted by the contractor, in a manner prescribed by the Department of Highways, at the site of the work in prominent places where it can be easily seen by the workers.

IV. STATEMENTS AND PAYROLLS

1. All contractors and subcontractors affected by the terms of KRS 337.505 to 337.550 shall keep full and accurate payroll records covering all disbursements of wages to their employees to whom they are required to pay not less than the prevailing rate of wages. Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of one (1) year from the date of completion of this contract.

2. The payroll records shall contain the name, address and social security number of each employee, his correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions made and actual wages paid.

3. The contractor shall make his daily records available at the project site for inspection by the State Department of Highways contracting office or his authorized representative.

Periodic investigations shall be conducted as required to assure compliance with the labor provisions of the contract. Interrogation of employees and officials of the contractor shall be permitted during working hours.

Aggrieved workers, Highway Managers, Assistant District Engineers, Resident Engineers and Project Engineers shall report all complaints and violations to the Division of Contract Procurement.

The contractor shall be notified in writing of apparent violations. The contractor may correct the reported violations and notify the Department of Highways of the action taken or may request an informal hearing. The request for hearing shall be in writing within ten (10) days after receipt of the notice of the reported violation. The contractor may submit

records and information which will aid in determining the true facts relating to the reported violations.

Any person or organization aggrieved by the action taken or the findings established as a result of an informal hearing by the Division of Contract Procurement may request a formal hearing.

4. The wages of labor shall be paid in legal tender of the United States, except that this condition will be considered satisfied if payment is made by a negotiable check, on a solvent bank, which may be cashed readily by the employee in the local community for the full amount, without discount or collection charges of any kind. Where checks are used for payments, the contractor shall make all necessary arrangements for them to be cashed and shall give information regarding such arrangements.

5. No fee of any kind shall be asked or accepted by the contractor or any of his agents from any person as a condition of employment on the project.

6. No laborers shall be charged for any tools used in performing their respective duties except for reasonably avoidable loss or damage thereto.

7. Every employee on the work covered by this contract shall be permitted to lodge, board, and trade where and with whom he elects and neither the contractor nor his agents, nor his employees shall directly or indirectly require as a condition of employment that an employee shall lodge, board or trade at a particular place or with a particular person.

8. Every employee on the project covered by this contract shall be an employee of either the prime contractor or an approved subcontractor.

9. No charge shall be made for any transportation furnished by the contractor or his agents to any person employed on the work.

10. No individual shall be employed as a laborer or mechanic on this contract except on a wage basis, but this shall not be construed to prohibit the rental of teams, trucks or other equipment from individuals.

No Covered employee may be employed on the work except in accordance with the classification set forth in the schedule mentioned above; provided, however, that in the event additional classifications are required, application shall be made by the contractor to the Department of Highways and (1) the Department shall request appropriate classifications and rates from the proper agency, or (2) if there is urgent need for additional classification to avoid undue delay in the work, the contractor may employ such workmen at rates deemed comparable to rates established for similar classifications provided he has made written application through the Department of Highways, addressed to the proper agency, for the supplemental rates. The contractor shall retroactively adjust, upon receipt of the supplemental rates schedule, the wages of any employee paid less than the established rate and may adjust the wages of any employee overpaid.

11. 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 laborer or mechanic in any work-week in which he is employed on such work, to work in excess of eight hours in any calendar day or in excess of forty hours in such work-week unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such work-week. 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. This agreement shall be in writing and shall be executed prior to the employee working in excess of eight (8) hours, but not more than ten (10) hours, in any one (1) calendar day.

12. Payments to the contractor may be suspended or withheld due to failure of the contractor to pay any laborer or mechanic employed or working on the site of the work, all or part of the wages required under the terms of the contract. The Department may suspend or withhold payments only after the contractor has been given written notice of the alleged violation and the contractor has failed to comply with the wage determination of the Department of Highways.

13. Contractors and subcontractors shall comply with the sections of Kentucky Revised Statutes, Chapter 337 relating to contracts for Public Works.

Revised 2-16-95

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

> KRS 11A.040 (6) provides:
>
> No present or former public servant shall, within six (6) months of following termination of his office or employment, accept employment, compensation or other economic benefit from any person or business that contracts or does business with the state in matters in which he was directly involved during his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved in state government. This subsection shall not prohibit the performance of ministerial functions, including, but not limited to, filing tax returns, filing applications for permits or licenses, or filing incorporation papers.
>
> KRS 11A.040 (8) states:
>
> A former public servant shall not represent a person in a matter before a state agency in which the former public servant was directly involved, for a period of one (1) year after the latter of:
> a) The date of leaving office or termination of employment; or
> b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, Room 136, Capitol Building, 700 Capitol Avenue, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Kentucky Equal Employment Opportunity Act of 1978

The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under ***Vendor Information, Standard Attachments and General Terms*** at the following address: **https://www.eProcurement.ky.gov**.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **finance.contractcompliance@ky.gov** or by phone at 502-564-2874.

KENTUCKY LABOR CABINET
PREVAILING WAGE DETERMINATION
CURRENT REVISION
HIGHWAY CONSTRUCTION LOCALITY NO. II

Determination No. CR-13-II-HWY

Project No.
Highway

Date of Determination: April 15, 2013

This schedule of the prevailing rate of wages for Locality No. II including the counties of ADAIR, BARREN, BELL, BREATHITT, CASEY, CLAY, CLINTON, CUMBERLAND, ESTILL, FLOYD, GARRARD, GREEN, HARLAN, HART, JACKSON, JOHNSON, KNOTT, KNOX, LAUREL, LAWRENCE, LEE, LESLIE, LETCHER, LINCOLN, MCCREARY, MAGOFFIN, MARTIN, MENIFEE, METCALFE, MONROE, MORGAN, OWSLEY, PERRY, PIKE, POWELL, PULASKI, ROCKCASTLE, RUSSELL, TAYLOR, WAYNE, WHITLEY, and WOLFE has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR-13-II-HWY.

The following schedule of rates is to be used for highway construction projects advertised or awarded by the Kentucky Transportation Cabinet. This includes any contracts for the relocation of any utilities or other incidental construction projects advertised or awarded by public authorities as a result of the highway construction project.

Apprentices or trainees shall be permitted to work in accordance with Administrative Regulations adopted by the Commissioner of the Department of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) hours per day, or in excess of forty (40) hours per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one calendar day, but not more than ten (10) hours worked in any one calendar day, if such written agreement is prior to the over eight (8) hours in a calendar day actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. Fringe benefit amounts are applicable for all hours worked except when otherwise noted. Welders will receive rate for craft in which welding is incidental.

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

Michael Donta, Deputy Commissioner
Department of Workplace Standards

CLASSIFICATIONS	RATE AND FRINGE BENEFITS	
BOILERMAKERS:	BASE RATE	$24.65
	FRINGE BENEFIT	12.94
BRICKLAYERS:		
Bricklayers:	BASE RATE	$22.90
	FRINGE BENEFITS	8.50
Stone Mason:	BASE RATE	$21.50
	FRINGE BENEFITS	8.50
CARPENTERS:		
Carpenters:	BASE RATE	$24.15
	FRINGE BENEFITS	13.50
Piledrivers:	BASE RATE	$23.80
	FRINGE BENEFITS	13.50
CEMENT MASONS:	BASE RATE	$21.25
	FRINGE BENEFITS	8.50
ELECTRICIANS:	*BASE RATE	$29.36
	FRINGE BENEFITS	10.55

*When workmen are required to work from bosum chairs, trusses, stacks, tanks, scaffolds, catwalks, radio and T.V. towers, structural steel (open, unprotected, unfloored raw steel), and bridges or similar hazardous locations where workmen are subject to a direct fall, except where using JLG's and bucket trucks up to 75 feet: Add 25% to workman's base rate for 50 to 75 feet, and add 50% to workman's base rate for over 75 feet.

LINEMAN:	*BASE RATE	$30.09
	FRINGE BENEFITS	10.94
EQUIPMENT OPERATOR:	*BASE RATE	$26.90
	FRINGE BENEFITS	10.31
GROUNDSMAN:	*BASE RATE	$17.79
	FRINGE BENEFITS	8.51
IRONWORKERS:	BASE RATE	$ 26.34
	FRINGE BENEFITS	18.84

CLASSIFICATIONS RATE AND FRINGE BENEFITS

LABORERS:

GROUP 1: Aging and curing of concrete (any mode or method), asbestos abatement worker, asphalt plant laborers, asphalt laborers; batch truck dumpers; carpenter tenders, cement mason tenders, cleaning of machines, concrete laborers, demolition laborers, dredging laborers, drill helper, environmental laborer - nuclear, radiation, toxic and hazardous waste – Level D, flagmen, grade checkers, all hand digging and hand back filling, highway marker placers, landscaping laborers, mesh handlers and placers, puddler, railroad laborers, rip-rap and grouters, right of way laborers, sign, guard rail and fence installers (all types), signalmen, sound barrier installer, storm and sanitary sewer laborers, swampers, truck spotters and dumpers, wrecking of concrete forms, general cleanup:

HEAVY & HIGHWAY	BASE RATE	$21.15
	FRINGE BENEFITS	11.41

GROUP 2: Batter board men (sanitary and storm sewer), brickmason tenders, mortar mixer operator, scaffold builders, burner and welder, bushammers, chain saw operator, concrete saw operators, deckhand scow man, dry cement handlers, environmental laborers – nuclear, radiation, toxic and hazardous waste – Level C, forklift operators for masonry, form setters, green concrete cutting, hand operated grouter and grinder machine operator, jack hammers, lead paint abatement, pavement breakers, paving joint machine, pipe layers – laser operators (non-metallic), plastic pipe fusion, power driven Georgia buggy and wheel barrow, power post hole diggers, precast manhole setters, walk-behind tampers, walk-behind trenchers, sand blasters, concrete chippers, surface grinders, vibrator operators, wagon drillers:

HEAVY & HIGHWAY	BASE RATE	$21.40
	FRINGE BENEFITS	11.41

GROUP 3: Air track driller (all types), asphalt luteman and rakersm gunnite nozzleman, gunnite operators and mixers, grout pump operator, powderman and blaster, side rail setters, rail paved ditches, screw operators, tunnel laborers (free air), and water blasters:

HEAVY & HIGHWAY	BASE RATE	$21.45
	FRINGE BENEFITS	11.41

GROUP 4: Caisson workers (free air), cement finishers, environmental laborer – nuclear, radiation, toxic and hazardous waste – Level A and B, miners and drillers (free air), tunnel blasters, and tunnel mockers (free air), directional and horizontal boring, air track drillers (all types), powder man and blasters, troxler and concrete tester if laborer is utilized:

HEAVY & HIGHWAY	BASE RATE	$22.05
	FRINGE BENEFITS	11.41

OPERATING ENGINEERS:

Group A-1:
NCCCO or OECP Certified; Crane, dragline, hoist (1 drum when used for stack or chimney construction or repair), hoisting engineer (2 or more drums), orangepeel, overhead crane, piledriver, truck crane, tower crane, hydraulic crane:

BASE RATE	$28.40
FRINGE BENEFITS	13.40

CLASSIFICATIONS	RATE AND FRINGE BENEFITS

Group A:
Auto patrol, batcher plant, bituminous paver, cable-way, clamshell, concrete mixer (21 cu. ft. or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge engineer, elevator (regardless of ownership when used for hoisting any building material), elevating grader and all types of loaders, hoe-type machine, hoisting engine, locomotive, LeTourneau or carry-all scoop, bulldozer, mechanic, orangepeel bucket, piledriver, power blade, roller (bituminous), roller (earth), roller (rock), scarifier, shovel, tractor shovel, truck crane, well points, winch truck, push dozer, grout pump, high lift, fork lift (regardless of lift height), all types of boom cats, multiple operator, core drill, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, material pump, pumpcrete, ross carrier,sheepfoot, sideboom, throttle-valve man, rotary drill, power generator, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, tugger, backfiller gurries, self-propelled compactor, self-contained hydraulic percussion drill:

BASE RATE	$27.35
FRINGE BENEFITS	13.40

Group B:
All air compressors (200 cu. ft. per min. or greater capacity), bituminous mixer, concrete mixer (under 21 cu. ft.), welding machine, form grader, tractor (50 H.P. and over), bull float, finish machine, outboard motor boat, brakeman, mechanic helper, whirly oiler, tractair and road widening trencher, articulating trucks:

BASE RATE	$24.87
FRINGE BENEFITS	13.40

Group B2:
Greaser on grease facilities servicing heavy equipment:

BASE RATE	$25.26
FRINGE BENEFITS	13.40

Group C:
Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, pump, tamping machine, tractors (under 50 H.P.), vibrator, oiler, air compressors (under 200 cu. ft. per min. capacity), concrete saw, burlap and curing machine, hydro seeder, power form handling equipment, deckhand oiler, hydraulic post driver:

BASE RATE	$24.60
FRINGE BENEFITS	13.40

PAINTERS:

All Excluding Bridges:

BASE RATE	$19.92
FRINGE BENEFITS	9.57

Bridges:

BASE RATE	$23.92
FRINGE BENEFITS	10.07

CLASSIFICATIONS	RATE AND FRINGE BENEFITS	
PLUMBERS:	BASE RATE	$22.52
	FRINGE BENEFITS	7.80
SHEET METAL:	BASE RATE	$20.40
	FRINGE BENEFITS	7.80
TRUCK DRIVERS:		
Truck helper and warehouseman:	BASE RATE	$22.45
	FRINGE BENEFITS	13.50
Driver, winch truck and A-Frame when used in transporting materials:	BASE RATE	$22.55
	FRINGE BENEFITS	13.50
Driver, (semi-trailer or pole trailer), driver (dump truck, tandem axle), driver of distributor:	BASE RATE	$22.65
	FRINGE BENEFITS	13.50
Driver on mixer trucks (all types):	BASE RATE	$22.70
	FRINGE BENEFITS	13.50
Truck mechanic:	BASE RATE	$22.75
	FRINGE BENEFITS	13.50
Driver (3 tons and under), tire changer and truck mechanic helper:	BASE RATE	$22.78
	FRINGE BENEFITS	13.50
Driver on pavement breakers:	BASE RATE	$22.80
	FRINGE BENEFITS	13.50
Driver (over 3 tons), driver (truck mounted rotary drill):	BASE RATE	$22.99
	FRINGE BENEFITS	13.50
Driver, Euclid and other heavy earth moving equipment and Low Boy:	BASE RATE	$23.56
	FRINGE BENEFITS	13.50
Greaser on greasing facilities:	BASE RATE	$23.65
	FRINGE BENEFITS	13.50

Kentucky Determination No. CR-13-II-HWY dated April 15, 2013

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

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

These rates are listed pursuant to the Kentucky Determination No. CR-13-II-HWY dated April 15, 2013. 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 contract or 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 numbers 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 wage. 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 to the undersigned.

Ryan Griffith, Acting Director
Division of Construction Procurement
Frankfort, Kentucky 40622

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

131056

PROPOSAL BID ITEMS

Report Date 1/21/13

Section: 0001 - PAVING-ASPHALT

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	28,883.00	TON		$	
0020	00020		TRAFFIC BOUND BASE	69.00	TON		$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	45,818.00	TON		$	
0040	00100		ASPHALT SEAL AGGREGATE	244.00	TON		$	
0050	00103		ASPHALT SEAL COAT	33.00	TON		$	
0060	00190		LEVELING & WEDGING PG64-22	119.00	TON		$	
0070	00212		CL2 ASPH BASE 1.00D PG64-22	20,329.00	TON		$	
0080	00309		CL2 ASPH SURF 0.50D PG64-22	1,934.00	TON		$	
0090	00330		CL3 ASPH SURF 0.50A PG64-22	2,148.00	TON		$	
0100	01845		ISLAND INTEGRAL CURB	59.50	LF		$	
0110	01891		ISLAND HEADER CURB TYPE 2	1,125.00	LF		$	
0120	02230		EMBANKMENT IN PLACE	400,003.00	CUYD		$	
0130	02599		FABRIC-GEOTEXTILE TYPE IV	121,901.00	SQYD		$	
0140	02696		SHOULDER RUMBLE STRIPS-SAWED	25,235.00	LF		$	
0150	10203ND		PAVEMENT ADJUSTMENT	1.00	LS	212,074.00	$	$212,074.00
0160	23362ES403		CL2 ASPH SURF 0.5B PG64-22	3,673.00	TON		$	

Section: 0002 - PAVING-CONCRETE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0450	00003		CRUSHED STONE BASE	38,820.00	TON		$	
0460	00020		TRAFFIC BOUND BASE	69.00	TON		$	
0470	00078		CRUSHED AGGREGATE SIZE NO 2	6,754.00	TON		$	
0480	00100		ASPHALT SEAL AGGREGATE	244.00	TON		$	
0490	00103		ASPHALT SEAL COAT	33.00	TON		$	
0500	00190		LEVELING & WEDGING PG64-22	119.00	TON		$	
0510	00212		CL2 ASPH BASE 1.00D PG64-22	8,305.00	TON		$	
0520	00309		CL2 ASPH SURF 0.50D PG64-22	1,083.00	TON		$	
0530	00330		CL3 ASPH SURF 0.50A PG64-22	2,148.00	TON		$	
0540	00358		ASPHALT CURING SEAL	53.00	TON		$	
0550	01845		ISLAND INTEGRAL CURB	1,184.50	LF		$	
0560	02078		JPC PAVEMENT-6 IN SHLD	10,315.00	SQYD		$	
0570	02084		JPC PAVEMENT-8 IN	25,452.00	SQYD		$	
0580	02230		EMBANKMENT IN PLACE	404,742.00	CUYD		$	
0590	02598		FABRIC-GEOTEXTILE TYPE III	55,323.00	SQYD		$	
0600	02599		FABRIC-GEOTEXTILE TYPE IV	11,552.00	SQYD		$	
0610	02696		SHOULDER RUMBLE STRIPS-SAWED	25,235.00	LF		$	
0620	10203ND		PAVEMENT ADJUSTMENT	1.00	LS	103,906.00	$	$103,906.00
0630	20263ED		GEOGRID REINFORCEMENT	55,428.00	SQYD		$	
0640	23265ES717		PAVE MARK TY 1 TAPE STOP BAR-24 IN	184.00	LF		$	
0650	23362ES403		CL2 ASPH SURF 0.5B PG64-22	1,573.00	TON		$	

Section: 0003 - PAVING-CONC WITH ASPHALT SHOULDER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT

131056

PROPOSAL BID ITEMS

Report Date 1/21/13

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0660	00003		CRUSHED STONE BASE	37,941.00	TON		$	
0670	00020		TRAFFIC BOUND BASE	69.00	TON		$	
0680	00078		CRUSHED AGGREGATE SIZE NO 2	10,589.00	TON		$	
0690	00100		ASPHALT SEAL AGGREGATE	244.00	TON		$	
0700	00103		ASPHALT SEAL COAT	33.00	TON		$	
0710	00190		LEVELING & WEDGING PG64-22	119.00	TON		$	
0720	00212		CL2 ASPH BASE 1.00D PG64-22	10,432.00	TON		$	
0730	00309		CL2 ASPH SURF 0.50D PG64-22	1,934.00	TON		$	
0740	00330		CL3 ASPH SURF 0.50A PG64-22	2,148.00	TON		$	
0750	01845		ISLAND INTEGRAL CURB	1,184.50	LF		$	
0760	02084		JPC PAVEMENT-8 IN	25,452.00	SQYD		$	
0770	02230		EMBANKMENT IN PLACE	404,742.00	CUYD		$	
0780	02598		FABRIC-GEOTEXTILE TYPE III	55,323.00	SQYD		$	
0790	02599		FABRIC-GEOTEXTILE TYPE IV	11,552.00	SQYD		$	
0800	02696		SHOULDER RUMBLE STRIPS-SAWED	25,235.00	LF		$	
0810	10203ND		PAVEMENT ADJUSTMENT	1.00	LS	103,906.00	$	$103,906.00
0820	20263ED		GEOGRID REINFORCEMENT	55,323.00	SQYD		$	
0830	23362ES403		CL2 ASPH SURF 0.5B PG64-22	1,573.00	TON		$	

Section: 0004 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0840	01000		PERFORATED PIPE-4 IN	173.00	LF		$	
0850	01010		NON-PERFORATED PIPE-4 IN	126.00	LF		$	
0860	01020		PERF PIPE HEADWALL TY 1-4 IN	2.00	EACH		$	
0870	01024		PERF PIPE HEADWALL TY 2-4 IN	1.00	EACH		$	
0880	01028		PERF PIPE HEADWALL TY 3-4 IN	10.00	EACH		$	
0890	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	43.00	EACH		$	
0900	01983		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW	16.00	EACH		$	
0910	01984		DELINEATOR FOR BARRIER - WHITE	98.00	EACH		$	
0920	01985		DELINEATOR FOR BARRIER - YELLOW	12.00	EACH		$	
0930	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	96.00	EACH		$	
0940	01992		INSTALL TEMP CONC MED BARR	9,600.00	LF		$	
0950	02003		RELOCATE TEMP CONC BARRIER	1,200.00	LF		$	
0960	02014		BARRICADE-TYPE III	16.00	EACH		$	
0970	02091		REMOVE PAVEMENT	6,200.00	SQYD		$	
0980	02159		TEMP DITCH	3,450.00	LF		$	
0990	02223		GRANULAR EMBANKMENT	666.00	CUYD		$	
1000	02242		WATER	131.00	MGAL		$	
1010	02262		FENCE-WOVEN WIRE TYPE 1	8,923.00	LF		$	
1020	02351		GUARDRAIL-STEEL W BEAM-S FACE	11,487.50	LF		$	
1030	02360		GUARDRAIL TERMINAL SECTION NO 1	4.00	EACH		$	
1040	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH		$	
1050	02367		GUARDRAIL END TREATMENT TYPE 1	1.00	EACH		$	
1060	02369		GUARDRAIL END TREATMENT TYPE 2A	4.00	EACH		$	
1070	02371		GUARDRAIL END TREATMENT TYPE 7	2.00	EACH		$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1080	02373		GUARDRAIL END TREATMENT TYPE 3	2.00	EACH		$	
1090	02381		REMOVE GUARDRAIL	8,299.00	LF		$	
1100	02391		GUARDRAIL END TREATMENT TYPE 4A	16.00	EACH		$	
1110	02396		REMOVE GUARDRAIL END TREATMENT	1.00	EACH		$	
1120	02429		RIGHT-OF-WAY MONUMENT TYPE 1	64.00	EACH		$	
1130	02432		WITNESS POST	64.00	EACH		$	
1140	02483		CHANNEL LINING CLASS II	2,391.00	TON		$	
1150	02484		CHANNEL LINING CLASS III	1,388.00	TON		$	
1160	02545		CLEARING AND GRUBBING72 ACRES	1.00	LS		$	
1170	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	7,519.00	SQYD	$2.00	$	$15,038.00
1180	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
1190	02651		DIVERSIONS (BY-PASS DETOURS)NO. 1	1.00	LS		$	
1200	02651		DIVERSIONS (BY-PASS DETOURS)NO. 2	1.00	LS		$	
1210	02653		LANE CLOSURE	4.00	EACH		$	
1220	02671		PORTABLE CHANGEABLE MESSAGE SIGN	5.00	EACH		$	
1230	02676		MOBILIZATION FOR MILL & TEXT	1.00	LS		$	
1240	02677		ASPHALT PAVE MILLING & TEXTURING	3,110.00	TON		$	
1250	02690		SAFELOADING	26.80	CUYD		$	
1260	02696		SHOULDER RUMBLE STRIPS-SAWED	36,500.00	LF		$	
1270	02701		TEMP SILT FENCE	3,450.00	LF		$	
1280	02703		SILT TRAP TYPE A	72.00	EACH		$	
1290	02704		SILT TRAP TYPE B	72.00	EACH		$	
1300	02705		SILT TRAP TYPE C	72.00	EACH		$	
1310	02706		CLEAN SILT TRAP TYPE A	216.00	EACH		$	
1320	02707		CLEAN SILT TRAP TYPE B	216.00	EACH		$	
1330	02708		CLEAN SILT TRAP TYPE C	216.00	EACH		$	
1340	02709		CLEAN TEMP SILT FENCE	3,450.00	LF		$	
1350	02726		STAKING	1.00	LS		$	
1360	02775		ARROW PANEL	2.00	EACH		$	
1370	02898		RELOCATE CRASH CUSHION	2.00	EACH		$	
1380	05950		EROSION CONTROL BLANKET	116,198.00	SQYD		$	
1390	05952		TEMP MULCH	348,630.00	SQYD		$	
1400	05953		TEMP SEEDING AND PROTECTION	34,863.00	SQYD		$	
1410	05966		TOPDRESSING FERTILIZER	11.30	TON		$	
1420	05985		SEEDING AND PROTECTION	218,603.00	SQYD		$	
1430	05990		SODDING	4,199.00	SQYD		$	
1440	06417		FLEXIBLE DELINEATOR POST-W	128.00	EACH		$	
1450	06418		FLEXIBLE DELINEATOR POST-Y	178.00	EACH		$	
1460	06510		PAVE STRIPING-TEMP PAINT-4 IN	25,709.00	LF		$	
1470	06514		PAVE STRIPING-PERM PAINT-4 IN	24,150.00	LF		$	
1480	06515		PAVE STRIPING-PERM PAINT-6 IN	33,223.00	LF		$	
1490	06517		PAVE STRIPING-PERM PAINT-12 IN	1,963.00	LF		$	
1500	06567		PAVE MARKING-THERMO STOP BAR-12IN	57.00	LF		$	
1510	06568		PAVE MARKING-THERMO STOP BAR-24IN	141.00	LF		$	
1520	06592		PAVEMENT MARKER TYPE V-B W/R	210.00	EACH		$	
1530	06593		PAVEMENT MARKER TYPE V-B Y/R	39.00	EACH		$	
1540	06600		REMOVE PAVEMENT MARKER TYPE V	28.00	EACH		$	
1550	08100		CONCRETE-CLASS A	28.16	CUYD		$	
1560	08150		STEEL REINFORCEMENT	708.00	LB		$	
1570	08902		CRASH CUSHION TY VI CLASS B TL3	2.00	EACH		$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1580	08903		CRASH CUSHION TY VI CLASS BT TL3	2.00	EACH		$	
1590	20430ED		SAW CUT	5,844.00	LF		$	
1600	23274EN11F		TURF REINFORCEMENT MAT 1	4,572.00	SQYD		$	
1610	23275EN11F		TURF REINFORCEMENT MAT 2	165.00	SQYD		$	
1620	23276EN11F		TURF REINFORCEMENT MAT 3	95.00	SQYD		$	
1630	24540		R/W MONUMENT TYPE 3	9.00	EACH		$	

Section: 0005 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1640	00440		ENTRANCE PIPE-15 IN	216.00	LF		$	
1650	00441		ENTRANCE PIPE-18 IN	64.00	LF		$	
1660	00460		CULVERT PIPE-12 IN	78.00	LF		$	
1670	00461		CULVERT PIPE-15 IN	66.00	LF		$	
1680	00462		CULVERT PIPE-18 IN	833.00	LF		$	
1690	00464		CULVERT PIPE-24 IN	93.00	LF		$	
1700	00466		CULVERT PIPE-30 IN	454.00	LF		$	
1710	00468		CULVERT PIPE-36 IN	536.00	LF		$	
1720	00469		CULVERT PIPE-42 IN	100.00	LF		$	
1730	00522		STORM SEWER PIPE-18 IN	302.00	LF		$	
1740	00526		STORM SEWER PIPE-30 IN	158.00	LF		$	
1750	00528		STORM SEWER PIPE-36 IN	223.00	LF		$	
1760	00530		STORM SEWER PIPE-48 IN	84.00	LF		$	
1770	01200		PIPE CULVERT HEADWALL-12 IN	1.00	EACH		$	
1780	01202		PIPE CULVERT HEADWALL-15 IN	1.00	EACH		$	
1790	01204		PIPE CULVERT HEADWALL-18 IN	6.00	EACH		$	
1800	01208		PIPE CULVERT HEADWALL-24 IN	2.00	EACH		$	
1810	01210		PIPE CULVERT HEADWALL-30 IN	5.00	EACH		$	
1820	01212		PIPE CULVERT HEADWALL-36 IN	5.00	EACH		$	
1830	01214		PIPE CULVERT HEADWALL-42 IN	1.00	EACH		$	
1840	01216		PIPE CULVERT HEADWALL-48 IN	1.00	EACH		$	
1850	01433		SLOPED BOX OUTLET TYPE 1-18 IN	2.00	EACH		$	
1860	01450		S & F BOX INLET-OUTLET-18 IN	11.00	EACH		$	
1870	01480		CURB BOX INLET TYPE B	2.00	EACH		$	
1880	01490		DROP BOX INLET TYPE 1	5.00	EACH		$	
1890	01493		DROP BOX INLET TYPE 2	1.00	EACH		$	
1900	01517		DROP BOX INLET TYPE 5F	1.00	EACH		$	
1910	01641		JUNCTION BOX-15 IN	1.00	EACH		$	
1920	01651		JUNCTION BOX-MOD	1.00	EACH		$	
1930	21800EN		BORE AND JACK PIPE-30 IN	200.00	LF		$	
1940	23131ER701		PIPELINE VIDEO INSPECTION	3,004.00	LF		$	

Section: 0006 - BRIDGE-26676

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1950	02231		STRUCTURE GRANULAR BACKFILL	160.00	CUYD		$	
1960	02998		MASONRY COATING	1,250.00	SQYD		$	
1970	03299		ARMORED EDGE FOR CONCRETE	83.00	LF		$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1980	08001		STRUCTURE EXCAVATION-COMMON	170.00	CUYD		$	
1990	08002		STRUCTURE EXCAV-SOLID ROCK	20.00	CUYD		$	
2000	08020		CRUSHED AGGREGATE SLOPE PROT	270.00	TON		$	
2010	08033		TEST PILES	61.00	LF		$	
2020	08051		PILES-STEEL HP14X89	261.00	LF		$	
2030	08095		PILE POINTS-14 IN	12.00	EACH		$	
2040	08100		CONCRETE-CLASS A	128.00	CUYD		$	
2050	08104		CONCRETE-CLASS AA	435.90	CUYD		$	
2060	08150		STEEL REINFORCEMENT	21,446.00	LB		$	
2070	08151		STEEL REINFORCEMENT-EPOXY COATED	136,535.00	LB		$	
2080	08500		APPROACH SLAB	222.00	SQYD		$	
2090	21532ED		RAIL SYSTEM TYPE III	506.00	LF		$	
2100	24383EC		PC I-BEAM TY NH 66 61-HYBRID	1,001.00	LF		$	

Section: 0007 - GASLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
2110	03438		RECONNECT TO MAIN	1.00	EACH		$	
2120	20083NN		CONNECT TO SERVICE	2.00	EACH		$	
2130	20084NN		CUT & CAP	3.00	EACH		$	
2140	20333EN		SERVICE LINE3/4 IN	40.00	LF		$	
2150	21773NN		GAS LINE MARKER	13.00	EACH		$	
2160	24603EC		POLYETHYLENE VALVE WITH BOX4 IN	4.00	EACH		$	
2170	24603EC		POLYETHYLENE VALVE WITH BOX6 IN	5.00	EACH		$	
2180	24603EC		POLYETHYLENE VALVE WITH BOX3 IN	1.00	EACH		$	
2190	24604EC		POLYETHYLENE GAS MAIN6 IN OUTSIDE ROADWAY	3,700.00	LF		$	
2200	24604EC		POLYETHYLENE GAS MAIN4 IN OUTSIDE ROADWAY	1,700.00	LF		$	
2210	24604EC		POLYETHYLENE GAS MAIN4 IN UNDER ROADWAY	20.00	LF		$	
2220	24604EC		POLYETHYLENE GAS MAIN4 IN TUNNEL/ BORE	100.00	LF		$	
2230	24604EC		POLYETHYLENE GAS MAIN6 IN UNDER ROADWAY	10.00	LF		$	
2240	24604EC		POLYETHYLENE GAS MAIN6 IN TUNNEL/ BORE	350.00	LF		$	
2250	24604EC		POLYETHYLENE GAS MAIN3 IN TUNNEL/ BORE	95.00	LF		$	
2260	24604EC		POLYETHYLENE GAS MAIN3 IN OUTSIDE ROADWAY	1,650.00	LF		$	
2270	24604EC		POLYETHYLENE GAS MAIN3 IN UNDER ROADWAY	15.00	LF		$	

Section: 0008 - SIGNING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
2280	04903		REFERENCE MARKER	1.00	EACH		$	
2290	06400		GMSS GALV STEEL TYPE A	2,025.00	LB		$	
2300	06405		SBM ALUMINUM PANEL SIGNS	1,244.00	SQFT		$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
2310	06406		SBM ALUM SHEET SIGNS .080 IN	643.00	SQFT		$	
2320	06407		SBM ALUM SHEET SIGNS .125 IN	56.00	SQFT		$	
2330	06410		STEEL POST TYPE 1	390.00	LF		$	
2340	06411		STEEL POST TYPE 2	1,755.00	LF		$	
2350	06441		GMSS GALV STEEL TYPE C	5,173.00	LB		$	
2360	06490		CLASS A CONCRETE FOR SIGNS	24.00	CUYD		$	
2370	06491		STEEL REINFORCEMENT FOR SIGNS	1,232.00	LB		$	
2380	20418ED		REMOVE & RELOCATE SIGNS	1.00	EACH		$	
2390	21596ND		GMSS TYPE D	8.00	EACH		$	
2400	24631EC		BARCODE SIGN INVENTORY	162.00	EACH		$	

Section: 0009 - LIGHTING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
2410	04700		POLE 30 FT MTG HT	8.00	EACH		$	
2420	04701		POLE 40 FT MTG HT	5.00	EACH		$	
2430	04722		BRACKET 8 FT	6.00	EACH		$	
2440	04723		BRACKET 10 FT	5.00	EACH		$	
2450	04725		BRACKET 15 FT	2.00	EACH		$	
2460	04740		POLE BASE	12.00	EACH		$	
2470	04741		POLE BASE IN MEDIAN WALL	1.00	EACH		$	
2480	04750		TRANSFORMER BASE	13.00	EACH		$	
2490	04761		LIGHTING CONTROL EQUIPMENT	1.00	EACH		$	
2500	04770		HPS LUMINAIRE	13.00	EACH		$	
2510	04780		FUSED CONNECTOR KIT	26.00	EACH		$	
2520	04793		CONDUIT-1 1/4 IN	2,200.00	LF		$	
2530	04795		CONDUIT-2 IN	900.00	LF		$	
2540	04820		TRENCHING AND BACKFILLING	3,100.00	LF		$	
2550	04832		WIRE-NO. 12	1,650.00	LF		$	
2560	04833		WIRE-NO. 8	8,650.00	LF		$	
2570	20391NS835		ELECTRICAL JUNCTION BOX TYPE A	12.00	EACH		$	
2580	21543EN		BORE AND JACK CONDUIT	900.00	LF		$	

Section: 0010 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0170	03381		PVC PIPE-2 IN	20.00	LF		$	
0180	03385		PVC PIPE-6 INOUTSIDE ROADWAY	5,970.00	LF		$	
0190	03385		PVC PIPE-6 INUNDER ROADWAY	60.00	LF		$	
0200	03432		REMOVE AND RELOCATE METER	2.00	EACH		$	
0210	03442		DUCTILE IRON FITTINGS	2,500.00	LB		$	
0220	03479		TIE-INTO 6 IN WATER MAIN	2.00	EACH		$	
0230	03522		GATE VALVE-2 IN	1.00	EACH		$	
0240	03526		GATE VALVE-6 IN	5.00	EACH		$	
0250	03550		CUT & CAP EXIST WATER MAIN	5.00	EACH		$	
0260	05950		EROSION CONTROL BLANKET	450.00	SQYD		$	
0270	08019		CYCLOPEAN STONE RIP RAP	40.00	TON		$	
0280	20951ND		TAPPING SLEEVE AND VALVE-6IN X 6 IN	4.00	EACH		$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0290	21233ED		ASPHALT PAVING REPLACEMENT	30.00	LF		$	
0300	21346ND		WATER SERVICE RECONNECT-3/4 IN-1 IN	2.00	EACH		$	
0310	21346ND		WATER SERVICE RECONNECT-3/4 IN-1 INPVC	40.00	EACH		$	
0320	21916EN		PVC PIPE 6 IN-WITH STEEL PIPE 12 IN	410.00	LF		$	
0330	22082NN		AIR RELEASE VALVE ASSEMBLY	8.00	EACH		$	
0340	22083NN		WATER ITEM POST MARKERLINE AND VALVE MARKER	22.00	EACH		$	
0350	23326EC		EXCAVATION-UNCLASSIFIED	100.00	CUYD		$	
0360	23340EC		PAVEMENT REPLACEMENTCOLD MIX	20.00	TON		$	
0370	23341EC		GENERAL CONCRETECLASS C	25.00	CUYD		$	
0380	23513EC		CRUSHED STONE PAVEMENT REPLACEMENT	70.00	LF		$	
0390	23514EC		TOPSOIL AND SEEDING OF TRENCHES	12,203.00	LF		$	
0400	23710EC		SERVICE TAP AND TEE-1 IN	2.00	EACH		$	
0410	23969EC		PE WATER MAIN-6 IN	1,500.00	LF		$	
0420	23983EC		CRUSHED STONE BACKFILL	100.00	CUYD		$	

Section: 0011 - MOB AND DEMOB

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0430	02568		MOBILIZATION	1.00	LS		$	
0440	02569		DEMOBILIZATION	1.00	LS		$	