CALL NO. 309

CONTRACT ID. 131083

UNION COUNTY

FED/STATE PROJECT NUMBER FD04 SPP 113 0056 007-012

DESCRIPTION KY 56 WIDENING

WORK TYPE GRADE, DRAIN & SURFACE WITH BRIDGE

PRIMARY COMPLETION DATE 9/15/2015

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.

TABLE OF CONTENTS

PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 02

CONTRACT ID - 131083

FD04 SPP 113 0056 007-012

COUNTY - UNION

PCN - DE11300561383
FD04 SPP 113 0056 007-012

KY 56 WIDENING KY-56 FROM JUST WEST OF KY-360 TO TEH MORGANFIELD BYPASS WIDENING, ADDING SHOULDERS AND ELIMINATING HORIZONTAL AND VERTICAL DEFICIENCIES.GRADE, DRAIN & SURFACE WITH BRIDGE SYP NO. 02-00310.10.

GEOGRAPHIC COORDINATES LATITUDE 37:40:00.00 LONGITUDE 88:37:00.00

COMPLETION DATE(S):

COMPLETED BY 09/15/2015 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

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

BID SUBMITTAL

Bidder must use the Department's Expedite Bidding Program available on the Internet web site of the Department of Highways, Division of Construction Procurement. (www.transportation.ky.gov/construction-procurement)

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

JOINT VENTURE BIDDING

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

UNDERGROUND FACILITY DAMAGE PROTECTION

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

SPECIAL NOTE FOR PIPE INSPECTION

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

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.

FUEL AND ASPHALT PAY ADJUSTMENT

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

ASPHALT PAVEMENT RIDE QUALITY CATEGORY A

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

OPTION A

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

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: November 20, 2013

Project Name: KY 56 (The Rocks-Morganfield)
Letting Date:
Project #: FD04 113 5844401R
County: Union
Item #: 02-310.10
Federal #:

Description of Project: MINOR WIDENING OF KY-56 FROM KY-109 AT THE ROCKS, EAST TO KY-130 AT THE WCL OF MORGANFIELD.

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

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

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

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

☐ **Condition 1.** All necessary rights-of-way, including control of access rights when applicable, have been acquired including legal and physical possession. Trial or appeal of cases may be pending in court but legal possession has been obtained. There may be some improvements remaining on the right-of-way, but all occupants have vacated the lands and improvements, and KYTC has physical possession and the rights to remove, salvage, or demolish all improvements and enter on all land. Fair market value has been paid or deposited with the court.

☐ **Condition 2.** Although all necessary rights-of-way have not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Trial or appeal of some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained, the occupants of all lands and improvements have vacated, and KYTC has physical possession and right to remove, salvage, or demolish all improvements. Fair market value has been paid or deposited with the court for most parcels. Fair market value for all pending parcels will be paid or deposited with the court prior to AWARD of construction contract. (See note 1 below.)

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

Right-of-Way Certification Form

Revised 2/22/11

☐ **Condition 3.** The acquisition or right of occupancy and use of a few remaining parcels are not complete and/or some parcels still have occupants. However, all remaining occupants have had replacement housing made available to them in accordance with 49 CFR 24.204. The KYTC is hereby requesting authorization to advertise this project for bids and to proceed with bid letting even though the necessary rights-of-way will not be fully acquired, and/or some occupants will not be relocated, and/or the fair market value will not be paid or deposited with the court for some parcels until after bid letting. KYTC will fully meet all the requirements outlined in 23 CFR 635.309(c)(3) and 49 CFR 24.102(j) and will expedite completion of all acquisitions, relocations, and full payments after bid letting and prior to AWARD of the construction contract or force account construction. A full explanation and reason for this request, including identification of each such parcel and dates on which acquisitions, payments, and relocations will be completed, is attached to this certification form for FHWA concurrence. (See note 2.)

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

Approved:	Jennifer K. Cox Printed Name	11/20/13 Signature	Right-of-Way Supervisor
Approved:	DAVID L. ORR Printed Name	11/21/13 Signature	KYTC, Director of ROW &Utilities
Approved:	_____ Printed Name	_____ Signature	FHWA, ROW Officer (when applicable)

Right-of-Way Certification Form

Revised 2/22/11

Date: November 20, 2013

Project Name: KY 56 (The Rocks-Morganfield)
Project #: FD04 113 5844401R
Item #: 02-310.10
Letting Date: _____
County: Union
Federal #: _____

This project has 25 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.

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

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

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

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

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

Parcel #	Name/Station	Explanation for delayed acquisition, delayed relocation, or delayed payment of fair market value	Proposed date of payment or of relocation

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

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

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

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

Union County
2-310.10

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

AT&T: Will complete the relocation of the telephone facilities by June 30th 2014.

Kenergy: Will complete the relocation of the electric facilities by June 30th 2014.

Time Warner Cable: Will complete the relocation of the cable facilities by June 30th 2014.

City Of Morgan Field Gas: Has included all relocation of the gas facilities in the roadway contract.

Union County Water District: Has included all relocation of the water facilities in the road way contact.

PROTECTION OF UTILITIES

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

The contractor is advised to contact the **BUD one-call system at 811** at least two working days prior to excavating. Contractor should be aware that owners of underground facilities are not required to be members of the BUD one-call system. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the project area.

CITY OF MORGANFIELD PUBLIC WORKS

KY 56, KY TRANSPORTATION CABINET GAS PIPELINE RELOCATION

PIPELINE CONSTRUCTION SPECIFICATIONS

SECTION I - General

A. This document contains the Company's Pipeline Construction Specifications. The Pipeline Construction Specifications are intended to cover the various operations and requirements incident to pipeline construction in a general manner and to briefly outline the type, character and quality of work required.

B. When, during construction performed under contract to Company, these general specifications conflict in any minor detail with drawings, plans, Specific Project Specifications etc. issued by Company for any specific operation or omit instructions for any specific detail, any such conflicts shall be decided by the Authorized Representative of the Company.

C. Local, State and Federal regulations, ordinances, statutes or codes shall govern where compliance is mandatory. Requirements of these Specifications shall apply when they are more exacting or do not conflict with such regulations, ordinances, statutes or codes.

D. Adherence to the Specifications is not intended to relieve Contractor of the responsibility to perform the work as an independent contractor in accordance with all applicable governmental and regulatory requirements. All references to codes, standards or other specifications shall be construed to be the most current edition in effect at the time the Contract is executed, and shall be considered as being part of these Specifications.

E. The Company Representative shall have the right to inspect all Work to insure that the results contracted for will be attained. They shall not have the right to direct or supervise the details of said work. The Contractor, being an Independent Contractor, shall have full power and authority to select the means, methods and manner of performing the work. The work shall be done to the satisfaction of the Company Representative and in accordance with the Contract, Drawings and Specifications.

F. The Company Representative will decide all questions which may arise as to the quality or acceptability of materials furnished and the Work performed, the manner or performance and the rate of progress of the Work and the interpretations of the Drawings and Specifications.

SECTION II - Surveys

A. Unless otherwise specified, No survey and or staking will be required by the Kentucky Transportation Cabinet. Should the Contractor request staking of the route, it will be at the expense of the Contractor.

B. The centerline shall be indicated by the drawings whose baseline is the north edge of existing pavement located adjacent to and running the entire length of the project. The Contractor shall be responsible for maintaining the centerline stakes if necessary. Contractor shall lay the pipeline along the route as shown on the construction drawings.

C. Contractor shall be responsible for determining the location of and setting offset stakes if needed. Offset stakes shall consist of but not be limited to: clearing, construction and right-of-way boundary limit stakes; extra workspace and staging areas; environmental concerns; and foreign pipelines and underground utilities.

D. Contractor shall be responsible for the preservation of all property corner monuments, stakes, benchmarks, and markers. Costs of replacing property corner monuments, stakes, benchmarks and markers destroyed or disturbed by Contractor shall be borne by Contractor.

E. The Contractor shall verify all grades, lines, levels and dimensions as shown on the drawings, and shall report any errors or inconsistencies to the Company.

F. No as-built survey will be required by the Transportation Cabinet.

SECTION III - Clearing and Preparing Right-of-Way

The relocation of gas facilities normally follows the road corridor and is generally clear of major obstacles. Some clearing may be required. Specifications listed below are to be followed as a general rule where applicable.

A. In clearing the right-of-way and in performance of the construction work hereunder, the Contractor shall give due consideration to the interests and property of landowners and tenants wherever involved and shall carry out and perform his work in a manner which shall cause a minimum of inconvenience, injury or damage.

B. The right-of-way shall be cleared to the width specified in the Right-of-Way Agreements or Drawings whichever is less. It shall be cleared of trees, brush, and other obstructions to permit the efficient use of machinery and equipment for construction of the pipeline. Large or valuable trees may be saved provided that they will not interfere with the construction operation or maintenance of the pipeline.

All of the Contractor's operations shall be confined within such applicable widths on each respective tract as designated in the ROW agreements and specified on the drawings and shall be controlling and binding upon the Contractor.

The method of clearing rights-of-way should take into account matters of soil stability, protection of natural vegetation, and the protection of adjacent resources. The Contractor shall be familiar and comply with the Company's environmental construction requirements.

C. The Contractor may use existing roads requiring no improvement providing only that the Contractor is responsible for obtaining, where required, use permits and complying with loading restrictions. The Contractor shall be responsible for maintaining and repairing existing roads such that the condition of the road after construction equals the condition of the road prior to construction.

D. The Contractor may improve (widen, etc.) existing access roads or construct temporary access roads only where they are specifically denoted on the Construction Drawings as "access roads". If the Contractor wishes to improve or construct access roads not specifically identified as such on the Drawings, the Company will, on a best effort basis, seek to obtain the necessary environmental, archeological and regulatory approval.

E. The Contractor shall ensure that paved roads are maintained free of mud and debris whenever access is directly from the right-of-way to the paved road.

F. All brush, and tree tops shall be chipped and spread on right-of-way. Any timber removed will be stacked neatly alongside the right-of-way. The Company shall determine the minimum diameter of merchantable timber. Contractor shall cut merchantable timber into log lengths as directed by the Company. Tree stumps in the designated ROW shall be ground flush.

G. Where it is necessary to remove permanent fences at the pipeline crossings, adequate

temporary fences or gates shall be installed immediately. Such temporary fences or gates shall be provided with suitable fasteners and shall be kept closed at all times except when necessary to be opened for construction purposes.

H. Such temporary bridges, roadways, etc., may be constructed as are required to provide for the passage of all equipment necessary for construction operations. Under no circumstances shall pipe designated for gas service be used for temporary bridges, flumes, or similar purposes.

I. Extreme care shall be exercised in conducting the right-of-way clearing operations so as to avoid damage or injury to adjacent property. Trees and shrubs which are not cleared shall not be unnecessarily damaged during construction. Trees to be saved shall be marked (flagging, safety fencing, etc.) before clearing begins.

All necessary burning permits shall be obtained by Contractor from the appropriate governmental agency, before any brush, timber, etc. is burned on the right-of-way. Fires shall be of reasonable size and so located and patrolled that they cannot spread to adjacent property. It may be required to pile and burn brush at times suitable to governmental agencies or landowners.

Construction shall be conducted in a manner which will minimize damage to shorelines, recreational areas, and fish and wildlife habitats. Efforts shall be made to avoid grading rights-of-way to the mineral soil. Where this does occur, the surface shall be restored and stabilized without undue delay.

J. The Contractor shall grade as necessary to mitigate the necessity of abrupt over-bends or sag-bends. Contractor shall minimize the grading where practical to prevent unnecessary disturbance and minimize work required to return the right-of-way to its original elevations, slopes, and profile as closely as practical. Graded subsoil material shall be stockpiled so it can be returned to its original depth and location as opposed to spread along the right-of way.

The extent of grading shall meet with approval of the Company in all cases.

K. The Contractor shall grub or otherwise remove all stumps from the working area including the ditch line and the space required for spoil pile storage. Disposal of stumps shall be by burning, chipping, burying or removal from the right-of-way.

L. Through cultivated and improved areas, at locations shown on the Drawings, the Contractor shall strip topsoil to it’s actual depth or to a maximum depth of one (1) foot and stockpile it separately from the subsoil ensuring that no mixing of subsoil and topsoil occurs. Topsoil shall not be piled in a manner that increases its water content.

M. During dry weather, when directed by the Company Representative, Contractor shall sufficiently water the right-of way to minimize dust as necessary for air quality, welding quality and coating application purposes.

SECTION IV - Trenching

A. The trench for the pipe shall be excavated to a width not less than six (6) inches in excess of the outside diameter of the pipe being laid for pipe diameters less than (12) inches and a minimum of twelve (12) inches wider for pipe diameters (12) inches and greater. Pipe shall be laid of such depth that the pipe shall have a minimum of thirty-six (30) inches of cover over the top of the pipe in normal excavation, twenty-four (24) inches in consolidated rock or forty-eight (48) inches in cultivated farmlands unless otherwise specified in the construction drawings or Specific Project Specifications.

B. It shall be the responsibility of the Contractor to determine the location and elevation of existing subsurface utilities or underground improvements in advance of trenching. The Contractor shall give proper notification to the authorities having jurisdiction over such facilities prior to commencement of the Contractor's trenching or boring at these locations. The Contractor's excavation at these crossings shall be governed by the requirements of that authority. All subsurface or above ground damage to such facilities must be repaired immediately at the Contractor's expense.

C. The trench shall be excavated by hand when, in the opinion of Owner's Authorized Representative, machine excavation could cause damage to pipelines or other underground installations.

D. There shall be a minimum clearance of 12 inches between the pipeline being laid and any other pipeline or existing underground structure. Where these clearances cannot be attained, other suitable precaution to protect the piping shall be taken, such as the installation of protective material, installation of casing, etc.

E. When advised that a property owner contemplates the installation of a new tile line, the extension of his present tiling system or the tiling of land not presently tiled, excavation of the trench shall be of a depth sufficient to meet the above clearance requirements.

F. Where lawns, cultivated shrubs, trees, orchards, or valuable growing timber are encountered on the right-of-way, special construction procedures may be required to eliminate or minimize damage or injury thereto.

G. Where the trench is excavated through land where livestock is confined, throughout fields under cultivation, across lanes or driveways, or where the trench is open cut through roads, the Contractor shall plug the trench or construct temporary facilities to permit the safe crossing of livestock, vehicles, equipment and persons from one side of the trench to the other.

H. All buried pipelines installed where deep plowing or grading operations are anticipated or where the area is subject to erosion, shall be provided with additional cover to prevent damage to the pipeline.

I. Due care shall be taken in excavating the trench, not to damage existing pipelines or other underground installations. It may be necessary to excavate the trench by hand when

crossing such underground installations.

J. The bottom of the trench shall be on undisturbed earth and shall provide a uniform support for each joint of pipe and shall be cut to a uniform grade so that the full width of the trench shall be available for providing slack in the line when laid. Padding of the trench with 4" soft earth is required unless otherwise directed by Owner's Authorized Representative. The depth of the trench through rock shall be sufficient to allow for a minimum of either 4 inches of earth padding or the installation of sandbags, and for rock shield and still maintain the specified cover.

K. All roots encountered in the trench shall be cut back far enough so that in no instance shall they come in contact with the pipe. No chips or parts of stumps, roots, rocks or other debris shall be left in the trench.

L. When the nature of the terrain is such as to require a drainage ditch to drain a section of the trench where water may lie, the Owner's authorized representative shall designate the location and the Contractor shall excavate such drainage ditch.

M. The Contractor shall install, maintain and reconstruct any temporary facilities necessary when cutting through existing dikes, levees, fire walls or other control devices crossed by pipeline trench construction.

N. Spoil piles from trenching operations shall not be placed where drainage will be affected or prevent access by the landowners. The Contractor shall ensure that all drainage ditches and watercourses are kept open and functional. The spoil pile from the trenching operations shall not be allowed to fall on any loose debris or foreign matter that might become mixed with the soil excavated from the trench.

O. At road and stream crossings, the spoil pile shall be appropriately protected from erosion.

SECTION V – Blasting – NOT PERMITTED THIS PROJECT

A. Blasting for grade or trench excavation shall be used only after all other reasonable means of excavation have been used and are unsuccessful in achieving the required results. No blasting shall be done without prior approval of the Company.

B. Contractor shall be familiar with blasting and use of explosives and agrees that it is relying upon no statement, representation, or advice of the Company in regard to the propriety or manner of such use.

C. The Contractor shall obtain all permits for and comply with all legal requirements in connection with the use of explosives and shall enforce all safety rules in their use. Such permits shall include use, transportation and storage of explosives. The Contractor shall provide the Company with copies of all permits and licenses obtained for blasting work.

D. The Contractor shall employ a blaster licensed in the State in which the work is being carried out. Only workmen thoroughly experienced in handling explosives shall be permitted to supervise, handle, haul, load or shoot explosives. Copies of all current licenses will be provided to the Company for review and approval prior to commencing any blasting activities.

E. The Contractor shall furnish a detailed Blasting Plan to the Company and shall obtain the Company's approval in writing prior to loading any explosive charges.

F. All drilling and blasting shall be done in a cautious manner and suitable precautions shall be taken to avoid injury or damage to persons, livestock, or other property. In no event shall explosives be used where their use will endanger existing facilities. The use of ammonium nitrate is prohibited.

G. Notwithstanding the right of the Company to approve or not approve the Blasting Plan, all damages or claims resulting from the use of explosives on or off the right-of-way shall be the responsibility of the Contractor. Matting or spoil dirt covering shall be used when necessary to prevent damage to adjacent facilities or property. Contractor is not allowed off of construction right-of-way. Contractor's responsibility shall apply without regard to negligence, due care, or a lack thereof.

H. All explosives shall be accounted for at all times. Explosives not being used shall be stored in a locked magazine in accordance with requirements of the U.S. Bureau of Alcohol, Tobacco and Firearms, 27 CFR Part 181. Detonating caps shall not be stored with explosives, but shall be stored in a separate place in accordance with 27 CFR Part 181. An inventory and use record of all explosives shall be maintained. All of the above shall be done by the qualified person responsible for handling blasting operations.

I. Blasting should not be done within or near stream channels without prior consultation with Federal and State conservation authorities having jurisdiction to determine what protective measures should be taken to minimize damage to fish and other aquatic life.

J. The Contractor shall use every reasonable precaution including, but not limited to, visual and audible warning signals, flags or barricades to ensure personnel safety.

K. Warning signs, indicating a blast area, shall be maintained at all approaches to the blast area. The warning sign lettering shall not be less than 4 inches high on a contrasting background.

L. Flagmen shall be safely stationed on all roadways which pass through the danger zone so as to stop traffic during blasting operations.

M. No loaded holes shall be left unattended or unprotected. Explosives shall not be primed or fused until immediately before use. After each blasting sequence the Contractor shall inspect the site for cut-offs and misfires. All explosives or blasting agents shall be verified as discharged prior to excavation.

N. The Contractor's blaster shall maintain and provide the Company a daily Blasting Log and record the ambient and other pertinent conditions at each blast.

SECTION VI – Material

A. The Contractor shall unload all material promptly upon arrival of such material. Upon arrival, such material shall be checked for quantity and condition by representatives of both the Contractor and the Company. The authorized representatives making such check shall make a written record thereof which shall set forth the quantity and condition of the material. Upon completion, the record shall be signed by the parties making the same and such record shall thereafter be conclusive as between the Contractor and Company. If material is received in a damaged condition a detailed report shall be prepared and forwarded to the Company.

B. Company furnished material for the project will be issued by the Company to the Contractor's authorized representative who shall acknowledge, in writing, the receipt of the material and shall be responsible for all such material thereafter.

C. Material that is not furnished by the Company shall be approved by the Company's Representative. If the sources of supply do not furnish a uniform product or if the product proves unacceptable at any time, the Contractor shall furnish approved material from other sources.

D. No material shall be used in the Work that has in any way become unfit for use after acceptance.

E. When material is specified on the Drawings by name and "or equal to" is written thereafter, the material mentioned by name is the material desired. If the Contractor desires to use another material in lieu thereof, approval of the Company Representative shall be obtained before making the substitution.

F. Whenever the words "approved by" or "satisfactory to" or similar phrases are used in this Specification, they shall be understood to mean that the item or material referred to shall be approved by and be satisfactory to the Company Representative.

G. All pipe, valves, fittings and accessories shall be loaded and unloaded by lifting with slings, hoists or other means to avoid shock or damage.

H. Equipment which comes in contact with pipe surfaces, especially thin film coated pipe, shall be padded with rubber, Teflon, neoprene or equal, to eliminate any pipe contact with metal or other hard surfaces. Sling hooks used to unload or move pipe shall be lined with brass, neoprene or aluminum to avoid damage to beveled ends. Padding and hooks are to be approved by the Company Representative.

I. The Contractor shall dispose of banding material and dunnage from rail cars and trucks in a manner acceptable to the Company, and shall clean-up and restore unloading areas to the Company's satisfaction.

J. Material shall be located and stored in a manner to preserve the quality and fitness for the Work. The interior of all pipe fittings and other accessories shall be kept free from dirt and foreign matter at all times. Valves and accessories shall be drained and stored in a location and manner that will protect them from damage from freezing.

K. All material not conforming to the requirements of this Specification shall be rejected and shall be removed immediately from the site of the Work unless permitted to remain by the Company Representative. Rejected materials, the defects of which have been subsequently corrected, shall have the status of new material once approved by the Company Representative.

L. The Contractor shall haul all surplus material to a Company designated yard or storage facility and store in a manner as directed by the Company Representative.

SECTION VII - Transporting, Unloading, Hauling And Stringing

A. Pipe shall be shipped only in accordance with the requirements of Title 49, Code of Federal Regulations, Part 192.

B. In truck shipments, the coated pipe shall be supported on bolsters suitably padded to prevent coating damage. Tie-down chains or cables are not permitted. Only tie-down straps shall be used for fastening the load shall to prevent any possible coating damage.

C. Upon arrival of pipe and other materials at points of delivery, such material shall be promptly unloaded from the railroad cars or other delivery vehicles and hauled to a designated warehouse or pipeyard, or to the right-of-way. The unloading and handling of all materials shall be accomplished in a careful workmanlike manner by the use of adequate equipment and labor.

D. Care shall be exercised in all loading, unloading, hauling, and stringing operations, so as to avoid damage to the pipe ends and coating. Cranes, side booms, gin poles or other suitable equipment, if available, shall be used in loading or unloading pipe. Buffers or other suitable means of protection shall be used where suitable unloading equipment is not available. In no event shall pipe be thrown or dropped from railroad cars or trucks.

E. The Contractor shall handle all pipe with brass, aluminum or neoprene lined hooks to avoid damage to beveled ends. Coated pipe shall be handled so as to protect the coating. Coated pipe shall not be run down sideways from cars or permitted to ram other pipe sections but shall be lifted from cars only with padded handling devices, by cranes or other suitable equipment and placed on padded truck bolsters or stockpiles.

F. Coated pipe shall be handled only with equipment that will prevent damage to the coating. Bare cables, chains, hooks, metal bars, narrow skids and other non-padded devices shall not be permitted to come in contact with the coating. Vehicles hauling coated pipe shall have fenders or other protection to prevent mud and rocks from being thrown upon the pipe, thus damaging the coating.

G. The Company may inspect the pipe coating during removal of the pipe from the original carrier at destination.

H. Where stockpiling of pipe is required, the Contractor shall provide all necessary equipment and materials for the stockpiling operations at his expense. Pipe shall be racked on padded timber skids or earth berms to keep joint ends clear of the ground and out of water. Earth berms shall be covered with a minimum 10 mil polyethylene.

Each joint shall be individually placed in the stockpile. Rolling of pipe into a stockpile will not be permitted. Short lengths shall be stockpiled in top rows of the piles. A short length shall be considered to be any length of pipe more than 10 feet shorter than the maximum pipe length in the stockpile.

Supporting skids shall be sufficiently leveled prior to placing the pipe to ensure contact between the pipe and each skid. Padded chocks or side stakes shall be used at each skid line to prevent collapse of the stockpile.

Steel pipe shall not be racked more than 6 joints or a maximum of 10 feet in height.

The Contractor shall collect, remove and dispose of all banding, skids, chocks and pipe coating protectors at the completion of the project and regrade as may be necessary all unloading yards and pipe storage areas.

I. Pipe shall be strung upon the right-of-way with due consideration to topographic conditions in connection with lining up, welding and river, creek, highway and railroad crossings where multiple lengths and special handling may be required.

In general, the pipe shall be strung end to end on the right-of-way, but in some cases may be placed in stockpiles for welding or coating.

In the cases where pipe is being strung end-to-end, sufficient spaces shall be left to provide for cattle crossings where necessary.

All pipe strung on the right-of-way shall be placed on skids so as to keep both ends free of dirt and debris. Coated pipe shall require a padding strip to keep pipe from coming in contact with the skids. The Contractor shall furnish all skids and padding material.

J. The Contractor shall utilize pipe pups a minimum of 10 ft. in length. All surplus pipe and casing shall be hauled to a Company designated area and be stored as directed by the Company Representative.

K. Valves, casing and other large and durable materials may be hauled and stored on the right-of-way provided such practice shall not result in their loss or damage. Small materials or materials easily lost or damaged shall be stored at convenient points in designated warehouses.

L. Polyethylene pipe shall be protected from fire, excessive heat, long term exposure to sunlight, or harmful chemicals. The Contractor shall exercise care during handling to prevent gouges, punctures, scratches, cuts or kinks to the pipe. Such damage shall be cut out at the expense of the Contractor. The Contractor shall not drop the pipe while handling. Chains shall not be used during handling.

M. The height of stored polyethylene pipe shall not exceed eight feet, and no other material shall be placed on top of the pipe. Polyethylene pipe shall be placed on clean flat surfaces and never directly on the ground. Polyethylene pipe shall not be thrown or dropped off of trucks nor dragged. Polyethylene pipe stored overnight on the job site shall be protected from vandals.

SECTION VIII - Bending and Laying Steel Pipe

A. The Contractor shall make all necessary field pipe bends required in the construction of the line. The Contractor shall furnish the necessary technical personnel to determine the locations and size of all bends. The method employed in making pipe bends in the field shall be subject to the approval of Company's Authorized Representative.

B. Company's Authorized Representative may require that pipe bends be set in the trench in advance of the laying crew, to test the bend radii and the grading of the trench.

C. All field bends made with or without the use of bending machine shall be made without heating and the completed bend shall not impair the serviceability of the pipeline. Each bend must have a smooth contour and be free from buckling, flattening, cracks, wall thinning, or any other mechanical damage.

The difference between the maximum and minimum diameters (i.e., out-of-roundness) shall not exceed 2.5% of the nominal diameter in all sizes. All bends shall meet criteria set forth in DOT Part 192.

All over-bends and sag bends shall conform to and match the grading of the bottom profile of the completed trench. Side bends shall be made to fit the centerline of the trench.

The Contractor shall determine the optimum bend procedure for the pipe provided. The Company shall not be responsible for any variation in bending characteristics that may be encountered.

D. For pipe with a longitudinal weld, the weld shall be located as near as practicable to the neutral axis of the bend. For side bends, the neutral axis shall be at the top of the pipe.

The minimum tangent distance between the start/end of the bend as measured along the longitudinal axis to the pipe end shall be at least 1-1/2 pipe diameters.

Where bending of pipe with a circumferential weld is required, no increment of the bend shall be made within 2-1/2 feet of the weld. If, in the opinion of the Company’s Authorized Representative, excessive distortion is evident in the weld area, a radiograph of the weld shall be required at the Contractor's expense.

The bending procedure shall be designed to prevent distortion of the pipe ends.

E. Bending procedures and equipment shall not cause damage to external and/or internal coatings. If, in the opinion of the Company’s Authorized Representative, coating protection is required, padded bending dies for bending machines shall be furnished at no additional cost.

F. For 12-inch nominal pipe and larger, the permanent deflection as measured along the longitudinal axis of the pipe shall not exceed 1-1/2 degrees in a length equal to the pipe

diameter. Where it can be demonstrated that more severe deflections are acceptable, bends in excess of this limit may be approved by the Company's Authorized Representative.

G. Miter bends shall not be permitted.

H. The Contractor shall, at no additional expense to the Company, furnish and use an internal bending mandrel to achieve smooth and undistorted bends. When bending machines with internally expanded mandrels are used, care shall be exercised to assure that the pipe diameter is not increased.

A Company approved field bending machine shall be used for all bends on 12-inch nominal and larger pipe.

An internal mandrel shall be used for all pipe bends on 16-inch nominal and larger pipe.

For 10-inch nominal and smaller pipe, field bending may be done by machine, bending block or other Company approved method.

I. Each bend shall be inspected by Contractor and Company's Authorized Representative to assure compliance with the above requirements.

The acceptability of bends will be determined by the Company's Authorized Representative.

If a bend is determined to be unacceptable, the pipe shall be replaced by the Contractor at no expense to the Company. Contractor shall also be responsible for the repair of coatings damaged by the bending process.

Deviations from these requirements may be approved by the Company's Authorized Representative in consultation with appropriate Company engineering personnel.

J. Each length of pipe and each other component must be visually inspected at the site of installation after bending to ensure that it has not sustained any visually determinable damage that could impair its serviceability. Any imperfection or damage that impairs the serviceability of a length of steel pipe must be repaired or removed. Repairs shall be consistent with the following:

1) Each imperfection or damage that impairs the serviceability of a length of steel pipe must be repaired or removed. If a repair is made by grinding, the remaining wall thickness must at least be equal to either:

a) The minimum thickness required by tolerances in the specification to which the pipe was manufactured; or

b) The nominal wall thickness required for the design pressure of the pipeline.

2) Each of the following dents must be removed from steel pipe to be operated at a pressure that produces a hoop stress of 20 percent, or more, of SMYS:

a) A dent that contains a stress concentrator such as a scratch, gouge, groove or arc burn;

b) A dent that affects the longitudinal weld or a circumferential weld; and

c) In pipe to be operated at a pressure that produces a hoop stress of 40 percent or more of SMYS, a dent that has a depth of --

i) More than one-quarter inch in pipe 12-3/4 inches or less in outer diameter; or

ii) More that two percent of the nominal pipe diameter in pipe over 12-3/4 inches in outer diameter.

For the purpose of this section a "dent" is a depression that produces a gross disturbance in the curvature of the pipe wall without reducing the pipe wall thickness. The depth of a dent is measured as the gap between the lowest point of the dent and prolongation of the original contour of the pipe.

3) A gouge, groove or dent may not be repaired by insert patching or by pounding out.

4) Each gouge, groove or dent that is removed from a length of pipe must be removed by cutting out the damaged portion as a cylinder.

K. The interior of all pipe joints shall be carefully examined for the presence of foreign matter before they are lined up for welding. All such matter shall be removed by swabbing or other means.

L. On pipe containing a longitudinal weld, the seam on adjacent pipe lengths shall normally be in the top quarter. The seams should not be in line. Seams should be directed away from adjacent facilities such as buildings, electric power lines, etc. Unless otherwise specified, the longitudinal seams on adjacent pipe shall be staggered, placing one approximately in the 10 o’clock position and the other approximately in the 2 o’clock position.

M. The open end or ends of the line shall be securely closed at the end of each day's work to prevent the entrance of small animals or the introduction of foreign matter of any kind and shall not be reopened until work is resumed at that point.

SECTION IX - Bending and Laying Polyethylene Pipe

A. Polyethylene pipe may be cold bent to a radius not less than twenty times the outside diameter of the pipe except that any bend of forty-five degrees or more shall be made with suitable fittings. Polyethylene pipe shall be snaked when placed in the ditch. Polyethylene pipe should never be dragged over rough surfaces which could scratch or gouge the pipe.

B. When polyethylene pipe spans disturbed earth (cut-outs, etc.) it shall be protected from crushing or shearing from external loading or settling of backfill. A bridging piece may be required if satisfactory compaction of backfill cannot be attained.

C. All polyethylene pipe installed shall be accompanied by a #12 single conductor stranded copper wire installed in the ditch after placement of the pipe. A 6" lift of dirt should cover the pipeline prior to the installation of the tracer wire. All wire splices shall be made with split bolt connectors - Scotchlok 562 connector or connectors as approved by the Engineer. The splice shall be wrapped with one layer of rubber electrical tape with a fifty percent overlap. In rural areas, where there are no services to provide access to the tracer wire, the wire should be brought up into a valve box for access.

D. At a transition from steel to polyethylene the wire shall be attached to the steel piping transition piping. When an existing polyethylene main is extended, the locator wire for the extension shall be spliced to the existing locator wire with an appropriate split bolt connector or Scotchlok 562 connector. The splice must be wrapped with approved tape as set out above.

E. The installation of the tracer wire shall be included in the base line laying price for installing the main or service line.

SECTION X - Welding

The City of Morganfield will accept “CURRENT” welder qualification cards from other reputable pipeline companies. CONTRACTOR will provide for review, written procedures of which the welder is qualified under. Copies of welder qualifications card shall be copied and provided along with the procedures prior to acceptance. ENGINEER shall review and provide guidance to City of Morganfield.

A. Welding shall be in accordance with the following codes:

1) API Standard 1104, Latest Edition, Standard for Welding Pipelines and Related Facilities.

2) Code of Federal Regulations, Title 49, Part 192, Latest Edition, Transportation of Natural and other Gas by pipeline: Minimum Federal Safety Standards.

3) ANSI/ASME B31.8, Gas Transmission and Distribution Piping Systems.

4) Any other applicable local, or State codes.

B. Welding on ASME Section VIII Code stamped vessels will not be permitted.

C. The Contractor shall furnish all materials necessary to weld the pipeline and appurtenances into a complete unit. On thin film (FBE) coated pipe, the Contractor shall provide a blanket or guard to prevent weld splatter from damaging the coating.

The Contractor shall furnish all welding supplies and equipment to perform the necessary work (i.e. welding rod, oxygen, acetylene, coupon testing machine, fire extinguishers, etc.)

D. Prior to commencement of welder qualification tests or production welding, Contractor shall submit to Company the welding procedure intended for use in construction of the pipeline and related facilities. The procedures shall be qualified in advance of start of construction with sufficient time for laboratory testing of weld. Contractor will supply the pipe and will pay for laboratory testing of procedure welds.

The Company reserves the right to accept or reject, at any time, in whole or in part, any or all welding procedures which, in the Company's opinion, will not produce or which are not producing acceptable welds. In the event such circumstances occur, regardless of the status of the Work, Contractor shall not continue with welding until the unacceptable procedures are remedied to Company's satisfaction at Contractor's expense. Acceptance or approval by the Company of the welding specifications or procedures used by Contractor shall not in any manner or to any degree alter Contractor's responsibility for producing sound and acceptable welds.

Procedures shall cover the diameters, wall thicknesses and grades of pipe and fittings to be used. Specified wall thickness and diameter groups listed for Welder Qualifications of

API Standard 1104 shall be considered essential variables for the welding procedure.

E. Welders shall be qualified in accordance with API Standard 1104. All welder qualification tests shall be witnessed by Company's designated representative. Each welder shall be qualified for the type and method of welding which he will perform. No welder shall do any phase of welding for which he has not been qualified. A welder who has made a successful procedure qualification test is automatically qualified in that procedure.

After the Company has determined that the welder has passed all weld test requirements, Contractor shall issue an identification number to that welder and each weld made by that welder shall be so identified. Any weld worked by more than one welder shall be identified by the number of each welder participating in the weld. Company will record the number and name of each welder. If a welder leaves the job, his number shall not be reassigned.

Pipe for welder qualification tests will be furnished by the Contractor. Contractor shall be responsible for cutting pipe nipples for such tests. Weld test specimens may be submitted to an independent testing laboratory for analysis and paid for by the Contractor or tested on-site by the Contractor. Contractor shall prepare the pipe nipples for testing and furnish all tools, destructive weld testing equipment, labor, services and welding materials necessary to conduct the tests.

F. The Company may have one production weld from each welder cut from the line to test each welder's work. The cost of such welds shall be borne by Contractor. Company may have additional welds cut for further tests. If additional welds pass destructive testing under API Standard 1104, Company will pay Contractor, for each acceptable weld. Contractor shall bear the costs for unacceptable welds that do not pass destructive testing under API Standard 1104.

G. Welding shall only be accomplished using qualified welders and approved processes and procedures.

H. The internal and external surfaces of each pipe shall be machine buffed a minimum length of three-quarters (3/4) inch from the welding edge to remove all rust, scale, dirt or other foreign materials before placing in alignment for welding. Grinding shall not be used for this purpose.

I. All bevels shall be buffed or wire brush cleaned to a bright finish just prior to welding. High points in the bead and scale, oxide, slag or other impurities shall be thoroughly removed from each bead and groove before the succeeding pass is made.

J. Adjoining lengths of pipe shall be accurately aligned and spaced by the use of an alignment clamp approved by the Company. Under no circumstances will mitered pipe welds be allowed. When an internal lineup clamp is used, it shall not be released until the root bead is at least 80 percent completed. When utilizing an internal lineup clamp, a minimum clamp pressure of 45 psi shall be maintained. When an external lineup clamp

is used, the root bead shall be made in equal segments, equally spaced around the circumference with a cumulative length of not less than 50 percent of the pipe circumference before the clamp is released.

The alignment of abutting ends of longitudinal seam pipe, except in bend section, shall be so as to stagger the longitudinal seams a minimum of forty degrees with each seam being in opposite forty-five degree segments from the top of the pipe.

K. The maximum high-low offset between surfaces of adjoining pipes of equal nominal wall thickness shall be one-sixteenth inch. Where the difference in the nominal wall thicknesses of adjoining pipe to fitting exceeds 3/32-inch, Contractor shall taper bore the inside of the thicker wall to a maximum angle of 30 degrees and not greater than 1/16-inch high-low offset. Contractor shall furnish the internal tapering machine, subject to Company's approval, and perform all work necessary to internally taper the ends.

L. Contractor shall ensure that arcing does not occur between the ground leads of the welding machines and the pipe or fittings. Striking the arc on the pipe or fittings at any point other than the welding groove shall not be permitted. All arc burns on the pipe shall be removed from the pipeline by removing a cylinder of pipe at no additional expense to the Company.

M. In the case of cold, rainy, or stormy weather, Contractor shall provide protection for the welders at their work and shall protect the welds from sudden variations in temperature until welds are thoroughly cool. Welding shall not be carried on when, in the judgment of the Company, the weather is unsuitable for welding operations.

N. Preheating shall be accomplished by a method acceptable to the Company and shall cover a band at least 4 inches wide on each side of the weld. Minimum preheat temperature shall be at least that for which the welding procedure was qualified and shall be maintained during welding and shall be checked by use of temperature indicating crayons or other appropriate temperature indicating devices. The following conditions shall require preheat:

1) When the ambient or pipe temperature is 40° F or below or pipe is wet or damp.

2) On all repair welds except for recapping or back welding. Repair welds shall be preheated in the area of repair extending a minimum of 3 inches beyond the ends of the repair cavity.

3) When, for any reason, it is necessary for specific welding procedure and material combinations to alleviate existing conditions that would limit the welding technique or adversely affect the quality of the weld.

O. Movement of the pipe during welding of the root bead shall be prohibited and no two successive weld beads shall be started at the same location.

The second bead (hot pass) shall be made immediately after the root bead pass has been

completed and thoroughly cleaned.

Before the day's work is complete, hot passes shall be added to all root beads. Welded joints, which have been connected by the root bead only from the end of one day's work to the beginning of the next, will not be accepted.

P. When welding valves into the line, gate, globe, and check valves shall be in the closed position and ball valves shall be in the open position. Temperature limits for welding adjacent to valves or other temperature sensitive components shall not exceed the temperature limits of those components.

Q. Welded sections of pipe shall not be rolled, hoisted off skids or dollies until the welds are thoroughly cool.

R. All welds shall be marked on the top quarter of pipe by each welder according to numbers assigned to the welders by Contractor. Contractor shall furnish Company with a record of all numbers assigned. Steel die stamping for identification of welding or any other purpose will not be allowed. The Company shall approve the method of marking.

S. The open ends of the line shall be securely closed and the ends of all pipe raised and placed on skids above ditch at the end of each day's work and shall not be reopened until the work recommences. A suitable cover of about the same diameter as the pipe shall be placed over the open ends of tie-in sections, or both ends of long sections. Any obstructions which may occur in the line shall be removed by Contractor at its expense and to the satisfaction and approval of the company. The pipeline must be delivered to the Company entirely free of water, dirt, obstructions and any other foreign substances.

T. Contractor shall daily collect, re-bevel, clean, haul ahead, and place in the pipeline all usable pup joints ten (10) feet or more in length. Pipe pups less than ten (10) feet may be used if approved by the Company. No pup joint shall be installed in the pipeline that is less than three (3) feet in length.

U. The Company will have the welds inspected by visual and radiographic inspection by an independent testing firm and Contractor's operations shall be so conducted as to allow for this type of inspection. The Company will employ the inspecting firm and bear all costs in connection with this type of inspection. Company will make every effort to avoid any delays to Contractor's operation; however, the Company will not compensate Contractor for any time lost due to the performance of this type of inspection.

The Contractor shall cooperate fully with the independent testing firm's personnel to ensure timely and adequate inspection of the welds. The Contractor shall furnish tow equipment and tow the inspection firm's equipment, if required, at no cost to the Company or inspection firm. All welds shall be subjected to nondestructive testing.

V. The Company reserves the right to require Contractor to cut any production weld from the pipe and that weld shall then be tested. If the weld is found to be acceptable, Company will reimburse Contractor for the cost of cutting out and replacing the weld,

except that Company shall be permitted to cut one test weld made by each welder from the pipe at no cost to the Company. If the test weld fails in any of the standard tests, the welder may not be permitted to continue welding in the Work. If two or more welders participated in making the weld which failed, Contractor and Company shall determine which welder or welders are responsible for the defective work. All welds which fail shall be replaced at no expense to the Company.

W. Test welds shall be tested in any of the following manners:

1) By performing nondestructive testing inspection in accordance with Section 6, "Standards of Acceptability Nondestructive Testing" API Standard 1104. If radiographic inspection indicates that a weld does not meet the requirement and there is any controversy, that portion or section of weld may be cut and tested destructively.

2) By cutting out and preparing test specimens and performing tests in accordance with the procedures as specified in Section 3, "Welder Qualifications", API Standard 1104.

X. Unless specifically waived by the Company on an individual weld basis, the initial repair or replacement of unacceptable welds shall be completed within three working days after such respective production welds are made. Welds which are not acceptable shall be removed or repaired at Contractor's expenses.

Y. Weld repair procedures shall be qualified in the same manner and at the same time the production welding procedure is qualified.

Z. If nondestructive testing indicates a weld to be defective, Contractor, at no additional cost to the Company, shall cut from the pipeline a cylinder of pipe containing such weld and have it replaced with good pipe or, at Contractor's option, shall have such weld repaired, provided the following limits are applicable:

1) Air-arc gouging and flame gouging shall not be used to remove defects except for certain defects in fabrication welds which shall be performed under the direction of Company or Vendor's Representative.

2) An area covering four (4) inches on each side of the repair shall be preheated to a minimum of 200° F, and maintained during welding.

3) All repair cavities shall be a minimum of two (2) inches in length.

4) The number of repairs in any given area of the weld will be at the discretion of the Company.

5) Repair of cracks or arc burns shall not be permitted.

6) A torch cut window at least 1" x 1" shall be made in the top of the pipe in the

weld area of any weld that is to be cut from the pipeline as a cylinder.

7) All repaired areas shall be radiographed and inspected by the same means previously used. The Company may re-inspect all of a weld containing a repair in the same manner as it is allowed to inspect any production weld.

SECTION XI - Fusing Polyethylene Pipe

A. All pipe joints shall be made by the butt-weld, heat fusion process. Butt-weld or socket-weld may be used to fuse the tapping tee to the service line and the riser to the service line. Threading or chemical solvent joining is not permitted for plastic pipe. All plastic pipe and fittings for the entire project shall be made by the same manufacturer and of the materials and specification.

B. Tapping tees and branch saddles shall be fused to mains by means of an approved sidewall fusion tool.

B. The plastic pipe specified for this work shall be joined in accordance with the manufacturer's instructions. Those instructions shall be followed precisely. Special attention shall be given to the manufacturer's recommended equipment type, heating time and cooling time. The Contractor shall provide Owner with three copies of the manufacturers' pipe joining procedures. A copy of those procedures shall be available at each place on the job site where the fusion process is being performed.

C. No plastic joining shall be attempted in rain or snow unless the work is properly protected or when the ambient temperature, including wind chill factor, is less than thirty-two (32) degrees Fahrenheit. The above will apply unless directed otherwise by the Owner's Authorized Representatives.

E. All heat fusion joints must be made by a device that holds the heater element square to the ends of the piping, compresses the ends together and holds the pipe in proper alignment while the polyethylene cools.

F. Heating irons used in joining polyethylene pipe shall be electric only - no irons heated with propane will be accepted. The irons shall be powered by portable generators providing AC voltage. The irons must be continuously connected to the power source when fusion weld is being made to ensure consistent temperature control. Irons must be tested daily for proper temperature control adjustment using a temperature pyrometer. Heat may not be applied to the pipe with a torch or other open flame.

G. If possible, all joints should be made above the ground. When it is deemed necessary to make a joint in a trench, the bell-hole shall be dug wide and long enough to assure ample slack in the pipe to make a proper joint.

H. Equipment for joining plastic pipe by heat fusion shall be maintained in good and clean condition and shall be capable of producing a sound joint when used in accordance with the manufacturer's instructions. Contractor shall keep a supply of clean cloths on the job

for cleaning pipe before joining and cleaning the heating element. The cloths shall be "Scotch-Brite", as manufactured by 3M or equivalent.

I. No person shall make a joint in a plastic pipe unless that person has been qualified under the applicable joining procedure and in accordance with Part 192, Title 49 of the Code of Federal Regulations and the manufacturers procedures. Contractor shall qualify his personnel in a manner acceptable to Owner and regulatory authorities which have jurisdiction over the project.

J. Owner’s Authorized Representatives will examine all welds of any nature; and no trench shall be backfilled until the welds have been examined.

K. When purging, repairing, replacing or extending plastic pipe, the conditions conductive to the generation and accumulation of static electric charges should be recognized. There are always static charges on the surface of isolated or non-conductor materials.

L. When conditions exist, that a flammable gas-air mixture may be encountered and static charges may be present, such as when repairing a leak, squeezing off an open pipe, purging, making a connection, etc., arc preventing safety precautions are necessary.

SECTION XII – Coating, Wrapping and Painting

A. General

1) This specification shall apply to the materials, surface preparation, field application and inspection of the coating system for corrosion protection. This specification also covers the coating of field joints (weld areas), fabricated assemblies and the repair of the yard applied coating. The intent of this specification is to achieve full adhesion of coating and painting materials to clean, dry surfaces.

2) Unless otherwise noted in the Project Specifications or Drawings, line pipe will be supplied with a yard applied coating. Fusion bond epoxy and polyurethane have been approved by the Company. The Contractor will be advised in the Project Specifications regarding the product (s) to be used for each project.

3) All painting and coating materials and application equipment, except as indicated on the Drawings or Project Specifications, shall be furnished by the Contractor, applied by qualified labor and done in a neat, workmanlike professional manner.

4) Careful attention is required to the preparation of surfaces to prevent contamination and marring of coating during and after drying to achieve a uniform skilled application.

5) The Contractor shall provide and operate a dry film coating thickness gauge, wet film coating thickness gauge and other inspection tools that may be necessary.

6) Below Grade coating shall extend a minimum of 6-inches above grade or soil line. Above Grade paint shall extend a minimum of 3-inches below grade. Above grade paint shall be applied over the below grade protective coating system.

7) The Company Representative shall have the authority to stop and disapprove the application of coating materials when current or impending weather conditions may be detrimental to the application process.

8) The Contractor shall have MSDS sheets at the job site and available at all times for each coating and painting system being used.

B. Field Joints (Weld Area)

1) The field joint surface to be coated shall be free from moisture, dust, dirt, oil, grease, weld spatter, slag, or other contaminants that might interfere with the coating or adhesion of the coating to the pipe or adjacent coating.

2) Weld slag shall be removed by chipping or wire brushing.

3) Oil or grease shall be removed by wiping with clean rags saturated with a

suitable, oil-free safety solvent. Dirt shall be removed by brushing, wiping, or by washing with clean, salt-free water.

4) If the Company specifies that a heat shrinkable sleeve be used for the field joint coating, it shall be a one piece, heat shrinkable, wrap around sleeve. Sleeve shall be composed 30 mils of polyolefin backing coated with 55 mils of mastic, Raychem, Canusa, or equal. The sleeve width shall cover the entire exposed joint length, plus an overlap of a minimum of 3 inches of the pipe coating on either side. Prior to sleeve installation the weld joint area should be pre-heated until hot to the hand, approximately 140° F. Heat shrink sleeves shall be applied with hot air, not open flame. Two people working on opposite sides of the pipe should be used for installing sleeves on pipe 16" O.D. and larger.

5) The Contractor may, with the Company's approval, coat the weld areas of the pipeline using a heat curable, thermosetting powdered epoxy coating with induction pre-heat, and fluidized flocked application per approved specification. This coating may be applied by use of a high frequency induction coil and powder application machine.

6) Every effort shall be made by the Contractor to coat tie-in welds using either a shrink sleeve or induced pre-heat and fluidized flocked application. Coal tar epoxy or a two-part thermosetting epoxy may be substituted with the approval of the Company Representative.

7) All refuge or waste materials from coating operations will be removed from the right-of-way immediately following coating operations and will not be left for cleanup.

C. Holiday Detection

1) The Contractor shall furnish high voltage electric holiday detectors of a type approved by the Company and the necessary labor and equipment to operate and move such detector along the line prior to lowering-in. The detectors shall have visual as well as audible warnings. These detectors shall operate at a voltage designated by the Company and which is sufficient to provide a spark that will span a gap equal to or greater than the coating thickness.

2) Holiday detection equipment shall be properly calibrated and batteries fully charged prior to use. Contractor shall provide to the Company a calibration certificate on each holiday detector being used. Detector shall be set 100 volts per mil thickness of coating.

2) The Company has the unrestricted right to inspect the coating system at any time prior to backfilling, and any previous inspection by Company does not in any manner relieve Contractor from any liability of repairing all defective coatings which may develop prior to backfilling.

D. Repairs

1) Fusion bond epoxy coating pinhole type holidays may be patched using the patch melt stick method or with an ambient temperature two part thermosetting liquid epoxy compound compatible with the pipe epoxy system and approved by the Company Representative.

2) A pinhole is defined as a holiday in which no visual mechanical damage is evident. Pinholes shall be repaired by having the original coated surface thoroughly cleaned and lightly abraded with sandpaper and all dust removed prior to application of the patch stick.

3) The patch stick shall be applied by heating the cleaned pipe surface until the patch stick begins to melt when it is rubbed over the heated area.

   Sufficient material shall be applied to obtain a minimum thickness of 16 mils over the entire abraded area.

4) Large areas of damaged fusion bond epoxy coating are to be repaired using the two-part, 100% solids, liquid epoxy compound approved by the Company.

E. Painting

1) All piping, valves, and unpainted equipment shall be painted for either below grade or above grade service as noted on the drawings.

2) Above grade piping shall be primed with a two-part epoxy primer to a minimum dry film thickness of 3.0 mils. The topcoat will be two-part epoxy paint. Finished coat including primer, middle coat, and topcoat shall be a minimum 8.0 mils thickness. Topcoat color specifications will be supplied by Company.

3) All paint and coating materials shall be stored, mixed and applied in accordance with the Manufacturer's Specifications and data sheets.

4) Care should be taken to insure that nameplates, gauge faces and similar components are protected during abrasive blasting and painting.

5) Contractor shall submit proposed manufacturer's technical literature for the proposed painting materials for approval by the Company prior to purchase of any painting material.

SECTION XIII – Lowering-In of Pipe

A. Prior to lowering-in the Contractor shall provide, to the satisfaction of the Company, a trench that is free from excess debris, large rocks, roots, welding rods, skids or other such objects which can cause damage to the pipe and its coating during lowering-in operations. The Contractor shall pump water from the trench, bell holes or other tie-in locations prior to lowering-in.

B. The Contractor shall provide sufficient approved lifting equipment to perform the lowering-in operation in a safe and efficient manner. Only properly manufactured slings, belts and cradles suitable for handling coated pipe shall be used. Bare metal cables, chains, hooks, metal bars, and skids shall not be permitted to come in contact with the coating.

C. The pipe shall be lowered in such a manner as to prevent damage to the coating from abrasions, scuffing or cracking. As the coated pipe is lowered in it shall be prevented from swinging against or rubbing against the sides of the trench.

D. If the pipe is cradled-in, it shall be done in such a manner as to secure proper slack and not damage the pipe coating. The use of belting reinforced with wire cable shall not be permitted. Any method of lowering-in which prevents damage to the coating shall be acceptable; however, the use of cradles is preferred.

E. In lowering the pipe into the trench, sag-bends and over-bends shall be lowered first wherever possible and weighted if necessary to serve as anchorage. Sag-bends shall bear firmly against the bottom of the trench, and over-bends shall have a minimum space of 6 to 12 inches between bottom of the pipe and bottom of the trench, it being the intent to lower the pipe in such a manner that a maximum amount of pipe shall be in the trench. Loose ends shall be left at any over-bend if required to permit the sag-bend to be lowered and anchored before making the cut and tie in weld.

F. Pipe shall be laid into the trench so that the longitudinal seams will remain in the top quadrant, except at sag-bends and over-bends where the seams shall be on the sides of the pipe (90° from the top).

G. Where rock is encountered, specified padding or sandbags shall be used to pack the bottom of the ditch to protect coated pipe from damage during lowering-in. The bottom of the ditch shall be padded with a minimum of 6 inches of earth, or sandbags placed every 15 feet or less.

H. Topsoil shall not be used for padding the trench. Acceptable rock free padding material may be obtained directly from the spoil, or by using a padding machine with material taken directly from the spoil. The Contractor may, at his own expense, haul in rock free padding material.

I. Where warranted by the condition of the backfill materials the Company may specify the use of an approved rockshield. If rock shield is used, it shall be applied to the pipe prior to the lowering-in operation if possible. Rockshield shall be Terra Shield or equal. The rockshield shall meet the following specifications.

1) Nominal 3/8” closed cell foam substrate
2) 25 mil polyethylene outer surface
3) 3/8” (max) perforations spaced a 2” (max) linearly and laterally

The Contractor shall affix the rockshield firmly around the pipe using non-metallic banding. The spacing of the banding shall not exceed 2 feet. The rockshield shall completely encircle the pipe with a minimum of 6” overlap unless otherwise approved by the Company.

J. All pipe shall be continuously inspected for coating damage as it is being lowered in the trench.

K. At all locations where the pipe's protective coating is damaged, the damaged area shall be recoated. Gouges, grooves, and notches in the pipe shall be repaired or replaced in accordance with these specifications.

SECTION XIV – Cathodic Protection

A. The Contractor shall install cathodic test leads and negative drain leads, in accordance with the Drawings. City of Morganfield will attach the leads by the Cadweld Thermite Process in locations shown on the Drawings and at such other locations as may be specified by the Company. Contractor shall coordinate the connections to the main with the City of Morganfield.

B. Each test lead wire must be must be connected to the pipeline so as to remain mechanically secure and electrically conductive after backfilling is completed.

C. Test leads shall be attached using a 15-gram thermite weld charge.

D. Only one thermite charge will be placed in the welding mold for any single weld.

E. When more than one test lead is to be attached, they shall be installed a minimum of 6 inches apart.

F. All bared test lead and bared metallic area at the point of connection to the pipeline must be coated with an electrical insulating material compatible with the pipe coating and the insulation on the wire. Any additional stripped copper wire shall be taped with an electrical vulcanizing tape and vinyl electrical tape.

G. The Contractor shall install test station post, and install wires in accordance with the Drawings. City of Morganfield will make terminations inside test station.

H. Sacrificial anodes shall be restricted to 17#, H-1 alloy, pre-packaged magnesium type. Connection of sacrificial anodes shall be made in locations as designated in the drawings or in the Project Specifications. Connection of sacrificial anode lead wires to the pipe shall only be made according to the Drawings. NOT REQUIRED

I. City of Morganfield will remove current from existing system before welding shall commence. Contractor shall coordinate such outages with City. Damage to existing anodes or impressed current systems during construction shall be repaired or replaced as directed by the Company. The Company shall be informed of any damage prior to the commencement of repairs.

SECTION XV – Backfilling

A. After lowering-in has been completed, but before backfilling, the trench shall be pumped dry in upland areas and the line inspected to ensure that all skids, brush, stumps, trees, boulders and debris have been removed from the trench.

B. After the pipe has been inspected and approved by the Company and after all coating damage has been repaired the Contractor shall backfill the trench sufficiently to prevent floating. The Contractor shall keep the completed backfill to within one mile of the lowered-in line unless otherwise approved by the Company.

C. Backfilling shall follow the laying and lowering-in of the pipe as closely as possible and shall be done so that no excavated material remains scattered on adjoining ground. Soil which has been excavated during construction and not used should be evenly filled back onto the cleared area or removed from the site. The soil should be graded to conform to the terrain of the adjacent land and vegetation planted and fertilized, where appropriate.

D. The trench shall be backfilled above ground level and backfill shall be heaped over the center of the trench to a height which will insure complete filling of the trench after settlement. Backfill through cultivated field or fields suitable for cultivation shall be rounded off so as not to interfere with farming operations.

E. Where the right-of-way has been graded or leveled off to facilitate the operation of trenching machines or other equipment, the backfill shall be completed so that the original contour of the ground will be restored unless otherwise directed.

F. Trench breakers, or ditchline breakers, are barriers constructed in the trench on sloping terrain to control runoff from channeling along the buried pipeline and eroding supporting soil. Specifications for installation of trench breakers are as follows:

1) Trench breakers will be used wherever the pipeline trench traverses slopes greater than 5% and in areas where seeps and springs are found.

2) Trench breakers will be installed prior to backfilling.

3) Trench breakers may consist of sandbags or earth-filled sacks (sack breakers) placed in the trench, or synthetic foam barriers sprayed in place. If sack breakers are used, topsoil will not be used to fill the sacks.

4) Breaker installations may be comprised of either a multiple sandbag configuration or by other approved methods. All breaker installations shall meet with the approval of the Company.

5) Breaker size is dependent on the extent and condition of the trench in depth, width, slope and grade. At a minimum, breakers shall extend the width and depth of the trench.

6) Trench breakers will be a minimum of 2 bags (3 ft.) wide at the bottom and have a minimum of 12 inches of cover.

7) Typical spacing for trench breakers is as follows:

Slope	Spacing (feet)
< 5%	None
5 – 15%	300 feet
15-30%	200 feet
> 30%	100 feet

Actual spacing is dependent on site-specific drainage conditions. Breakers shall only be placed as shown on the Drawings or as directed by the Company

G. The backfilling shall be done so that the protective coating of pipe, fittings or other appurtenances shall not be damaged.

H. Any backfilling omitted because of installation of breakers, farm taps, tie-in connections, cathodic protection test stations, drips, concrete foundations, concrete blocks, concrete gate boxes, etc., shall be completed after such installations have been made and approved.

I. Excavated rocks whose largest dimension is not larger than 4 inches may be returned to the trench. Rocks returned to the pipe trench shall be prevented from contacting the pipe by the use of rock shield or specified padding. Rocks in the trench shall have a dirt cover of not less than 12 inches through cultivated field or fields suitable for cultivation. When rock shield is not used, the coated pipe shall be protected by earth padding of not less than 6 inches around the entire pipe circumference.

J. Large rock or boulders in excess of 24 in. in diameter, width or length, shall not be backfilled in the trench under any circumstances. Such rock shall be disposed of properly.

K. Open-cut highway and railroad crossings shall be installed and backfilled in accordance with the highway and/or railroad crossing permits.

SECTION XVI - Clean Up and Restoration

A. Clean-up work shall follow completion of the backfill closely, so that it shall be finished as soon as possible after completion of the pipeline.

B. As construction work is completed, the right-of-way and surrounding ground shall be cleaned of all extra materials, rubbish and debris remaining from the work. Holes, ruts and depressions shall be filled and the right-of-way shall be left in a neat and presentable condition acceptable to the Company.

C. In cultivated and improved areas, the right-of-way shall be cleared of stones and rock greater than 4 inches in any dimension to a depth of 12 inches. A mechanical rake and/or rock-picker may be used but stone removal by hand may also be necessary.

D. Barrels, cans, drums, rubbish, refuse or other waste materials shall be disposed of only in accordance with applicable state and local laws and regulations. Oil and oily wastes shall be disposed of in accordance with applicable state and federal laws and regulations. Stumps, rocks and earth materials may be disposed of on adjacent property only with written permission from the affected property owner.

E. Where any remaining brush or timber is disposed of by burning, such disposal shall be conducted as specified in Section III entitled "Clearing and Preparing Right-Of-Way".

F. The Contractor shall construct terraces, cross ditches or berms across the right-of-way on sloping ground to divert surface run-off to adjacent vegetated areas or to existing drainage systems. Diversion terraces are normally constructed with a bulldozer or back hoe. Using the blade, the diversion terrace is cut cross-slope with a gradient of 3% to 5% and shall be feathered at the ends. After the initial cut, the downslope berm is compacted with a bulldozer track. Following compaction, a hand shovel is used to clear obstructions from the channel formed up slope of the berm to ensure unimpeded flow of runoff. It is very important that water does not collect behind and erode through the berms.

Specifications for installing and maintaining diversion terraces are described below. The actual spacing and configuration may vary based on field conditions, including degree of slope, soil characteristics, runoff area, cores slopes, existing drainage patterns, and location of suitable outlasts, as well as land use, access, and other special landowner requirements.

1) General guidelines for spacing of temporary and permanent diversion terraces (per Natural Gas Pipeline Environmental Compliance Workbook) are as follows:

Slope	Spacing (feet)
< 5%	None
5 – 15%	300 feet
15-30%	200 feet
> 30%	100 feet

2) Berms should be broad and gradual and have a break of sufficient width to permit traffic to move through them safely.

3) Berms shall be maintained and repaired as conditions require; and

4) Diversion terraces should divert water to a well vegetated area. If such an area is not available, a silt fence or straw bale filter will be required at the diversion terrace outlet.

G. The Contractor shall restore all damaged property, including but not limited to buildings, fences, hedges, survey monuments, roads, railways, bridges, culverts, drainage ditches, terraces, drainage tiles, creeks and rivers occupied or crossed during construction. Any property damaged in the execution of the work shall be restored to their original condition.

H. Any potholes, marshes or similar water area drained to facilitate construction should be reestablished to their pre-construction water levels and flow characteristics, if such reestablishment is consistent with landowner wishes.

I. All roads, hillsides, creek banks and other places where the Contractor has moved earth to facilitate the movement or operations of his equipment shall be restored by the Contractor to their original profile and condition. Upon abandonment, temporary roads used for construction should be stabilized without undue delay.

J. As general clean-up is completed, construction right-of-way areas shall be subsoiled and/or cultivated (primary cultivation) to the satisfaction of the Company in order to relieve compaction.

Where subsoiling is deemed necessary by the Company, it shall be done under appropriate soil moisture conditions, upon completion of backfilling and leveling. An agricultural subsoiler of a company approved design shall be used. The operating depth of the subsoiler shall be sufficient to break up compaction to its actual depth, as determined by the Company.

K. The Contractor shall complete the clean-up to a standard acceptable to the Company. The right-of-way shall be smoothed to present a finished and workmanlike appearance. Immediately thereafter, areas designated shall be fertilized, seeded and conditioned in accordance with Company environmental requirements.

L. Upon completion of all backfilling and clean-up activities, all fences and gates which have been cut or removed during the construction work shall be permanently repaired in a first class and substantial manner to the satisfaction of the Company and landowner or tenant.

All fence and gate repairs should match the original style of the fence so far as is possible. Where there is any doubt as to the suitability of old fence material, new material shall be used in making such repairs.

M. The Contractor shall assemble, transport and deliver all surplus materials to the Company at the Company's storage locations as designated by the Company.

Scrap materials are property of the Company, unless otherwise specified in the Project Specifications, and the Contractor shall stockpile or dispose of them as instructed by the Company.

N. On completion of the clean-up activities and after the fences and gates have been permanently repaired the Contractor shall install permanent pipeline markers. Pipeline markers shall be installed on each side of all roads, railways, utility crossings and other locations as designated on the Drawings, Project Specifications or by the Company Representative.

O. The Contractor shall at all times complete the clean-up within 10 days of final grade, including fence replacement, drainage and terraces, seeding and mulching.

SECTION XVII - Seeding and Mulching

A. The Contractor shall prepare the soil surface for seeding as soon as possible after work is completed and depending upon weather conditions and individual right-of-way requirements. This work shall consist of secondary cultivation to ensure proper seedbed preparation.

B. Seed mixtures, varieties and rates of application shall be as specified in the Project Specifications or in the Environmental Construction Plan. Additional seed mixtures may be used at the specific request of an individual Property Owner. No changes shall be made to the specified seed, soil amendment or application rate without prior approval of the Company.

C. Seed mixture shall consist of seventy-five percent (75%) of Kentucky 31 Fescue and twenty five percent (25%) rye grain and shall be applied at a rate of three (3) pounds per one thousand (1000) square feet. The top soil shall be prepared by loosening to a depth of three inches by discing or other approved method with all clods or stones being removed. Fertilizer and agriculture limestone shall be incorporated into the loosened soil and the seed bed sown with the above mixture at the specified rate. The seed shall be worked approximately one fourth inch (1/4") into the soil. The completed seed bed shall be mulched at a rate of approximately seventy five (75) pounds per one thousand (1000) square feet with straw or other approved mulch. Tack mulch with emulsified asphalt at the rate of .10 gal/SY (10 gal/10000SF). Other seed mixtures may be used at the request and approval of the property owner.

SECTION XVIII – Fencing

A. The Contractor shall install a suitable, substantial gate or gap in every fence at the point of intersection of the proposed pipeline, for access to land crossed by the pipeline and for passage of construction equipment.

B. The Contractor shall not remove or take down fences, open gates or construct gates or gaps without first notifying the respective property owner, tenant or occupiers.

C. The Contractor shall use only such roads through farms as are designated and approved by the Company.

D. Before cutting the fences to make these gates or gaps, the Contractor shall suitably brace and reinforce existing fences with posts six inches in diameter or larger and braces four inches in diameter or larger within the constraints of the right-of-way per the satisfaction of the Company Representative. Gates or gaps shall be constructed so that they can be securely closed.

E. Upon completion of the work, all fences shall be replaced by the Contractor. Gates or gaps installed during construction may be left after construction completion if approved by the property owner or tenant and the Company. The Contractor shall not use untreated fence posts or posts of lesser size and quality than that of the existing fence being permanently replaced.

F. Early or historic fences shall be carefully re-assembled by hand from the original material. Where original material has deteriorated to a state that makes it unsalvageable, replacement material identical to the original shall be used.

G. The Contractor shall replace any existing marker post located in original fences on existing or adjacent right-of-way that is damaged or removed due to the work.

H. Chain link type fencing that is required to enclose mainline valves, sales meter stations, regulator stations etc. should be installed in accordance with standard fencing detail Drawings supplied by the Company to the Contractor if applicable for the project.

SECTION XIX – Environmental Requirements

A. The Contractor shall adhere to these specific environmental requirements in addition to the environmental requirements stated elsewhere in these Specifications.

B. The Contractor shall comply with the Company's Spill Prevention, Containment and Control Plan (SPCC) provided with the project documentation if applicable.

C. The Contractor shall ensure that all persons engaged in work associated with the pipeline's construction are informed of the special environmental conditions and concerns and that they receive instruction regarding the requirements of all safety and environmental laws, rules and regulations applicable to the worksite.

1) The Contractor shall attend a Company sponsored pre-job meeting at which time its Supervisory Personnel shall participate in a pre-construction briefing pertaining to the safety, environmental and cultural resource aspects of the project.

2) It shall be the responsibility of these Supervisory Personnel to train the rank-and-file workers and to keep them up to date regarding safety and environmental matters.

D. All construction work shall be conducted so as to avoid unnecessary disturbance of the ground by the placement or excavation of materials, the disruption of established natural surfaces and underground drainage or the disturbance of natural vegetation cover.

E. The stringing of pipe and other heavy materials shall be suspended during periods of wet weather when the continuation of such operations could cause irreparable damage to the right-of-way soil structure.

F. The Contractor shall not permit wastes, solid or liquid, or motor oils and fuels to be deposited upon the ground or into bodies of water. The Contractor shall have on site at all times a supply of suitable absorbent material and any other supplies and equipment necessary to immediately clean-up inadvertent spills regardless of the location or materials involved.

1) The Contractor shall conduct equipment refueling and lubricating activities and store all hazardous material within the right-of-way, Company station sites, designated pipeyard or warehouse areas and at least 100 feet away from all waterbodies and wetlands.

2) There shall not be any refueling activities within any designated well protection area or within 200 feet of any private, municipal or community water well supply.

3) The Contractor will supply the Company a list of the type, quantity and storage location of containment and clean-up equipment to be used during construction.

G. If archeological sites or human remains are discovered, the Contractor shall take immediate measures to protect the sites. The location of the site shall be immediately brought to the attention of the Company who will advise the appropriate Federal or State authorities. Until such time as the value of the site has been officially assessed, the Contractor shall cease his activities to avoid damage to the site.

H. All construction related activities in or near any water crossing shall be performed in accordance with the Project Specifications, any environmental requirements specified in the Contract and Section XXIII of these specifications.

1) Particular care shall be taken during construction to ensure that the normal drainage patterns are not altered and that trench plugs are maintained on either side of the water crossing operations in order to minimize the attendant siltation problems.

2) Trees shall be felled away from all streams. Where overhanging limbs inadvertently fall into the water, they and any other debris shall be immediately removed. Cleared debris shall be removed a sufficient distance so that it will not enter the stream during peak flood periods.

3) Construction access roads across streams shall be constructed and maintained as specified in the Project Specifications and Project Drawings.

4) Erosion control measures shall be installed parallel to the banks in all areas where soil could potentially run off into the water. Sediment filter devices or temporary erosion control berms shall be installed as necessary.

5) The Contractor shall not wash any equipment, machinery or vehicles in any watercourse.

6) The Contractor shall not store hazardous materials, chemicals, fuels or refuel construction equipment within 100 feet of a stream bank.

I. When pumping water from the trench for any reason the Contractor shall ensure that adequate pumping capacity and sufficient hose is available to permit dewatering as follows:

1) Trench water shall not be allowed to enter a river or stream directly but shall instead be diverted through a vegetated area, straw bale or into a drainage ditch of suitable capacity.

2) Trench water shall not be disposed of in a manner which could flood cultivated fields, interfere with the functioning of underground drainage systems or cause erosion.

J. The Contractor shall construct temporary diversion ditches across the right-of way immediately subsequent to grading at the following spacings:

Slope	Spacing (feet)
5 – 15%	300 feet
16-30%	200 feet
> 30%	100 feet

K. The Contractor shall install temporary silt fences or straw bales at the base of all slopes adjacent to roadways where the vegetation has been disturbed within the following distance of the road:

Slope	Min. Vegetation Strip Required
<5%	25 feet
5 – 15%	50 feet
16-30%	75 feet
> 30%	100 feet

1) Temporary silt fences and/or straw bales shall be installed at the edge of the right-of-way at the downslope end of swales and gullies where soil could potentially flow off of the right-of-way.

2) Temporary silt fences and/or straw bales shall be installed at the base of slopes at all stream crossings where necessary to prevent possible soil run-off into the stream.

3) All temporary erosion control devices should be continually monitored and maintained throughout construction until permanent soil stabilization has taken place.

SECTION XX – Cleaning, Testing and Drying

A. General

1) Unless otherwise specified in the Project Specifications, a test medium of air or nitrogen shall be used for testing of the newly constructed steel pipeline and polyethylene mains.

2) The Contractor shall provide all labor, equipment, material, and services to perform the complete pressure testing, including but not limited to furnishing all fill, test fittings, manifold piping, valves, high pressure hose, pressure and temperature recorders, dead weight testers, temperature and pressure gauges, pigs, charts and all other test apparatus as may be required by Company. Dead weight testers, temperature and pressure recorders shall be in first class condition and shall have been certified for accuracy within the past two months.

3) Contractor shall supply fill equipment consisting of, but not limited to, the following:

a) An air compressor having a rated capacity of not less than 600 standard cubic feet per minute at a discharge pressure of not less than 120 pounds per square inch.

4) Contractor shall furnish test equipment consisting of, but not limited to, the following:

a) Certified dead weight balance with individual weights required for measuring up to the specified test pressures in maximum increments of 0.1 psig. Dead weights shall be identified and traceable through a serial number permanently affixed to the balance.

b) Pressure recorders covering a minimum 24 hour range and possessing either a 10-inch minimum diameter chart size or 8-inch minimum chart widths for strip recorders. Pressure recorders shall be dead weight tested and calibrated prior to each test.

c) Temperature recorders covering a minimum 24 hour range and capable of measuring temperatures from 32^{o}F to 125^{o}F. Temperature recorders shall have either a 8-inch minimum diameter charts or an 8-inch minimum chart widths for strip recorders.

5) The Contractor shall furnish and inject Methanol or other Company approved chemical additives if required by Company. Contractor is responsible for recovering and disposing of chemicals used in accordance with applicable environmental regulations.

6) The Contractor shall develop his plan for testing for review by the Company, in accordance with this specification.

7) Upon completion of the line or a substantial part, the line shall be cleaned and tested in accordance with this section. Contractor shall give Company two (2) days notice prior to testing all sections of the pipeline in order that Company can make proper notification to other parties.

8) The test procedure and the test pressures for special construction such as rivers, highways, railroad crossings, etc. shall be specified by the Company's Representative, if tested separately.

9) The test section ditch shall be backfilled throughout its entire length except at valve settings and necessary bell holes, as approved by the Company's Representative.

10) All mainline valves shall be placed in the full open position so that the valve seats and gate segments are not subjected to the test pressure.

11) All vents and other connections shall be opened as required to eliminate air from the lines during filling operations.

12) Contractor shall supply and install all instrument lines required for test. All lines shall be either high pressure tubing or hose.

B. Cleaning

1) Foam type cleaning pigs shall be run through the pipeline in advance of the test. All pigs shall be run using compressed air supplied by an air compressor having a rated capacity of not less than 600 standard cubic feet per minute at a discharge pressure of not less than 120 pounds per square inch.

2) Contractor shall furnish and run foam type pigs in such number and combination as to effectively clean the interior of the pipeline. The cleaning process shall remove dirt and other like materials from the pipe wall.

3) The pipe shall be considered to be sufficiently cleaned when, in the opinion of Company, additional cleaning will not remove significant additional material from the pipeline. This condition will be achieved when the following procedures and results are obtained:

4) Each cleaning pig shall be run at an average speed between two to five miles per hour. The travel speed shall be regulated by restricting air flow into, and from, the pipe section.

5) In the event entrained dirt or other solids are visible during the blowdown procedure or following the pig runs, then the cleaning procedure shall be repeated.

C. Line Fill and Test - If Required

The pipeline shall be filled with water taken from a point designated by the Company. If necessary, the water shall be filtered to prevent introduction of mud, silt, sand, and debris into the pipeline. As a minimum, the test shall be as follows:

1) The minimum test pressure as specified in the Specific Conditions.

2) The following general procedure shall govern the test:

a) When the line if filled and pressurization begins, a log record shall be maintained which accurately shows the pressure/volume relationship. Water volume shall be measured by use of a positive displacement meter or by a stroke counter on the pump. Pressure shall be measured with an indicating pressure gauge readable in pressure increments not exceeding 10 pounds per square inch and accurate to plus or minus 0.2 percent of full scale.

b) The official pressure (strength) test shall not begin until the fill water temperature reaches near equilibrium temperature with the surroundings. The test may begin when the pressure measured with a dead weight tester does not vary more than plus or minus 2 pounds per square inch during the hour immediately preceding commencement of the test.

c) The following listed instruments shall be used to monitor and measure hydrostatic test data:

Dead weight tester capable of accurately measuring in one pound per square inch increments. The instrument shall be in good condition and shall have been certified for accuracy within the past six months.

Recording pressure gauge with circular chart graduated in maximum 20 pounds per square inch increments. This pressure gauge shall be calibrated against the dead weight tester and shall be accurate to within plus or minus 10 pounds at the test pressure.

Temperature recorders to monitor the pipeline internal temperature and ambient temperature. The recorder chart shall be divided into maximum one degree Fahrenheit increments.

d) The official test shall not commence until authorized by the Company and shall be continued or terminated as prescribed by Company.

e) The test pressure shall be measured each thirty minutes using the dead weight tester. Measurement data, including pressure, pipeline temperature, ambient temperature and observations shall be recorded on acceptable forms approved by the Company. The pressure test and the

recording of all test data shall be witnessed by a Company Representative.

f) The test shall not be considered successfully concluded should an unexplained appreciable pressure loss be indicated by the recorded test data.

g) Should pressure deviations indicate that a leak exists then Contractor should check all possible sources of leaks by checking all valves, instrument lines, exposed piping, and test equipment. Should no leaks be found then an underground leak is indicated.

At this point Contractor shall furnish labor and equipment to locate and repair the leak and failure. After repairs are made Contractor shall refill and restore the pressure to that point at which it failed and a leak was detected.

Should a leak occur due to faulty and defective material furnished by the Company then company shall reimburse Contractor for all costs incurred for locating and repairing of such leak and for the cost of bringing the test procedure to the point attained at the time the leak was detected.

h) In the event a continuous decrease in pressure is observed, Contractor shall repressure the section to the specified test pressure after an elapse of two hours. If a continuation of pressure loss is observed within the next two hour period, a leak is evident. Therefore, the Contractor shall discontinue the testing until the leak has been located and subsequent repair(s) made. If the pressure stabilizes, Contractor shall repressure to specified test pressure and proceed with the test program. Contractor shall not permit the pressure during the test to increase in excess of 50 psig above the test pressure.

D. Removal of Water and Drying – If Required

Hydrostatic water shall be removed from the pipeline at a time and in a manner acceptable to the Company. Contractor will determine the requirements of Company and Agencies having jurisdiction over the disposal of test water and shall perform the necessary treatment of the water which may include adjustment of pH value, temperature, aerating, injection of chemicals, filtering or any other treatment of the water.

As a minimum, the water will be displaced with air using a brush cleaning pig followed by a four-cup squeegee pig.

E. Drying – If Required

Upon completion of the hydrostatic test of the pipeline and discharge of the water, Contractor shall dry the pipeline to Company's satisfaction. This shall be accomplished using multiple pig runs. The pig runs shall continue until the specified dew point is

achieved or as otherwise specified in the Project Specifications.

After cleaning and drying, the pipeline should be tied-in, purged and loaded as soon as practical. If Company operating conditions prevent timely purging and loading, the Contractor may be requested to inject a nitrogen "blanket" into the pipeline

F. Records

Contractor shall keep an accurate report of all data obtained. All reports shall reflect the following:

1) Tests shall be numbered by test sections (1,2,3, etc., for each pipeline spread), and by test, if more than one test is run on a given section or spread.

2) Company Name

3) Date and time the test starts.

4) Date and time the test ends.

5) Test Medium.

6) Certification of Contractor. Name and signature of Contract's representative.

7) Certification of Company. Name and signature of Company's representative.

8) Explanation of any discontinuities in pressure on any chart.

9) Continuous pressure recording charts for each test or tests on each test section.

10) Should a leak occur in any test section, then, in addition to the above information, the following will be furnished:

    a) Location of the leak by section, township, range, tract number, alignment sheet number and station number.

    b) Pressure at the time the leak was detected (furnish chart).

    c) Date and time leak was detected.

    d) Date and time leak was found.

    e) Date and time leak was repaired.

    f) Cause of leak (split seam, crack in plate or other, etc.).

SECTION XXI - Railroad, Highway, and Road Crossings

A. The construction of railroad, highway, and road crossings, including all details incident to the installation of such crossings, shall be in accordance with the Drawings and comply with the specifications and requirements of the permit issued by the railroad company or any governmental agency having jurisdiction and shall be accomplished in a manner satisfactory to the authorized representatives of such Company or Agency. The Contractor shall provide all survey equipment and personnel necessary for such crossings.

B. The Contractor shall, at his own expense, slope the walls at all road bore pits in accordance with OSHA regulations or install sheeting in compliance with OSHA regulations and the appropriate Department of Transportation regulations.

C. Normally, railroad crossings require casing. Highway crossings shall be bored using casing, slip bored or where permitted by the highway authorities having jurisdiction, directionally drilled. Generally, road crossings (unpaved, secondary and unimproved roads) shall be open cut. The Company shall have the right to determine and specify the method of all crossings at roads and railroads.

D. Prior to commencement of construction at each crossing, the Contractor shall ensure that the appropriate authorities are given a minimum of 72 hours notice, which shall not include Saturdays, Sundays or Holidays.

E. In all work performed on highway rights-of-way, traffic control devices shall be installed and maintained as required for the protection of the traveling public in accordance with all existing state and local requirements or as determined by the Company. All signs and control of traffic shall be in accordance with the Manual on Uniform Traffic Control Devices, latest edition, as published by the U.S. Department of Transportation. Flag persons, provided with reflective vests, shall be provided at the Contractor’s expense as required to protect the public.

F. Where casing is required at railroad and road crossings the installation shall be as shown on the construction drawings and crossing permit.

1) In the event more than one joint of casing is required, the casing will be joined by complete welds to secure a leak tight casing throughout its length. The Contractor shall exercise extreme care to ensure that straight casing is maintained.

2) The casing shall be bored to achieve the required profile and alignment and at the same time have a minimum 1 in 250 slope for self drainage and be constructed so as not to create any undue stresses on the carrier pipe. The minimum cover over the top of the casing shall be 3 feet unless otherwise noted on the individual permit drawing.

3) Prior to the installation of coated pipelines in casing, approved insulating spacers shall be attached to the pipe as indicated on the construction drawings.

3) The space between the pipeline and casing shall be sealed at the ends using Company approved casing seals. Casing seal installations shall be inspected and tested prior to backfill.

4) Casing vents shall be installed as indicated on the construction drawings and such installation shall prevent water from entering the pipeline.

5) The insulation between the casing and the carrier pipe shall be checked for electrical shorts both prior to tie-ins and backfill. Should the casing and carrier pipe be shorted (electrically connected), such conditions shall be remedied immediately (including having the carrier pipe withdrawn, checked and rethreaded). Casing installation shall not be considered completed until all electrical shorts are eliminated.

6) Prior to backfilling, the carrier pipe shall be supported by sandbags or other suitable means where it exits from the casing on both ends and for a sufficient distance to prevent the carrier pipe from deflecting and breaking the casing seal.

G. The Company will supply suitably coated line pipe which will be used for all bored crossings without casing.

1) The bored crossing without casing should be installed before the trenching and bending operations arrive at the crossing. Adequate approach and exit trenches shall be dug prior to boring.

2) Necessary dummy pipe shall be placed at the leading end of the boring operation. The carrier pipe shall be installed simultaneously with the removal of the dummy pipe. When boring, the cutting head shall not extend beyond the leading end of the carrier pipe more than 6 inches.

3) Upon completion of boring and when the carrier pipe has been advanced the required distance, all boring equipment shall be removed and the carrier pipe cleaned out thoroughly.

4) The Company will conduct a pipe to soil check for coating damage upon completion of the installation but prior to tie-in. If the reading proves to be unsatisfactory, the carrier pipe shall not be removed without re-installing another pipe segment to prevent tunnel collapse.

H. Upon completion of bored and cased crossings, all voids or annular space between the carrier or casing pipe and the earth shall be grouted. The grout shall consist of a 1:1 cement-sand slurry mix or as required by jurisdictional authority.

I. In the event it is necessary to install pipe by the open cut method the Contractor shall following criteria will apply.

1) The Contractor will ensure that traffic flow is maintained for all roads disturbed or otherwise affected by the construction.

2) For those roads which are permitted to be closed the Contractor shall ensure that suitable road closure signs, including flag persons, are posted at the crossroads closest to that being cut.

3) Where road closing necessitates a detour, signs shall be erected at the nearest crossroads from the roadway being cut.

4) Where detour routes cannot feasibly be utilized, the Contractor shall either install a suitable temporary bridge over the trench or construct a suitable temporary by-pass ramp/roadway near the crossing installation. Only under special circumstances will the Contractor be permitted to install the pipe by cutting open one-half the roadway at one time while maintaining traffic on the other half of the roadway. This is to eliminate having a tie-in weld installed beneath the roadway.

5) All roadways encountering any form of traffic shall be backfilled and restored to normal service as soon as possible. Therefore, the Contractor shall ensure that all necessary preparatory work including pipe fabrication and securing the required backfill is completed prior to open-cutting the road.

6) The Contractor shall ensure that clean-up and restoration in the vicinity of the roads is commenced immediately after returning the roads to normal service. Temporary ramps, detour signs etc. shall be removed and the jurisdictional authority shall be notified that all construction has been completed.

J. The Contractor, at his expense, will repair damaged road, street, and sidewalk surfaces where damage was necessary for construction. This includes all access roads utilized by Contractor. All paved, graveled, or otherwise improved surfaces shall be replaced to conform to adjacent undisturbed areas to equal to or better condition. Gravel, dirt, or oil surfaced roads shall be repaired and replaced to original condition, at the Contractor's expense, and to the satisfaction of the Company.

SECTION XXII - Foreign Pipeline and Utility Crossings

A. The Company will exercise due diligence in locating foreign pipelines and utility line crossings on the drawings. The existence and location of foreign pipelines and other utilities shown on the drawings is NOT guaranteed. The Company assumes no responsibility for the complete accuracy of such indicated locations. It shall be the duty of the Contractor to investigate and verify in the field the existence and location of ALL foreign pipelines and other utilities and to make minor relocations of the pipeline or other facilities being installed, without extra cost, when considered necessary and upon approval of the Company.

B. Contractor shall locate, stake, and flag all foreign pipeline and utility crossings. Utmost caution shall be observed in approaching and crossing foreign pipelines and utilities. Any conditions imposed by the authorities having jurisdiction over the foreign pipelines or other utilities shall be complied with.

C. Contractor shall give proper notification to the authorities having jurisdiction over the foreign pipelines and utilities to be crossed, preferably two working days, prior to the commencement of the Contractor's trenching or boring at these locations. The Contractor's excavation for these crossings shall be governed by the requirements of that authority.

D. Contractor may be required by some foreign pipeline or utility authorities to locate and expose such underground facilities by hand excavation across their entire right-of-way. Some authorities may require their facilities to be exposed by their own employees prior to commencement of the Contractor's trenching or boring near their facilities.

E. The Contractor shall provide the required trench to allow installation of the pipeline across the existing facility with a minimum clearance of 12 inches or as required by the owner/operator. When the trench is open-cut, the space between the pipeline and the facility shall be filled with sandbags.

F. The Contractor shall be responsible and bear the cost of any damage to foreign pipelines or other utilities. The Contractor shall repair or replace all drainage tile damaged during construction.

G. Bond wires shall be attached to foreign pipelines per the standard drawings and/or to the satisfaction of both the foreign pipeline owner and the Company.

SECTION XXIII - Stream and River Crossings

A. The objective of a waterbody crossing is to install the pipe while maintaining the downstream populations of aquatic life, minimizing the extent and duration of siltation from construction activities, maintaining an unimpeded flow of water, maintaining the integrity of the stream banks and preserving the aesthetics of the area.

B. Water crossings shall be constructed wet or dry as detailed in the Project Specifications and the Construction Drawings. The Contractor shall adhere to the requirements listed herein as well as Section XIX-Environmental Requirements.

Supplementary procedures and specifications will be provided for individual locations as required and shown on individual drawings and referenced in the Project Specifications.

C. Where navigable rivers or other streams under the jurisdiction of any governmental agency are crossed, construction shall conform to any codes, specifications, or special requirements of such agencies.

D. The water crossing method most suitable for a given location may be dependent upon site conditions at the time of construction. The appropriate agency(s) and the Company's authorized representative will identify and approve the appropriate method for each location based on site-specific conditions at the time of construction. In no case shall a different method than that identified in the application or subsequent filings be implemented without prior approval of the appropriate agency(s).

E. A minimum cover of 4 feet is required below any stream bottom with active or potential current or as shown on the Construction Drawings or in the Project Specifications.

F. Weights shall be installed at locations designated on the plans or as otherwise required. Where weights are installed on long sections of pipe, care shall be taken in handling to prevent buckling of the pipe or damaging the coating.

G. The Contractor shall not flood pipe to facilitate lowering the pipe to the stream bottom unless the water is pigged or pumped out immediately after installation.

H. The cover over the weights shall not be less than the minimum cover specified in these specifications, unless specifically designated on the Construction Drawings.

I. Each crossing will be treated as a separate project, such that trenching, pipeline installation and back filling are completed in the minimum number of consecutive calendar days necessary. Minor stream crossings (less than 10 feet wide) will be completed within 24 hours while intermediate stream crossings (10 feet to 100 feet wide) will be completed within 48 hours unless a flume is used to allow uninterrupted flows across the trench line, or in the case that blasting is required.

J. Stream crossings may be restricted to specific months of the year to allow for the

sensitive spawning periods of fish, recreational uses of the watercourse or directives issued by authorities.

K. All equipment and materials shall be on site before trenching in active channels is allowed. All activities shall proceed in an orderly manner without delays until the trench is backfilled and the stream banks are stabilized.

L. The permanent easement, any temporary work space and any special restrictions are as shown in the Contract documents and the Construction Drawings. The work shall be contained within these areas.

M. To facilitate the access and movement of construction equipment and vehicles across waterbodies, culverts or flumes ramped with Company approved granular material or temporary bridges shall be used. Clearing crews may cross waterbodies once, prior to installing equipment crossings. These crews may construct temporary crossings with timber mats. Temporary crossings may not be used by any subsequent crews.

1.) The Contractor shall not construct equipment crossings without prior approval from the Company.

2) Approved methods for crossing streams and rivers are depicted on the Construction Drawings.

3) Flume pipes will conform to stream crossing dimensions and alignments. The size and number of flumes will be sufficient for maximum anticipated flows.

4) The Contractor shall be responsible for the maintenance of all equipment crossings during construction and subsequent clean-up to the satisfaction of the Company and governing agencies.

N. The Contractor shall use a backhoe or dragline to excavate the trench across the waterbody. Equipment used to dig the trench will work from the stream banks, equipment crossings or by straddling the trench line where the width of the stream prohibits excavations solely from the banks.

1) Except where rock is encountered, the trench shall be excavated only when the pipe section is fabricated and all other material and equipment is on site.

2) Sediment control devices shall be installed in the stream as directed by the Company.

3) Trench spoil shall not be sidecast in streams less than 50 feet wide. The spoil shall be stored a minimum of 15 feet from the top of the bank and shall be protected with silt fence and/or hay bales.

4) Earth plugs shall be left in the trench, on either side of the stream crossing, to prevent trench water and silt from land operations from entering the stream or

river. The plugs will be left in place until the pipe is ready to be lowered in.

5) Cofferdam or other diversionary techniques to lay pipe across streams should be used where necessary and practical to permit flow in one part of the stream while construction work is being performed in another part.

O. The pipe and trench shall be thoroughly inspected to the satisfaction of the Company prior to pipe installation.

1) In rock, the trench shall be adequately padded with clean granular material to provide continuous support for the pipe.

2) Protective coatings shall be protected by rock shield, concrete coating, slatting, or other appropriate methods.

3) Pipe to be installed in major water crossings (greater than 100 feet) should be tested before installation.

4) At locations where the excavated material is not acceptable for backfill or must be supplemented, Company approved granular material shall be imported.

P. Stream channels and banks will be backfilled, re-contoured and restored immediately following the installation of the pipe.

1) Stream banks shall be rip-rapped, if necessary, to prevent erosion. Excess earth shall be disposed of so as not to block the flow of streams, interfere with other construction or maintenance operations, or cause damage or inconvenience to property owners or others.

2) Replacement of earth adjacent to water crossings should be at slopes equal to or less than the normal angle of repose for the soil type involved and sandbagging, seeding, or other methods of soil stabilization should be accomplished without undue delay.

3) Silt fences shall be installed adjacent to the streams and maintained until revegetation on the right-of-way is complete.

Q. Extreme care should be taken to avoid oil spills and other types of pollution while work is performed in streams and other bodies of water and in their immediate drainage areas.

SECTION XXIV - Fabrication

A. Fabrication of valves, fittings and other components into assemblies shall be governed by all pertinent clauses in Section X and XI of these Specifications as well as the following specific requirements. The supply and disposition of all prefabricated assemblies shall be as noted in the Drawings, Bills of Material and/or Project Specifications.

B. Fabricated assembly of valve sections, test equipment and other components may be performed by a third party or the Contractor at fabrication shops or yards away from the final location of the assembly.

C. All welds completed by the Contractor shall be tested and assessed in accordance with the Project Specifications at or immediately adjacent to the final location of the assembly, irrespective of any previous testing.

D. Pressure testing of fabricated assemblies, if required by the Contractor, shall be performed at or immediately adjacent to the final location as required by Section XX of these Specifications.

E. The Contractor shall be responsible for ensuring that all fabricated assemblies are made so that they will fit correctly to the pipeline or other assemblies when installed. The Contractor is responsible for determining all lengths, depths, distances, wall thickness and orientation of piping for purposes of fabricating or installing prefabricated assemblies. The Contractor shall perform all necessary field surveys to ensure this occurs prior to fabricating any spool pieces or prior to final tie-ins of any third party prefabricated assemblies.

F. The Contractor shall make pipe revisions to prefabricated assemblies, as needed, to install the assemblies and make piping tie-ins. This includes all cutting and beveling of random pipe lengths, riser pipe lengths and “field determine” pipe lengths, and the field trimming and/or rolling of elbows, fittings, etc. The Contractor shall be responsible for back beveling and/or internally grinding to transition piping as necessary and/or as directed by the Company.

G. All materials that are to be or have been fabricated into assemblies or are to be welded directly into the pipeline shall be handled in such a manner as to prevent damage. If lifting lugs are provided on a component only those lugs may be used for lifting of that component.

H. All assemblies or material for assemblies shall be stored so as to be protected from mud or water and shall be adequately skidded where necessary to prevent such occurrence.

I. All third party fabricated assemblies will be shop or mill coated and painted. All coating or painting damage that occurs to fabricated assemblies as a result of handling by the Contractor shall be repaired to the satisfaction of the Company.

SECTION XXV – Concrete: Slabs, Weights & Foundations

A. Poured-in-place concrete foundations, pipe supports, anchor blocks or weights shall be constructed of such size and design, and installed at locations, as shown on the Drawings. Unless otherwise indicated, all design, transportation, mixing and placing of all concrete to be used shall comply with the latest revision of ACI Standard 318, Building Code Requirements for Reinforced Concrete.

B. The Contractor shall furnish all necessary equipment, labor and materials to excavate for foundations and blocks and shall furnish all cement, sand, gravel reinforcing steel and all other materials and equipment necessary to mix, pour and place all concrete in a manner satisfactory to the Company.

C. Concrete shall be designed to achieve a strength of 3000 psi at 28 days, using well graded washed sand and gravel. Cement shall be Portland Cement and shall conform to ACI 311, Type I or II. The maximum coarse aggregate size is 1.5 inches. Permissible slump of 3-4 inches is required. Water/cement ratio shall be 0.57 by weight. Aggregate and mix design shall be approved by the Company. When ready-mixed concrete is used, it shall be mixed, delivered and controlled by Specifications for Ready Mixed Concrete ASTM 94.

D. All reinforcing bar shall meet the standards of the latest ASTM specifications and shall be deformed to conform to ASTM A-615 Gr. 60 and shall be bent cold to shapes as indicated on the drawings. Reinforcing bar shall be free from scale, oil, concrete, loose rust and structural defects.

E. Wire mesh shall be woven or electrically welded wire fabric or cold drawn steel in accordance with ASTM A-82, ASTM A-185 and as referenced in ACI 318 and shall be lapped at least one mesh.

E. Concrete shall be formed in the excavations in the earth with a minimum use of form materials and as directed by the Company, to obtain the maximum resistance to movement of the blocks.

F. Regardless of the foundation depth shown on the drawings, new concrete footings for pipe supports, piers and foundations shall be placed on natural undisturbed soil. In the event that excavations become flooded for any reason, they shall be pumped free of water and all soft or slurried soil shall be removed prior to the placement of the concrete.

G. Pipe shall be wrapped with a minimum of one (1) sheet of Company approved rockshield or ¼” thick neoprene at all locations where the piping comes in contact with supports, piers, weights or foundations.

KY 56, KY TRANSPORTATION CABINET PIPELINE RELOCATION

Bid Item Descriptions

Incidental work to the following bid items includes, but is not limited to: mobilization and demobilization; material loading, unloading and storage; grading, excavation and earthwork; cutting, beveling, welding, pressure testing; cleaning and drying pipe; installing fabricated piping; lowering-in and backfilling; miscellaneous foundations; coating and painting; installing cathodic protection items; installing rock/gravel; installing line markers, installing/maintaining erosion and sedimentation control items; final grading and clean-up and seeding and mulching disturbed areas. Without limitation, it is understood that the prices are firm, and not subject to adjustment due to changes in costs of labor or materials, or to any other factor, except changes in the scope of WORK or other causes specifically stated in the Contract.

NOTE: The bid items and descriptions are provided for bidding purposes. See the Pipeline Relocation Plans for the complete Bill of Materials listing.

Bid Item No.	**BID UNIT**
24646EC Steel Pipeline (6.625 IN OD Pipeline)	**LINEAR FEET**

Bid Item includes the following:

1. Install and Furnish - 2400 LF of 6.625” x 0.188” W.T. Steel Pipeline equal to or less than 48” in depth– including all labor, materials, transporting, right-of-way clearing and preparation, trenching, bending, joining, laying, backfill, silt fence, straw-bales, and/or other erosion control, trench breakers, clean up as necessary for a completed pipeline.
2. Install and Furnish - 1900 LF of 6.625” x 0.188” W.T. Steel Pipeline greater than 48” in depth– including all labor, materials, transporting, right-of-way clearing and preparation, trenching, bending, joining, laying, backfill, silt fence, straw-bales, and/or other erosion control, trench breakers, clean up as necessary for a completed pipeline.
3. Install - six (6) - 6” TDW 3-Way Tee SHORTSTOPP fittings

   Includes furnishing material, installing, cutting, stopping, and completion.
4. Install - six (6) - 6” TDW SHORTSTOPP 300D Split Tee Fittings
   Includes furnishing material, installing, cutting, stopping, and completion.
5. Install - (1) 6” steel road bore crossing and tie-ins
6. Install and Furnish - (6) 1” MDPE temporary bypasses for SHORTSTOPP fittings. To include welding transition/nipple to tapping tee, stringing, laying, fusing, and protecting

from damage while in service and removal upon completion.

Temporary bypasses may be installed above grade and protected from damage. Portions of bypass shall be installed below grade where traffic or potential damage is anticipated.

24644EC Service Tapping Tee (3/4 IN) EACH

Bid Item includes the following:

1. Install and Furnish twenty-three (23)- 3/4" Service Tapping Tees - Includes welding on main and tapping.

24645EC MDPE Pipeline (2 IN) LINEAR FEET

Bid Item includes the following:

1. Install and Furnish two (2) - 2" MDPE bored road crossings including tie-ins to service lines and farm taps. Includes 100 LF of boring and 500 LF of Tie-In.
2. Install and Furnish 800 LF - 2" MDPE service line

24645EC MDPE Pipeline (3/4 IN) LINEAR FEET

Bid Item includes the following:

1. Install and Furnish 50 LF of ¾" MDPE service line.

24642EC ¾ IN FARM TAP TO ¾ IN MDPE EACH

Bid Item includes the following:

1. Furnish material and install two (2) - 3/4" Farm Taps and tie into existing ¾" PE Service

24643EC ¾ IN FARM TAP TO 2 IN MDPE EACH

Bid Item includes the following:

1. Furnish material and install two (2) - 3/4" Farm Taps and tie into existing 2" PE Service

21773NN GAS LINE Marker (Post) EACH

Bid Item includes the following:

1. Install (15) Pipeline Marker Post **(Post and sign provided by COM)**

24650EC Cathodic Test Station EACH

Bid Item includes the following:

1. Furnish and install two (2) - Cathodic Test Stations to include, install test station, (2) #12 Solid Copper wires wrapped around 6.625" O.D. pipeline as shown on detail sheets. COM will CADWELD to piping and terminate in box. Contractor will only wrap wires and install test station.

24641EC DEMOLITION (Existing Farm Tap Piping) LUMP SUM

Bid Item includes the following:

1. Dismantle two (2) existing Farm Tap settings. To be completed after mainline has been put in service. Requires removal of above ground piping and welding cap installed on existing ¾" steel service piping removed from service.

TECHNICAL SPECIFICATIONS
SECTION A
GENERAL INFORMATION AND REQUIREMENTS

1. GENERAL

1.1 These TECHNICAL SPECIFICATIONS include descriptions of materials which may or may not be used on this project.

1.1.1 The CONTRACTOR shall note the type materials identified for use on the project. Only those materials specified in the Special Provisions, shown on the PLANS, identified on the Bid Form or in Measurement for Payment will be acceptable for the project regardless of any others that may be included in these TECHNICAL SPECIFICATIONS.

1.1.2 These TECHNICAL SPECIFICATIONS may be supplemental to General Specifications of the OWNER. The CONTRACTOR shall carefully read the special provisions for statements concerning other Specifications which may be applicable to the project.

1.2 Materials shall be of the types and constructed of the materials specified herein when identified on PLANS, Bid Form or Measurement for Payment. Material and accessories shall be of new and unused material and shall be installed in accordance with manufacturer's Specifications and/or as shown on the PLANS.

1.3 The CONTRACTOR shall be responsible for the safe storage and handling of all material furnished to or by him, and accepted by him, until it has been incorporated into the complete project and the project has been accepted by the OWNER.

I.3.1 The CONTRACTOR shall handle all materials and equipment in such a manner to avoid damage. All material and equipment whether moved by hand, skidways, hoists or other means shall be handled in such a manner avoid dropping or bumping against other materials or equipment.

1.3.2 In distribution material at the site of work, each piece shall be unloaded as near as possible to final installation point to minimize the number of times it must be handled.

2. PROTECTION OF UNDERGROUND & SURFACE STRUCTURES, & OTHER PROPERTY

2.1 General:

2.1.1 Temporary support, adequate protection and maintenance of all underground and surface utility structures, drains, sewers, and other obstructions encountered in the progress of the work shall be furnished at the CONTRACTOR'S expense incidental to the project.

2.1.2 No valve, switch or other control device on existing utility systems shall be operated by the CONTRACTOR without approval of the ENGINEER and the utility. All consumers which will be affected by operation of any control device shall be notified by the CONTRACTOR before the operation and advised of the probable time when service will be restored.

2.2 Obstruction by Other Utilities:

2.2.1 Existing underground utilities shown on the PLANS are shown in approximate locations based on information furnished by others. Prior to beginning construction of proposed facilities the CONTRACTOR shall accurately locate existing underground utilities by whatever means necessary including excavation where required. The CONTRACTOR shall notify the ENGINEER where utilities, so located, will interfere with proposed construction.

2.2.2 Where the limits of construction of the proposed work encroaches upon existing utilities, the CONTRACTOR, where possible, shall provide temporary support or protection satisfactory to the owners of the utility to permit continuation of proposed construction. Cost associated with said temporary support and/or protection shall be incidental to construction and no additional payment authorized.

2.2.3 Where existing utilities are encountered which prohibit construction of proposed facilities unless relocated, the CONTRACTOR shall so notify the ENGINEER. Additional cost for relocation shall be paid in accordance with the extra work provisions of the General Conditions. Relocation shall be accomplished in a manner acceptable to the owners of the utility. The CONTRACTOR shall not proceed with such work until so authorized by written Change Order.

2.3 Property Protection:

2.2.1 Extreme care shall be taken to protect trees, fences, poles, crops and all other property from damage unless their removal is authorized by the ENGINEER. Any damaged property shall be restored to as near original condition as possible by the CONTRACTOR and shall meet with the approval of the ENGINEER and OWNER.

2.2.2 The CONTRACTOR has the right to fully utilize the easement unless specifically stated otherwise on the PLANS or by the ENGINEER. If any irreplaceable trees, fences, poles or crops, such as tobacco, corn, soy beans and such (excluding pasture land), occur on the easement the CONTRACTOR shall obtain the ENGINEER'S and OWNER'S approval prior to removing or otherwise causing damage to any of these items.

2.2.3 Beyond the limits of the easement the CONTRACTOR shall be responsible for any damage caused by his operations and/or men.

3. INCIDENTAL ITEMS OF CONSTRUCTION

3.1 Barricades, Guards and Safety Provisions:

3.1.1 To protect the public from injury and to avoid property damage, adequate barricades, construction signs, warning lights and guards shall be placed and maintained by the CONTRACTOR during the progress of construction work until it is safe for the public to use the construction site.

3.1.2 The CONTRACTOR shall provide and maintain all safety facilities and devices required by the Occupational Safety and Health Act (OSHA). The ENGINEER is not responsible for safety provisions furnished or used by the CONTRACTOR nor will the ENGINEER advise or direct safety operations of the CONTRACTOR.

3.2 Traffic and Utility Control:

3.2.1 All excavations shall be conducted in a manner to cause the least interruption to traffic. The CONTRACTOR shall provide suitable bridges at streets and driveways where traffic must cross excavated areas.

3.2.2 Driveways and other private and public access routes shall not be kept blocked or closed by the CONTRACTOR for more than a reasonable period of time without prior written approval from the property owner or controlling authority.

3.2.3 Existing fire hydrants, valve pit covers, valve boxes, meter boxes, curb-stop boxes, fire or police call boxes or other utility controls shall be kept unobstructed and accessible during the construction period.

3.3 Maintenance of Utility Service and Flow of Drains:

3.3.1 Adequate provisions shall be made for the maintenance of flow in sewers (storm or sanitary), drains, water lines, gas lines and electrical lines encountered during construction.

3.3.2 No valve, switch or other control device of any utility system within the construction, area shall be operated by the CONTRACTOR without approval of the utility except in cases of an emergency. All utility customers which will be affected by the operation of any utility valve or control device shall be notified by the CONTRACTOR in sufficient time for each customer to make arrangements for the period of no service. Each customer shall be advised as to the time service will be off and probable time when it will be resumed.

3.4 Fencing:

3.4.1 When the pipe line is being constructed through fields where livestock is being held the CONTRACTOR shall provide, either by temporary fencing or stationing of personnel, adequate protection to livestock from machinery and open trenches. The CONTRACTOR shall take all precautions necessary to insure that all animals are not isolated from their source of water.

3.4.2 Where pipe line crosses fences in good condition and the work area is easily accessible through gates, the CONTRACTOR shall excavate or tunnel beneath the fences.

3.4.3 When it is necessary to cut existing fences, new end posts shall be installed on each side of the construction easement and old fence thoroughly stapled to these new posts before cutting fence. After pipe is installed at this point and backfill is completed, a new fence of galvanized wire (No. 9 gauge) shall be stretched between the new posts and thoroughly stapled to existing post and any new intermediate posts necessary to provide a good fence. Replacement of fences shall be on an in-kind basis and shall be considered incidental to installation of the pipe line.

TECHNICAL SPECIFICATIONS
SECTION B
PIPE MATERIALS

1. GENERAL

1.1 These SPECIFICATIONS describe several types of pipe which may or may not apply to the current project. All types listed herein will be acceptable alternates if no indication is otherwise given either on the PLANS or in other sections of these SPECIFICATIONS.

1.2 Selected pipe materials will be identified either on the PLANS, or in the bid form, the special provisions, or in the measurement for payment. The CONTRACTOR shall thoroughly familiarize himself with each of the items identified above and base his bid on the pipe material given therein.

1.3 Handling of Pipe and Accessories:

1.3.1 Pipe and accessories shall be unloaded at the point of delivery, hauled to, and distributed at the site of the project by CONTRACTOR in such a manner to avoid damage to the materials. Whether moved by hand, skidways, or hoists, materials shall not be dropped or bumped against pipe or accessories already on the ground or against any other object.

1.3.2 In distributing material at the construction site, each piece shall be unloaded as near the installation point as possible.

1.3.3 Pipe shall be handled in such a manner as to avoid damage to the ends. When such damaged pipe cannot be repaired to the ENGINEER'S satisfaction, it shall be replaced at the CONTRACTOR's expense. The interior of all pipe and accessories shall be kept free from dirt and foreign matter at all times. The interior of all pipe and accessories shall be checked for dirt and debris and, if necessary, thoroughly cleaned before use in the project.

2. CAST IRON PIPE AND FITTINGS

2.1 Scope:

This article covers the design, manufacture and testing of cast iron pipe centrifugally cast in metal molds and cast iron fittings for pipe sizes three inch (3") through forty-eight inch (48").

2.2 Specific Requirements: Cast iron pipe shall be centrifugally cast in metal molds and shall be furnished cement lined unless otherwise noted on the PLANS or in other sections of the Specifications. Cast iron pipe shall be furnished with rubber-gasket push-on joints unless otherwise noted on the PLANS or in difficult working areas and with the approval of the ENGINEER.

2.2.1 Thickness design of cast iron shall conform in all aspects to the requirements of ANSI-AWWA C101 latest revision.

2.2.2 Manufacture and testing of cast iron pipe centrifugally cast in metal molds shall comply with the requirements of the National Standard Institute and American Waterworks Association designation A21.6/AWWA C106 latest revisions.

2.2.3 Cement mortar lining shall conform to the requirements of ANSI/AWWA C104/A 21.4, latest revision for cement-mortar lining for ductile iron pipe and gray iron pipe and fitting for water.

2.2.4 Fittings and joints for cash iron pipe shall conform to the latest revisions of ANSI/AWWA C110 "Cast iron and ductile iron fittings, three inches (3") through forty-eight inches (48"), for water and other liquids", ANSI/AWWA C111/A 21.11 "Rubber-gasket joints for ductile iron and gray iron pressure pipe and fittings", and ANSI/AWWA 1115 21.15 "Flanged cast iron and ductile iron pipe with threaded flanges".

3. DUCTILE IRON PIPE AND FITTINGS

3.1 Scope: This article covers the design, manufacture, and testing of ductile iron centrifugally cast in metal molds and ductile iron fittings.

3.2 Specific Requirements - Ductile iron pipe shall be centrifugally cast in metal molds and shall be furnished cement lined unless otherwise noted on the PLANS or in other sections of these Specifications. Ductile iron pipe shall be furnished with rubber gasket push-on joints unless otherwise noted on the PLANS or in difficult working areas and with the approval of the ENGINEER.

3.2.1 Thickness design of ductile iron shall conform in all aspects to the requirements of ANSI/AWWA C150/A 2l.50 latest revision.

3.2.2 Manufacture and testing of ductile iron pipe shall conform in all respects to the requirements of the latest revisions of ANSI/AWWA C151/A 2l.5l.

3.2.3 Cement mortar lining - see ART. 2.2.3 above.

3.2.4 Fittings and joints - see ART. 2.2.4 above.

4. PVC (POLYVINYL CHLORIDE) PRESSURE PIPE

4.1 Scope: This article covers the design, manufacture, and testing of PVC 1120 manufactured of CLASS 12454-A or CLASS 12454-B resin material with a hydrostatic-design-basis (HDB) rating of 4,000 psi at 73.4 degree F (23 degree C).

4.2 Specific Requirements: PVC pressure pipe shall be furnished, constructed of materials and to the Specifications of this section. The types of PVC pipe

permitted for use on the project will be as noted on the PLANS, bid documents or other sections of these Specifications. The selected pipe will be designated either as PVC (ASTM) or PVC (AWWA) followed by an appropriate pressure rating. The CONTRACTOR shall thoroughly review the PLANS and other sections of these Specifications for the type of PVC pipe selected for the various parts of the project.

4.2.1 PVC (ASTM) pipe shall be furnished and installed when designated on the PLANS or in the bid documents. When selected, by the ENGINEER, for use on the project PVC (ASTM) pipe shall be designed, manufactured and tested to conform with the latest revision of the American Society for Testing and Materials designation ANSI/ASTM D-2241.

4.2.2 PVC (AWWA) pipe shall be furnished and installed when designated on the PLANS or in the bid documents. When selected by the ENGINEER for use on the project, PVC (AWWA) pipe shall be designed, manufactured, and tested in conformance to the latest revision of the American Waterworks Association designation AWWA C900.

4.2.3 PVC pipe joints shall be rubber gasket push-on joints either constructed integrally with the pipe or as a separate coupling constructed of the same material and to the same pressure Specifications as the pipe.

4.2.4 PVC (ASTM) pipe shall be furnished as SDR 26, 21, and 17 for Class 160 psi, 200 psi and 250 psi respectively.

4.2.5 PVC (AWWA) pipe shall be furnished as SDR 25, 18, and 14 for Class 100 psi, 150 psi and 200 psi respectively.

4.2.6 PVC (AWWA) pipe shall be furnished with outs dimensions (O.D.) equal to that for ductile iron and cast iron pipe.

4.2.7 All fittings for PVC (ASTM) pipe and those for PVC (AWWA) pipe shall be ductile iron, mechanical joint.

5. POLYETHYLENE PIPE AND FITTINGS

5.1 Scope: This section covers the design, manufacture, and testing of polyethylene high density pressure pipe manufactured of grade P34 resin material with a hydrostatic - design basis (HDB) rating of 1,600 PSI at 73.4 degree F (23 degrees C).

5.2 Specific Requirements: The CONTRACTOR shall furnish and install high density polyethylene pipe meeting these Specifications at the locations indicated on the PLANS and in other sections of these Specifications.

5.2.1 High density polyethylene pipe shall be manufactured and tested in conformance to the requirements of the latest revision of the American Society for Testing and Materials designations ASTM D-3350 "Polyethylene Plastic Pipe and Fittings Materials"

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5.2.2 High density polyethylene pipe shall have a grade designation of PE 3406 and a cell classification designation of PE 355434C.

5.2.3 High density polyethylene pipe shall be joined by means of butt fusion.

5.2.4 Fittings for high density polyethylene pipe shall be manufactured of the same materials as the pipe. Unless otherwise indicated, all fittings shall be joined to the pipe by butt fusion techniques.

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TECHNICAL SPECIFICATION
SECTION C
TRENCHING

1. GENERAL

1.1 This section describes the acceptable methods of trenching for the installation of pressure pipe and casing pipe in an open trench.

1.2 Trenching may be accomplished by means of a backhoe, trenching machine or by hand depending on the construction area.

At the CONTRACTOR's option, trenching, by a trenching machine or by backhoe is acceptable except as noted below:

1.2.1 Where the pipe line parallels a state highway and is being installed within the limits of the shoulder, a trenching machine must be used whenever practical.

1.2.2 Where the pipe line is being constructed close to other utilities, structures, buildings, or large trees, and it is reasonable to anticipate possible damage from the use of a backhoe, then trenching shall be made by hand methods.

1.3 Clearing - All trees, stumps, bushes, shrubbery, and abandoned concrete or masonry structures within the limits of the trench shall be removed by the CONTRACTOR, in accordance with provisions of Section A, Article 2.3, and disposed of in a manner satisfactory to the land owner. All clearing work shall be considered as incidental to the cost of laying pipe.

1.4 Bracing and Sheeting - In areas of unstable soils, bracing and sheeting shall be provided to adequately protect the workers during pipe line installation.1

1.4.1 All requirements of the Occupational Safety and Health Act (OSHA) shall be met during trenching and backfill operations.

1.4.2 When sheeting and bracing are required, the trench width shall not be less than specified herein. As backfill is placed, the sheeting shall be withdrawn in increments not exceeding one (I) foot and the void left by the withdrawn sheeting shall be filled and compacted.

1.4.3 The ENGINEER will not be responsible for determining requirements for bracing or sheeting.

1.5 Excavated materials shall be piled in a manner that will not endanger the work and will avoid obstructing driveways and sidewalks. Gutters shall be kept clear or other satisfactory provisions made for street drainage.

2. TRENCHING

2.1 General

2.1.1 The CONTRACTOR shall perform all excavation of every description and of whatever substances encountered, including clearing over the pipe line route. All excavations for the pipe line shall be open-cut except at paved county roads, state and federal highways, railroads and blacktop or concrete driveways which shall be bored unless otherwise approved by ENGINEER or OWNER. Banks of excavations shall be kept as nearly vertical as possible.

2.1.2 Trench widths at the top of the pipe shall not be less than or greater than that given in Table C-1, except as approved by the ENGINEER. If trenching is proposed by the CONTRACTOR, minimum trench width shall be four (4) inches plus the pipe diameter.

TABLE C-1
Allowable Trench Widths

Pipe Size (inches)	Minimum Width (inches)	Maximum width (inches)
4 & less	16	28
6	18	30
8	20	32
10	22	34
12	24	36
14	26	38
16	28	40
18	30	42
20	32	44

2.2 Trench Depth

2.2.1 The trench shall be excavated to a depth sufficient to provide thirty (30) inches of cover over the pipe in non-traffic areas and thirty-six (36) inches in traffic areas. In addition, excavation shall be carried to a minimum of four (4) inches below pipe grade in soil and a minimum of six (6) inches below pipe grade in rock.

2.2.2 When it is necessary to install a pipe line below a roadway ditch, it shall be provided with forty-eight (48inches of cover unless otherwise approved by ENGINEER.

2.3 Excavation will be classified as "unclassified", "earth", or "solid rock". Generally pipe line construction covered by these Specifications will be

unclassified, with no separate payment for rock removal. Rock excavation will be a pay item only when shown on the bid form.

2.3.1 Unclassified excavation shall include all material encountered during excavation of trench to proper depth and width. It includes the removal of all slate, hardpan, soil, pavements, loose and solid rock and any other material which may be encountered in the trench.

2.3.2 Earth excavation shall include removal of all material that does not require blasting or jack hammering for removal.

2.3.3 Solid rock excavation shall include only that material which is not decomposed, weathered or shattered and requires blasting or jack hammering for removal.

2.4 Computation of Rock Excavations

2.4.1 Whenever the bid documents indicate that there is a separate pay item for solid rock and solid rock is encountered, the CONTRACTOR shall notify the ENGINEER for the purpose of obtaining an accurate survey of rock excavation required prior to blasting.

2.4.2 The quantity of solid rock excavation shall be computed by multiplying the average depth of rock strata by the length of strata and by the trench width as hereafter specified:

2.4.2.1 Length of Strata - Distance where bottom of trench intersects the rock strata at each end of strata.

2.4.2.2 Average Depth - Total of all depth measurements taken (one at each end of strata and 25 foot intervals between) divided by total number of measurements. Measurement of depth will be taken from top of strata to six (6) inches below bottom of pipe barrel when laid in accordance with paragraph 2.2.1 above. Rock excavations below the minimum grades as given in paragraph 2.2.1 above unless authorized by the ENGINEER will be at the CONTRACTOR's expense.

2.4.2.3 Width of Trench - Trench widths to be used in rock computations will be eighteen (18) inches for pipes four (4) inches inside diameter and less, twenty-four (24) inches for pipes with inside diameters of six (6) inches, eight (8) inches, and ten (10) inches, and thirty (30) inches for pipes with inside diameters of twelve (12) inches, fourteen (14) inches and sixteen (16) inches. Any rock excavation greater than herein set out shall be at the CONTRACTOR's expense.

2.5 Blasting for excavation shall occur only after proper precautions are taken for the protection of persons and property. Any damage caused by the blasting shall be repaired by the CONTRACTOR at his expense. The CONTRACTOR's methods of blasting and procedure shall conform to local state

laws and municipal ordinances. The ENGINEER will not be responsible, nor direct in any way, blasting practices of the CONTRACTOR.

TABLE D - 3

SIZE	APPROXIMATE MELT BEAD
2 inch & below	1/16 inch
3 inch - 5 inch	1/8 inch
6 inch & larger	3/16 inch

4.3.6 Carefully move the pipe ends away from the heater plate and remove the plate. (If the softened material sticks to the heater plate, discontinue the joint. Clean heater plate, re-square pipe ends and start over).

4.3.7 Bring melted ends together rapidly. DO NOT SLAM. Apply enough pressure to form a double roll-back to the body of the pipe bead around the entire circumference to the pipe about 1/8 inch to 3/16 inch wide. Pressure is necessary to cause the heated material to flow together.

4.3.8 Allow the joint to cool and solidify properly. This occurs when the bead feels hard and your finger can remain comfortably on the bead. Remove the pipe from the clamps and inspect the joint appearance.

5. PIPE CUTTING

Cutting of pipe for the insertion of valves, fittings or closure pieces shall be done in a neat and workmanlike manner without creating damage to the pipe, linings, or coatings and in strict accordance to manufacturer's recommendation.

TECHNICAL SPECIFICATIONS
SECTION D
BEDDING AND PIPE INSTALLATION

1. GENERAL

1.1 This section covers the bedding and installation of pipe line materials prior to the backfilling operations.

1.2 Proper implements, tools, and facilities shall be provided and used for safe and convenient performance of the work. All pipe, fittings, valves and hydrants shall be lowered carefully into the trench by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to pipeline materials and protective coatings and linings. Under no circumstances shall pipeline materials be dropped or dumped into the trench. The trench shall be completely dewatered prior to pipe installation.

1.3 All pipe, fittings, valves, hydrants, and other appurtenances shall be examined carefully for damage and other defects immediately prior to installation. Defective materials shall be marked and held for inspection by the ENGINEER, who may prescribe corrective repairs or reject the materials.

2. BEDDING

2.1 The trench shall be excavated to the depth indicated in Section C herein before. They shall have a general smooth grade. After excavation and prior to pipe installation, the CONTRACTOR shall fill the trench to a depth of four (4) inches in earth areas and six (6) inches in rock areas with specified bedding material.

2.2 Bedding material, in earth excavation areas, may be clean earth free from rocks, debris, or other foreign material. The CONTRACTOR shall use crushed stone, sand, or gravel as bedding material where rock excavation is encountered.

2.2.1 The CONTRACTOR shall review standard drawings of the Plans for bedding techniques.

2.2.2 Unless prior written approval is given by the ENGINEER, placement of pipe directly on the trench bottom will not be acceptable.

2.3 The specified depth of bedding shall be placed, the pipe lowered into position, then additional bedding material added to bring the bedding to the springline of the pipe. The bedding shall be thoroughly compacted in layers not to exceed six (6) inches or installed in accordance with manufacturer's recommendations.

2.4 From the springline of the pipe to a distance twelve (12) inches above the pipe, the CONTRACTOR shall use the same material as specified for bedding. Compaction is required in areas subject to traffic.

4.1 Push-On Joints - Push-on joints are to be assembled as follows:

4.1.1 Thoroughly clean the groove and bell socket and insert the gasket, making sure that it faces the proper direction and that it is correctly seated.

4.1.2 After cleaning dirt or foreign material from the plain end, apply lubricant in accordance with the pipe manufacturer's recommendations. The lubricant is supplied in sterile cans and every effort should be made to keep it sterile.

4.1.3 Be sure that the plain end is beveled; square or sharp edges may damage or dislodge the gasket and cause a leak. When pipe is cut in the field, bevel the plain end with a heavy file or grinder to remove all sharp edges. Push the plain end into the bell of the pipe. Keep the joint straight while pushing. Make deflection after the joint is assembled.

4.1.4 Small pipe can be pushed into the bell socket with a long bar. Large pipe requires additional power, such as a jack, lever puller, or backhoe. The supplier may provide a jack or lever pullers on a rental basis. A timber header should be used between the pipe and jack or backhoe bucket to avoid damage to the pipe.

4.2 Mechanical Joints - Mechanical joints are to be assembled as follows:

4.2.1 Wipe clean the socket and plain end. The plain end, socket, and gasket should be washed with a soap solution to improve gasket seating.

4.2.2 Place the gland on the plain end with the lip extension toward the plain end, followed by the gasket with the narrow edge of the gasket toward the plain end of the pipe.

4.2.3 Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.

4.2.4 Push the gland toward the bell and center it around the pipe with the gland lip against the gasket.

4.2.5 Align bolt holes and insert bolts with bolt heads behind the bell flange, and tighten opposite nuts to keep the gland square with the socket. Make deflection after joint assembly but before tightening the bolts.

4.2.6 Tighten the nuts in accordance with TABLE D-I.

2.5 Unstable Subgrade - When the subgrade is found to be unstable or to include ashes, cinders, refuse, organic material, or other unsuitable material, such material shall be removed to the depth ordered by the ENGINEER and replaced under the directions of the ENGINEER with clean, stable backfill material. When the bottom of the trench or the subgrade is found to consist of material that is unstable to such a degree that, in the judgement of the ENGINEER it cannot be removed, a foundation for the pipe and/or appurtenances shall be constructed using piling, timber, concrete, or other materials at the direction of the ENGINEER.

3. PIPE INSTALLATION

3.1 Proper implements, tools, and facilities shall be provided and used for the safe and convenient performance of the work. All pipe, fittings, valves, and hydrants shall be lowered carefully into the trench by means of a derrick, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to waterline materials and protective coatings and linings. Under no circumstances shall waterline materials be dropped or dumped into the trench. The trench should be dewatered prior to installation of the pipe.

3.2 The CONTRACTOR shall secure from the manufacturer an installation guide for the pipe being used. The CONTRACTOR shall in all cases adhere to the recommended installation procedures of the manufacturer except where those given herein are more stringent. The more stringent requirements shall be met.

3.2.1 Examination of Material - All pipe fittings, valves, hydrants, and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the ENGINEER who may prescribe corrective repairs or reject the materials.

3.2.2 Pipe Ends - All lumps, blisters, and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and be free from dirt, sand, grit, or any foreign material before the pipe is laid.

3.2.3 Pipe Cleanliness - Foreign material shall be prevented from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing, or other materials shall be placed in the pipe.

3.2.4 Pipe Placement - As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.

3.2.5 Pipe Plugs - At times when pipe laying is not in progress, the open ends of pipe shall be closed by a water tight plug or other means approved by the ENGINEER. Care must be taken to prevent pipe flotation should the trench fill with water. The plug shall remain in place until the trench is pumped completely dry.

4. JOINT ASSEMBLY

TABLE D - 1
MECHANICAL JOINTS - BOLT TORQUES

Bolt Diameter Inches	Torque ft. lbs.
5/8	45 - 60
3/4	75 - 90
1	86 - 100
1 1/4	105 - 120

4.3 Butt Fusion Joints - Butt fusion joints shall be made in the following manner:

4.3.1 Clean pipe ends inside and outside to remove dirt, water, grease and other foreign materials.

4.3.2 Square (face) the pipe ends using facing tool of the fusion machine.

4.3.3 Check line-up of pipe-ends in fusion machine to see that pipe ends meet squarely and completely over the entire surface to be fused. Make sure the clamps are tight so that the pipe does not slip during the fusion process.

4.3.4 Check temperature of heater plate to assure that it falls within the range given in TABLE D-2.

TABLE D-2

THERMOMETER READINGS (Degrees Fahrenheit)		SURFACE TEMPERATURE (Degrees Fahrenheit)	
Coated Plates	Uncoated Plates	Coated Plates	Uncoated Plates
500-525	475-500	475-500	475-500
400-425	375-400	375-400	375-400

4.3.5 Insert clean heater plate between aligned ends, and bring ends firmly in contact with plate, but DO NOT APPLY PRESSURE while achieving melt pattern. Allow pipe ends to heat and soften. Approximate softening depths are given in

TABLE D - 3

SIZE	APPROXIMATE MELT BEAD
2 inch & below	1/16 inch
3 inch - 5 inch	1/8 inch
6 inch & larger	3/16 inch

4.3.6 Carefully move the pipe ends away from the heater plate and remove the plate. (If the softened material sticks to the heater plate, discontinue the joint. Clean heater plate, re-square pipe ends and start over).

4.3.7 Bring melted ends together rapidly. DO NOT SLAM. Apply enough pressure to form a double roll-back to the body of the pipe bead around the entire circumference to the pipe about 1/8 inch to 3/16 inch wide. Pressure is necessary to cause the heated material to flow together.

4.3.8 Allow the joint to cool and solidify properly. This occurs when the bead feels hard and your finger can remain comfortably on the bead. Remove the pipe from the clamps and inspect the joint appearance.

5. PIPE CUTTING

Cutting of pipe for the insertion of valves, fittings or closure pieces shall be done in a neat and workmanlike manner without creating damage to the pipe, linings, or coatings and in strict accordance to manufacturer's recommendation.

TECHNICAL SPECIFICATIONS
SECTION E
BACKFILLING

1. GENERAL

Backfill is considered herein to be the complete refilling of the excavated trench from a point twelve (12) inches above the pipe to the original surface level. See Section D for bedding and backfill to twelve (12) inches above pipe.

2. BACKFILLING

2.1 Backfill material may contain stones with maximum dimensions not exceeding eight (8) inches. Otherwise, all backfill must be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, frozen soil or any other materials which in the opinion of the ENGINEER is unsuitable.

2.2 When the type of backfill material is not indicated on the PLANS or is not specified in other sections herein, the material excavated from the trench may be used, provided that such material consists of loam, clay, sand, gravel, or other materials that, in the opinion of the ENGINEER, are suitable for backfilling.

2.3 If there is a deficiency of excavated material, suitable for backfill, or because of rejections of any part thereof, other approved material to restore the work suitable to original grade shall be provided by the CONTRACTOR.

2.4 Backfill shall be placed in such a manner to assure that the surface will be smooth and level with the original surface. Any and all settled areas must be brought to grade and restored to as near original conditions as possible prior to final acceptance of the project by the OWNER.

2.5 For all paved county roads, state and federal highways, railroads, blacktop or concrete driveways, or other surfaces subject to traffic that are not bored, full depth compaction of the backfill to 90% standard proctor density will be required.

TECHNICAL SPECIFICATIONS
SECTION F
CLEANUP AND SURFACE RESTORATION

1. GENERAL

This SPECIFICATION covers the furnishing of all labor, materials, equipment, supplies and related items to regrade construction areas to original contours or regrade contours shown on PLANS, fertilize and lime, seed or sod the area as indicated on PLANS and in general return all disturbed areas to their original or regrade contour and condition.

2. FINE GRADING

2.1 Upon completion of backfill, the construction area shall be regraded roughly to original or regrade contours. The top eight (8) inches of the regrade must be free from rocks and other deleterious material. All rock shall be picked up and disposed of at a designated place approved by OWNER.

2.2 Any and all settled areas must be brought to grade and restored to as near original conditions as possible prior to final acceptance of the Project by the OWNER.

3. SEEDING AND SODDING

3.1 After regrading has been completed, rocks, and all excess excavated material have been removed, the area shall be fine graded and evenly shaped in preparation for seeding or sodding.

3.2 Preparation of Seed Bed - Where the area to be seeded is not sufficiently pulverized to provide a good seedbed, the seedbed will be prepared by pulverizing the soil to a depth of four (4) inches with a disk harrow, drag harrow, spike toothed harrow or similar tool immediately prior to seeding.

3.3 Lime and Fertilizer - Immediately prior to seedbed preparation, two (2) tons of agricultural limestone per acre and one half (1/2) ton per acre of fertilizer with a 10-10-10 analysis shall be uniformly applied.

3.4 Seeding - a mixture of fifty percent (50%) bluegrass, forty percent (40%) domestic rye and ten percent (10%) redtop shall be sowed at the rate of thirty (30) pounds per acre. The seed shall have a minimum of eighty percent (80%) percent germination and a maximum of one percent (1%) weeds. The seed shall be drilled or raked into the ground to a depth of approximately one-fourth (1/4) inch.

3.5 Mulching - All seeded areas subject to erosion, all yards, or as otherwise directed by the ENGINEER, shall be covered with a straw mulch placed to a uniform depth of one and one-half (1 1/2) inches loose.

3.6 Sodding - The sod bed shall be prepared, fertilized and limed similar to those areas to be seeded. Then the sod shall be placed in accordance with Section 528.3.4 of the Standard SPECIFICATIONS for Road and Bridge construction of the KY Department of Transportation.

TECHNICAL SPECIFICATION
SECTION G
STEEL CASING PIPE

1. GENERAL

Under this item, the CONTRACTOR shall provide all labor, tools, materials, and equipment necessary to construct, complete and in place, the steel casing pipe at the locations shown on the PLANS and in the manner indicated herein.

2. MATERIALS

2.1 Casing pipe shall be steel, plain end, conforming to AWWA Specification C-200, latest revision. Steel for casing pipe shall have a minimum yield strength of 35,000 psi. Casing pipe shall neither be coated or wrapped. The inside diameter of the casing pipe shall be a minimum of four (4) inches greater than the outside diameter of the carrier pipe joint or coupling for casings under railroads and a minimum of 2" greater for other casing installations or as shown on PLANS or in the BID FORM.

2.2 The minimum wall thickness shall be in accordance with TABLE G-1.

TABLE G-1

Diameter of Casing - Inches	Minimum Wall Thickness Under Railroads - Inches	All Other Uses Inches
20 or less	0.250	0.250
22	0.281	0.250
24	0.312	0.250
26	0.344	0.281
28	0.375	0.375
30	0.406	0.375
Greater than 30	0.500	0.375

2.3 Casing pipe shall have continuously welded joints. Shop welded joints shall be continuously welded in accordance with AWWA SPECIFICATIONS C-200, latest revision. Field welds shall be done by a certified welder in accordance with AWWA SPECIFICATION C-206, latest revision.

3. INSTALLATION

3.1 Bore and Jack:

3.1.1 Where designated on the PLANS or when directed by the ENGINEER, crossings beneath state maintained roads, railroads, or other surfaces shall not be disturbed and are to be installed by boring and jacking of steel casing pipe followed by installation of the carrier pipe within the casing pipe. The

CONTRACTOR shall provide a jacking pit, bore through the earth, and/or rock, jack the casing pipe into proper line and grade and then install the carrier pipe within the casing pipe.

3.1.2 The approach trench shall be large enough to accommodate one section of casing pipe, the jacks and blocking. The CONTRACTOR shall furnish and use adequate equipment to maintain the line and grade. The approximate ditch width must be approved by the ENGINEER prior to excavation.

3.1.3 The carrier pipe shall be securely anchored in place within the casing by plastic pipeline crossing insulators Model 60 as manufactured by F. H. Maloney Company, or equal, or other method approved by the ENGINEER.

3.1.4 After proper installation of the carrier pipe within the casing pipe and secure anchorage of the carrier pipe, each end of the casing pipe shall be sealed with bituminous mastic or multiflex molded type casing seal by F. H. Maloney Company, or equal.

3.2 Open Cut:

3.2.1 For locations where installation by open cut is designated, the CONTRACTOR shall open the trench under the direction of the ENGINEER and install the casing pipe and complete the bedding and backfilling as described for line work.

3.2.2 Installation, anchorage, and end sealing shall conform to 3.1 above, and on the preceding page.

TECHNICAL SPECIFICATIONS
SECTION H
FITTINGS, HYDRANTS, VALVES

1. SCOPE

This section describes the materials, construction, type, sizes and installation of valves, fittings, and fire hydrants.

2. FIRE HYDRANTS

2.1 All fire hydrants shall be dry barrel of the compression type, with cast iron body, fully bronze-mounted, suitable for a working pressure of 150 pounds per square inch and shall be in accordance with the latest SPECIFICATIONS of the AWWA. Hydrants shall open by the use of a pentagonal nut and have two (2), two and one-half (2 1/2) inch hose connections and a four and one-half (4 1/2) inch streamer connection with threads standard to the OWNER'S requirements.

2.2 Hydrants shall be constructed in a manner permitting withdrawal of internal working parts without disturbing barrel of casing. Hydrants shall be provided with a porous fill around barrel. Valve, when shut, shall be reasonably tight and remain closed if upper portion of barrel should be broken off. There shall be no chattering under any conditions of operation. Each hydrant shall be tested to a hydrostatic pressure of 300 psi with valve in both opened and closed position. The direction of opening shall be cast in the head of the hydrant and shall be approved by the OWNER and ENGINEER. Hydrants shall be painted with one (1) coat of red lead and two (2) finishing coats of Sonneborn's Hydrant Enamel, color to match existing hydrants or to be selected by OWNER.

2.3 Hydrants shall have mechanical joint ends for direct joining to pipe and shall be as manufactured by the M & H Company, Anniston, Alabama; Mueller & Company, Decatur, Illinois; or approved equal. Two (2) operating and spanner wrenches shall be furnished with each project. Extensions for bury depth in excess of a minimum of three (3) feet six (6) inches shall be included in the cost of hydrants.

2.4 Installation - Fire hydrants shall be installed as detailed on Standard Drawings included with construction PLANS.

2.4.1 Examination of Material - Prior to installation, inspect all hydrants for direction of opening, nozzle threading, operating-nut and cap-nut dimensions, tightness of pressure-containing bolting, cleanliness of inlet elbow, handling damage, and cracks. Defective hydrants shall be corrected or held for inspection by the ENGINEER.

2.4.2 Placement - All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to the curb, with the pumper nozzle facing the curb, except that hydrants having two-hose nozzles ninety-degrees (90) apart shall be set with each nozzle facing the curb at an angle of forty-five degrees (45).

2.4.3 Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least twelve (12) inches above the ground, or as directed by the ENGINEER.

2.4.4 Each hydrant shall be connected to the main with a branch controlled by an independent valve, as shown on the PLANS, unless otherwise specified by the ENGINEER.

2.4.5 When a dry-barrel hydrant is set in soil that is impervious, drainage shall be provided at the base of the hydrant by placing coarse gravel or crushed stone mixed with coarse sand, from the bottom of the trench to at least six (6) inches above the waste opening in the hydrant and to a distance of one (1) foot around the elbow.

2.4.6 When a dry-barrel hydrant with an open drain is set in clay or other impervious soil, a drainage pit of 2 feet x 2 feet x 2 feet shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand, under and around the elbow of the hydrant and to a level of six (6) inches above the drain port.

2.4.7 Location - Hydrants shall be located as shown on the PLANS or as directed by the ENGINEER.

2.4.8 Protection - In the case of hydrants that are intended to fail at the ground-line joint upon vehicle impact (traffic hydrants), specific care must be taken to provide adequate soil resistance to avoid transmitting shock moment to the lower barrel and inlet connection. In loose or poor load bearing soil, this may be accomplished by pouring a concrete collar approximately six (6) inches thick to a diameter of two (2) feet at or near the ground-line around the hydrant barrel.

3. GATE VALVES

3.1 All gate valves shall be manufactured in conformance to all requirements of AWWA designation C-500. Valves shall be furnished with mechanical joint ends for connection to the pipe line. When required by the type of pipe or special conditions of the construction site, plain, bell or flanged end valves may be used upon approval of the ENGINEER. Valves shall have an adjustable two piece cast iron valve box and cover suitable for thirty (30) inch to thirty-six (36) inch pipe cover.

3.1.1 Valves shall be manufactured to meet all applicable requirements of AWWA Standard for Resilient Seated Gate Valve C509-80. Valves 12" and smaller shall be bubble-tight at 200 psi water working pressure.

3.1.2 Each valve shall have maker's name, pressure rating and year in which manufactured, cast on the body. Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to twice the specified working pressure.

3.1.3 The interior shall be two part thermo-setting, non-toxic epoxy which is safe for potable water.

3.1.4 Body and cover bolts and nuts shall meet Specification ASTM A-307 and shall be suitably rustproofed.

3.1.5 Stem nuts shall be two inches (2") square and be independent of wedge and shall be made of solid bronze conforming to ASTM B62.

3.2 Covers shall be stamped "Water". Both valves and boxes shall be installed vertically. Two (2) valve wrenches shall be furnished for the project. Covers shall be set to conform to finish surface of the ground or street.

3.3 Valves shall have the interior thoroughly cleaned and shall be inspected in both the open and closed positions just prior to installation. Earth shall be thoroughly tamped for a radius of four (4) feet all around valve boxes.

4. AIR RELEASE VALVES, AIR AND VACUUM VALVES, COMBINATION AIR RELEASE VALVES, AND BOXES

All air valves shall be installed as shown on the PLANS. This item shall include the complete assembly with box and cover top, shut-off valve, blowoff, air valve and piping with valves, fittings and union, all complete and ready for operation. Valves shall be designed for 150 psi working pressure unless designated otherwise. Valves shall not be less than three-fourths (3/4) inch in size but in all cases furnished in size as given on the PLANS or in the Bid Form. They shall be Apco, Mueller, or approved equal. All valve boxes for air valves shall be carefully set to grade. The cover shall be set at grade. Off line installations shall be located in fence lines or uncultivated areas, where possible.

5. CHECK VALVES

Check valves installed in water lines shall be as shown on the PLANS. All check valves in distribution lines shall be standard iron body, swing type with straightway passage of full pipe area. These valves shall be bronze-mounted with self adjusting neoprene faced disc. They shall be manufactured and tested in conformance with AWWA standard C-508 latest revision. Check valves installed in distribution systems shall be installed in a meter box large enough to permit access and maintenance.

6. BUTTERFLY VALVES

Butterfly valves, when called for on the PLANS or in other section of these SPECIFICATIONS, shall be manufactured and tested in accordance to all requirements of AWWA standard ANSI/AWWA C-504 latest revision.

7. TAPPING SLEEVES ASSEMBLIES AND VALVES

The tapping sleeves or assemblies for connections to existing water lines shall be of the mechanical joint type suitable for working pressures of M & H Valve Company, Mueller Company or approved equal.

8. PRESSURE REDUCING VALVE

The pressure reducing valve shall automatically reduce a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. This valve shall be an accurate, pilot operated regulator capable of holding downstream pressure to a predetermined delivery pressure. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve shall close drip tight. All valves shall be furnished with indicating stems for indication of valve operation.

The pressure reducing valve shall consist of a main valve and a pilot control system. The main valve shall be a single seated, hydraulically operated, pilot controlled, diaphragm type globe valve. The control system shall be sensitive to slight pressure changes and immediately control the main valve to maintain the desired downstream pressure. Pressure setting adjustment shall be made with a single adjusting screw. The adjusting screw shall be protected by a screw type housing
which may be sealed.

The adjustment range shall be as indicated on the PLANS or other sections herein and shall be as manufactured by Clayton, Bermad, Ross Valve or an approved equal.

9. INSTALLATION OF FITTINGS AND VALVES

9.1 Examination of Material:

Prior to installation, valves shall be inspected for direction of opening, freedom of operation, tightness of pressure containing bolting, cleanliness of valve ports and especially seating surfaces, handling damage, and cracks. Defective valves shall be corrected or held for inspection by the ENGINEER.

9.2 Placement:

Valves, fittings, plugs, and caps shall be set and joined to the pipe in the manner specified in the section for cleaning, laying, and joining pipe, except that twelve (12) inch and larger valves should be provided with special support, such as treated timbers, crushed stone, concrete pads, or sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve.

9.3 Valve Location:

Valves in water mains shall, where practical, be located in the street, near fence lines, in non cultivated areas or on property lines extended in unpaved areas

unless shown otherwise on the PLANS. Valves shall be located in fence lines or uncultivated areas, where possible.

9.4 Mains shall be drained through drainage branches or blowoffs. Drainage branches, blowoffs, air vents, and appurtenances shall be provided with valves and shall be located and installed as shown on the PLANS. Drainage branches or blowoffs shall not be directly connected to any storm or sanitary sewer, submerged in any stream, or be installed in any other manner that will permit back siphonage into the distribution system.

9.5 Valve Protection:

A valve box or a vault shall be provided for every valve.

9.6 A valve box shall be provided for every valve that has no gearing or operating mechanism or in which the gearing or operating mechanism is fully protected with gear case. The valve box shall be centered over the operating nut of the valve, with the box cover flush with the surface of the finished area or such other level as may be directed by the ENGINEER.

9.7 A valve vault designed to prevent settling on the pipe shall be provided for every valve that has exposed gearing or operating mechanisms. The operating nut shall be readily accessible for operation through the opening in the valve vault which shall be set flush with the surface of the finished pavement or such other level as may be specified. Vaults shall be constructed to permit minor repairs and afford protection to the valve and pipe from impact where they pass through the vault walls.

9.8 In no case shall valves be used to bring misaligned pipe into alignment during installation. Pipe shall be supported in such a manner as to prevent stress on the valve.

9.9 Plugs and Caps:

All dead ends on new mains shall be closed with plugs or caps that are suitably restrained to prevent blowing off under test pressure. If a blowoff valve precedes the plug or cap, it too shall be restrained against blowing off. All dead ends shall be equipped with suitable blowoff facilities.

10. THRUST BLOCKING

10.1 Hydrants:

The bowl of each hydrant shall be well braced against a sufficient area of unexcavated earth at the end of the trench with stone slabs, concrete backing, or it shall be tied to the pipe with suitable metal tie rods, clamps, or restrained joints as shown on the PLANS.

10.1.1 Tie rods, clamps, or other components of dis-similar metal shall be protected against corrosion by hand application of a bituminous coating

or by encasement of the entire assembly with eight (8) millimeter thick loose polyethylene film in accordance with AWWA C-105.

10.1.2 Thrust restrain design pressure shall be equal to the test pressure.

10.2 Fittings:

All plugs, caps, tees, and bends, unless otherwise specified, shall be provided with reaction backing, or suitably restrained by attaching metal rods, clamps, or restrained joints as shown or specified by the ENGINEER.

10.3 Restraint Materials:

Vertical and horizontal reaction backing shall be made of concrete having a compressive strength of not less than 2,000 psi after 28 days.

10.3.1 Backing shall be placed between solid ground and the fitting to be anchored; the area of bearing on the pipe and on the ground in each instance shall be that shown or directed by the ENGINEER. The backing shall, unless otherwise shown or directed, be so located as to contain the resultant thrust force and so that the pipe and fitting joints will be accessible for repair.

10.3.2 Restrained push on joints, mechanical joints utilizing set-screw retainer glands or metal harness of tie-rods, or clamps may be used instead of concrete backing if so indicated in the PLANS and SPECIFICATIONS. Tie rods, clamps, or other components of dissimilar metal shall be protected against corrosion by hand application of a bituminous coating or by encasement of the entire assembly with eight (8) millimeter thick, loose polyethylene film in accordance with AWWA C-105.

TECHNICAL SPECIFICATION
SECTION I
METERS, SERVICES & INDIVIDUAL PRESSURE REDUCING VALVES

1. METER

1.1 General:

It is the intent of these SPECIFICATIONS to obtain water meters which are cold water nutating disc type with hermetically sealed and magnetically driven registers. Meters shall be first line quality of the manufacturer. The latest requirements of the AWWA SPECIFICATIONS C-700 shall be complied with, except in cases of conflict with these SPECIFICATIONS. Any type or make of meter offered must have been manufactured and marketed in the U.S. for at least five (5) years or more. A bond may be submitted to waive this experience clause. The bond shall be of an amount adequate for replacement of the meters and shall be held for five (5) years. The OWNERS' preference of meters, if any, shall govern brand to be used.

1.1.1 Main Cases - The main case shall be high grade waterworks bronze, with hinged, single lid cover and raised characters cast on them to indicated the direction of flow. Each meter must have the manufacturer's serial number stamped on the lid. They must have a working pressure of 150 psi. Standard frost bottom meters shall be furnished. Non-ferrous strainers shall be provided which fit tightly against the main case.

1.1.2 Measuring Chambers - The measuring chamber shall be of 85-5-5-5 bronze alloy composition and stainless steel or monel trimmed. The chamber shall be of the two piece design, equipped with a disc made of hard rubber and as near to the specific gravity of water as possible. Discs shall be of the three piece design of the thrust roller type.

1.1.3 Registers - The register shall be straight reading U.S. gallon type. The register unit shall be completely encased and hermetically sealed, and driven by permanent magnets. There shall be a test index circle, divided into 100 equal parts, and shall have a red center sweep test hand. Water meters shall be Rockwell Meter or approved equal. Registers shall be guaranteed by the manufacturer for a period of at least fifteen (15) years.

1.2 Testing of Meters:

The meter manufacturer shall furnish certificates showing that each meter has been tested for accuracy of registration and that it complies with accuracy and capacity requirements of the latest edition of AWWA C700, when tested in accordance with AWWA C705.

1.3 Meters shall include meter box and cover, meter, coppersetter, six (6) feet of pipe and corporation stop, plus four (4) feet of pipe on the customer's side of meter. (This latter item is to prevent the customer or his plumber from disarranging or loosening the meter after the CONTRACTOR has already set the meter in its proper position.) Where the main line is in the highway right-of-way, meter shall be set as close to the right- of-way fence as practical but no meter on the same side of the road as the main line shall be set with more than ten (10) feet of service line unless prior approval has been obtained from the ENGINEER or his representative.

1.4 Meters shall be installed at each service connection unless directed otherwise by the ENGINEER. Meter boxes shall be concrete, PVC, OWNERS preference or as designated on the bid form, and shall be twenty-four (24) inches deep or OWNER'S preference. The box shall be fifteen (15) inches in diameter or eighteen (18) inches in diameter where individual PRV's are required. Meter box cover shall be eleven and one-half (11 1/2) inches diameter by four (4) inches deep, Ford No.

X-31, or equal. Meters shall be five-eighths inch by three-fourths inch (5/8 x 3/4) unless shown otherwise on the PLANS. Meter connections shall be made by means of Ford Coppersetters having a cut-off and three-fourths (3/4) inch locking spud. An angle check valve shall be furnished on the meter outlet side of the coppersetter. (The size of meter box stated is for five-eighths inch by three-fourths inch (5/8 x 3/4) meter. For larger meters, meter box size shall be in accordance with standard practice.) Alternate boxes may be considered upon submittal of shop drawings and performance data.

1.5 Meters shall be set in a workmanlike manner with backfill neatly compacted in place. In yards, pastures and other grassed areas, top of meter box will be one-half (1/2) inch above grade, otherwise two (2) inches above grade.

2. INDIVIDUAL METER PRESSURE REDUCING VALVES

2.1 Pressure reducing Valves will be installed for individual services only where shown by notes on PLANS.

2.2 These valves shall be a Watts, Model No. U5, three-fourths (3/4) inch regulator or approved equal complete with a stainless steel strainer. Each regulator to have an adjustable pressure range of 25-75 psi and is to be set at 60 psi or pressure desired by OWNER. These regulators shall be installed on the inlet side of the service meter using a tandem copper-setter. Burying of the PRV or installing in a separate meter box will not be permitted.

3. SERVICE LINE

3.1 Service Lines Not Crossing a Road:

Unless indicated otherwise on the PLANS, all service lines shall be polyethylene plastic tubing. A corporation stop, Mueller H-1500 or approved equal, shall be used on each service line at the main line connection.

3.2 Service Lines Crossing a County Road or City Street:

Same as above, except that all pipe will be jacked beneath paved or blacktopped City streets or County roads, unless rock prevents using this method. Open-cut shall be used on all unpaved City streets, County roads and private driveways. Blacktopped private driveways shall also be jacked under. In all cases where lines are under traffic, a minimum cover o thirty (30) inches shall be provided. All backfill shall be puddled or compacted by air tampers in layers no greater than a six (6) inch depth.

3.3 Service Lines Crossing a State Highway:

Same as above except services shall be jacked or pushed under paving. If solid rock is encountered, trench will not be open-cut until the Department of Transportation approval is received. All pipe shall be placed and backfilled in accordance with current requirements of the State Highway Department.

TECHNICAL SPECIFICATION
SECTION J
SPECIAL ITEMS OF CONSTRUCTION

1. MAIN LINE CROSSINGS OF STATE HIGHWAYS, CITY STREETS, COUNTY AND PRIVATE ROADS

1.1 State Highways:

These crossings shall be made in accordance to State Highway Department requirements. All such crossings shall be made by boring or jacking, unless otherwise approved by the ENGINEER and Department of Transportation. When casing pipe is required, the crossing shall be made as shown on the PLANS.

1.2 City Streets, County and Private Roads:

Same SPECIFICATIONS as for service line crossings for paved surfaces. Where solid rock beneath crossing makes trenching necessary, replacement of surfacing shall be of same type and depth as original surface. For all such crossings, all backfill shall be either puddled or mechanically tamped in layers no more than six (6) inches in depth. If backfilled with crushed stone or creek gravel, the ENGINEER may omit puddling or mechanical tamping.

2. RAILROAD CROSSINGS

At all Railroad Crossings casing pipe for water lines (carrier pipe) shall be bored, jacked or pushed beneath tracks unless otherwise shown, and the carrier pipe shall be jointed and pushed through the casing pipe. Detailed drawings of railroad crossings are given on the PLANS.

3. CREEK CROSSINGS

3.1 Where a creek has a solid rock floor, the trench shall be cut in rock to such depth as to permit installation in accordance with details in the PLANS. All stream crossings shall be scheduled for construction in times of low flow, if practicable, otherwise, coffer dams of sand bags or clay fill shall be used to divert the stream. A typical stream crossing section is shown on the PLANS.

3.2 Where a creek has an earthen floor it shall be constructed as shown on the PLANS.

3.3 Where it is not practicable to lower waterline to provide sufficient cover to protect water line from erosion at ends of culvert pipe or in steep ditches, this protection shall be afforded by either extending culvert pipe or constructing a short section of concrete flume.

4. RIVER OR LAKE CROSSINGS

Crossings of this type shall be made with materials and pipe specified herein or indicated on the PLANS and in strict accordance with details given on the PLANS.

5. PIPELINE MARKERS (Not Required on this Job)

The CONTRACTOR shall install one (1) pipeline marker next to each gate valve and in row fences at all road crossings, or not more than 4,000 feet between markers. These markers shall be whitefiberglass fence posts, approximately 54" long and shaped "+" as available from Southern States or equal. The top 8" of these posts shall be sprayed with a light reflecting blue paint after they have been driven into the ground approximately 24".

TS-K-1
130301

TECHNICAL SPECIFICATIONS
SECTION K
TESTING AND STERILIZATION

1. TESTING

1.1 After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure test of at least 1.5 times the working pressure at the point of testing, but in no case less than that required by other sections herein. In addition, a leakage test shall be conducted concurrently with the pressure test.

1.2 Pressure Test:

1.2.1 Test Pressure Shall:

1.2.1.1 Not be less than 1.25 times the working pressure at the highest point along the test section.

1.2.1.2 Not to exceed pipe or thrust restraint design pressures at the lowest point along the test section.

1.2.1.3 Be of at least four (4) hour duration.

1.2.1.4 Not vary by more than plus or minus 3 PSI.

1.2.1.5 Not exceed twice the rated pressure of the valves or hydrants when the pressure of the test section includes closed gate valves or hydrants.

1.2.1.6 Not to exceed the rated pressure of resilient seat butterfly valves when used.

1.2.2 Each valved section of pipe shall be filled with water slowly 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.

1.2.3 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 ENGINEER.

1.2.4 All exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, or hydrants 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 ENGINEER.

1.3 Leakage Testing:

1.3.1 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 3 PSI of the specified test pressure after

TS-K-2
130301

the air in the pipeline has been expelled and the pipe has been filled with water.

1.3.2 No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

L=ND(P exp 1/2)/7400

In which L is the allowable leakage, in gallons per hour; N is the number of joints in the length of pipeline tested; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge.

1.3.2.1 Allowable leakage at various pressures is shown in TABLE K-1.

1.3.2.2 When testing against closed metal seated valves, an additional leakage per closed valve of 0.0078 gal/hr/in of nominal valve size shall be allowed.

1.3.2.3 When hydrants are in the test section, the test shall be made against the closed hydrant.

1.3.3 Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified in Section 1.3.2 the CONTRACTOR shall, at his own expense, locate and repair the defective material until the leakage is with the specified allowance.

1.3.3.1 All visible leaks are to be repaired regardless of the amount of leakage.

TABLE K-1

ALLOWABLE LEAKAGE PER 1,000 FT. OF PIPELINE (gph)

Avg. Test Pressure psi	Nominal Pipe Diameter (Inches)								
	2	3	4	6	8	10	12	14	16
450	0.32	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55
400	0.30	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40
350	0.28	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25
300	0.26	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08
275	0.25	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99
250	0.24	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90
225	0.23	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80
200	0.21	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70
175	0.20	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59
150	0.19	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47
125	0.17	0.25	0.34	0.50	0.67	0.84	0.01	1.18	1.34
100	0.15	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20

TABLE K-1 (CONTINUED)

TS-K-3
130301

Avg. Test Pressure psi	Nominal Pipe Diameter (Inches)							
	18	20	24	30	36	42	48	54
450	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60
400	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11
350	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58
300	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02
275	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72
250	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41
225	2.03	2.35	2.70	3.38	4.05	4.73	5.41	6.03
200	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
175	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
150	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97
125	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
100	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

2. STERILIZATION

2.1 General:

It is the intent of this section to present essential procedures for disinfecting new and repaired water mains. The section is patterned after AWWA C601. The basic procedure comprises:

2.1.1 Preventing contaminating materials from entering the water mains during construction or repair and removing by flushing materials that may have entered the water main.

2.1.2 Disinfecting any residual contamination that may remain.

2.1.3 Determining the bacteriologic quality by laboratory test after disinfection.

2.2 Preventive Measures During Construction:

2.2.1 Precautions shall be taken to protect pipe interiors, fittings, and valves against contamination. Pipe delivered for construction shall be strung so as to minimize entrance of foreign material. When pipe laying is not in progress, as for example at the close of the day's work, all openings in the pipeline shall be closed by water tight plugs. 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.

If dirt that in the opinion of the ENGINEER, will not be removed by the flushing operation (Article 2.3) enters the pipe, the interior of the pipe shall be cleaned and swabbed as necessary, with a five (5) percent hypochlorite disinfecting solution.

2.2.2 Packing Materials and Joints - No contaminated material or any material capable of supporting prolific growth of micro-organisms shall be used for sealing joints. Packing material shall be handled in such a manner as to avoid contamination. Where applicable, packing materials must conform to AWWA standards. Packing material for cast iron pipe must conform to AWWA C600. Yarning or packing material shall consist of molded or tubular rubber rings, rope of asbestos or treated paper. Materials such as jute or hemp shall not be used. The lubricant used in the installation of sealing gaskets shall be

suitable for use in potable water. It shall be delivered to the job in enclosed containers and shall be kept clean.

2.3 Preliminary Flushing:

he main shall be flushed prior to disinfection, except when the tablet method is used (Article 2.5.3). It is recommended that the flushing velocity be not less than 2.5 ft/sec. The rate of flow required to produce this velocity in various diameters is shown in TABLE K-2. No site for flushing should be chosen unless it has been determined that drainage is adequate at the site.

TABLE K-2

REQUIRED OPENINGS TO FLUSH PIPELINES

(40-psi Residual Pressure)

Pipe Size (in)	Flow Required to Produce 2.5 fps Velocity (gpm)	Orifice Size (in)	Hydrant Outlet Nozzles Number	Hydrant Outlet Nozzles Size (in)
4	100	15/16	1	2 1/2
6	220	1 3/8	1	2 1/2
8	390	1 7/8	1	2 1/2
10	610	2 5/16	1	2 1/2
12	880	2 13/16	1	2 1/2
14	1,200	3 1/4	2	2 1/2
16	1,565	3 5/8	2	2 1/2
18	1,980	4 3/16	2	2 1/2

2.4 Form of Chlorine for Disinfection:

The most common forms of chlorine used in the disinfecting solutions are liquid chlorine (gas at atmospheric pressure), calcium hypochlorite granules sodium hypochlorite solutions, and calcium hypochlorite tablets.

2.4.1 Liquid Chlorine Use - Liquid chlorine shall be used only when suitable equipment is available and only under the direct supervision of a person familiar with the physiological, chemical, and physical properties of this element and who is properly trained and equipped to handle any emergency that may arise. Introduction of chlorine gas directly from the supply cylinder is unsafe and shall not be permitted.

Note: The preferred equipment consists of a solution fed chlorinator in combination with a booster pump for injecting the chlorine gas water mixture into the main to be disinfected. Direct feed chlorinators are not recommended because their use is limited to situations where the water pressure is lower than the chlorine cylinder pressure.

2.4.2 Hypochlorites

2.4.2.1 Calcium Hypochlorite - Calcium hypochlorite contains seventy (70) percent available chlorine by weight. It is either granular or

tabular in form. The tablets, 6-8 to the ounce, are designed to dissolve slowly in water. Calcium hypochlorite is packaged in containers of various types and sizes ranging from small plastic bottles to one hundred (100) pound drums.

2.4.2.2 A chlorine-water solution is prepared by dissolving the granules in water in the proportion requisite for the desired concentration.

2.4.2.2 Sodium Hypochlorite - Sodium hypochlorite is supplied in strengths from five and one-quarter (5.25) percent to sixteen (16) percent available chlorine. It is packaged in liquid form in glass, rubber, or plastic containers ranging in size from one (1) quart bottles to five 95) gallon carboys. It may also be purchased in bulk for delivery by tank truck.

The chlorine water solution is prepared by adding hypochlorite to water. Product deterioration must be reckoned with in computing the quantity of sodium hypochlorite required for the desired concentration.

2.4.2.3 Application - The hypochlorite solutions shall be applied to the water main with a gasoline or electrically powered chemical feed pump designed for feeding chlorine solutions. For small applications, the solutions may be fed with a hand pump, for example, a hydraulic test pump. Feed lines shall be of such material and strength as to withstand safely the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the hypochlorite solution is applied to the main.

2.5 Methods of Chlorine Application:

2.5.1 Continuous Feed Method - This method is suitable for general application.

2.5.1.1 Water from the existing distribution system or other approved sources of supply shall be made to flow at a constant, measured rate into the newly laid pipe line. The water shall receive a dose of chlorine, also fed at a constant, measured rate. The two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 mg/l available chlorine. To assure that this concentration is maintained, the chlorine residual should be measured at regular intervals in accordance with the procedures described in the current edition of Standard Methods and AWWA M12--Simplified Procedures for Water Examination.

Note: In the absence of a meter, the rate may be determined either by placing a pitot gauge at the discharge or by measuring the time to fill a container of known volume.

TABLE K-3 gives the amount of chlorine residual required for each one hundred (100) feet of pipe of various diameters. Solutions of one (1) percent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires approximately one (1) pound of calcium hypochlorite in eight and five-tenths (8.5) gallons of water.

TABLE-3

CHLORINE REQUIRED TO PRODUCE 50 Mg/1 CONCENTRATION

IN 100 FT. OF PIPE (By Diameter)

Pipe Size (in)	100 Percent Chlorine (lb)	1 Percent Chlorine Solutions (gal)
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88

2.5.1.2 During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least twenty-four (24) hours during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this twenty-four (24) hour period, the treated water shall contain no less than 25 mg/1 chlorine throughout the length of the main.

2.5.2 Slug Method - This method is suitable for use with mains of large diameter for which, because of the volumes of water involved, the continuous feed method is not practical.

2.5.2.1 Water from the existing distribution system or other approved source of supply shall be made to flow at a constant, measured rate (see Article 2.5.1.1) into the newly laid pipe line. The water shall receive a dose of chlorine also fed at a constant, measured rate. The two rates shall be proportioned so that the concentration in the water entering the pipe line is maintained at no less than 300 mg/1. 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 passes along the line, expose all interior surfaces to a concentration of at least 300 mg/1 for at least three (3) hours. The application shall be checked at a tap near the upstream end of the line by chlorine residual measurements.

2.5.2.2 As the chlorinated water flows past tees and crosses, related valves and hydrants shall be operated as to disinfect appurtenances.

2.5.3 Tablet Method - Tablet disinfection is best suited to short extension (up to 2,500 ft.) and smaller diameter mains (up to 12 in.). Because the preliminary flushing step must be eliminated, this method shall be used only when scrupulous cleanliness has been exercised. It shall not be used if trench water or foreign material has entered the main or if the water is below 5 degrees C (41 degrees F).

2.5.3.1 Placement of Tablets - Tablets are placed in each section of pipe and also in hydrants, hydrant branches, and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in hydrants and in the joints between the pipe sections. All the tablets within the main must be at the top of the main. If the tablets are fastened before the pipe section is placed in the trench, their position should be marked on the section to assure that there will be no rotation. When placing tables in joints, they are either crushed and placed on the inside annular space, or, if the type of assembly does not permit, they

are rubbed like chalk on the butt ends of the sections to coat them with calcium hypochlorite.

The adhesive may be Permatex No. 1 or any alternative approved by the Engineer or the purchaser. There shall be no adhesive on the tablet except on the broad side next to the surface to which the tablet is attached.

2.5.3.1 Filling and Contact - When installation has been completed the main shall be filled with water at a velocity of less than 1 foot/second. This water shall remain in the pipe for at least twenty-four (24) hours.

Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.

2.6 Final Flushing:

After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 mg/l. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipe line.

2.7 Bacteriologic Tests:

2.7.1 After final flushing, and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quality and shall show the absence of coliform organisms. If the number and frequency of samples is not prescribed by the public health authority having jurisdiction, at least one sample shall be collected from chlorinated supplies where a chlorine residual is maintained throughout the new main. From unchlorinated supplies at least two samples shall be collected at least twenty-four (24) hours apart.

2.7.2 Samples for bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulfate. No hose or fire hydrant shall be used in collection of samples. A suggested sampling tap consists of a standard corporation cock installed in the main with a copper tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed, and retained for future use. See TABLE K-5.

TS-K-8
130301

TABLE K-4

NUMBER OF 5G HYPOCHLORITE TABLETS
REQUIRED FOR DOSE OF 50 Mg/1

Length of Section (ft)	Diameter of Pipe (in) 2	4	6	8	10	12
13 or less	1	1	2	2	3	5
18	1	1	2	3	5	6
20	1	1	2	3	5	7
30	1	2	3	5	7	10
40	1	2	4	6	9	14

2.8 Repetition of Procedure: If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The tablet method cannot be used in these subsequent disinfections. When the sample tests indicate that disinfection has been effective, the main may be placed in service.

2.9 Procedure After Cutting Into or Repairing Existing Mains: The procedures outlined in this Article apply primarily when mains are wholly or partially dewatered. Leaks or breaks that are repaired with clamping devices while the mains remain full of water under pressure present little danger of contamination and require no disinfection.

2.9.1 Trench "Treatment" - When an old line is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from such pollution. Tablets have the advantage in such a situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

2.9.2 Main Disinfection - The following procedure is considered as a minimum that may be used.

2.9.2.1 Swabbing with Hypochlorite Solution - The interior of all pipe and fittings used in making the repair (particularly couplings and tapping sleeves shall be swabbed with five (5) percent hypochlorite solution before they are installed.

2.9.2.2 Flushing - Thorough flushing is the most practical means of removing contamination introduced during repairs. If valving and hydrant locations permit, flushing from both directions is recommended. Flushing shall be started as soon as the repairs are completed and continued until discolored water is eliminated.

2.9.2.3 Slug Method - Where practicable, in addition to the procedures of Article 2.9.2.1, a section main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in Article 2.5.2, except that the dose may be increased to as much as 500 mg/1, and the contact time reduced to as little as one-half (1/2) hour. After chlorination, flushing shall be resumed and continued until discolored water is eliminated.

2.9.3 Sampling - Bacteriologic samples shall be taken after repairs to provide a record by which the effectiveness of the procedures used can be determined. If the direction of flow is unknown, samples shall be taken on each side of the main break.

MP-1
130301

TECHNICAL SPECIFICATIONS
MEASUREMENT AND PAYMENT

1. GENERAL

1.1 This section identifies the method of measurement and payment for the various construction items listed in the Proposal Form of these SPECIFICATIONS.

1.2 The following measurement and payment may include description for more items that those shown on the Bid Form. It is the intent of this section to provide a measurement and payment description for each item on the Bid Form. If none is available, a request should be made to the ENGINEER for a clarification prior to bid.

1.3 The Unit Price bid for each of the items of the Bid Form shall include the cost of all the labor, materials, equipment, and supplies necessary to install these items at the location shown on SPECIFICATION. In addition, the cost shall include all construction necessary to complete the installation which is not covered by other items of the Bid Form or as described in this section.

2. LAYING PIPE FOR WATER MAINS

2.1 Work under these items includes, but is not limited to trenching, backfilling, solid rock removal, fittings, thrust blocks, surface restoration, repair or replacement of fences, line sterilization, and any work identified under Special Conditions not covered by specific items on the Bid Form.

2.2 Measurement shall be made on a lineal foot basis along the centerline of the pipe from the beginning to the end with deductions only for structures such as pump stations, master meter pits, tank valves pits, and others of similar nature.

2.3 Payment for these items will be based on the following percentages of the Unit Price bid per linear foot: eighty percent (80%) of the Unit Price Bid will be paid on the completion of trenching, pipe installation and backfilling. Seven and one-half percent (71/2%)of the Unit Price Bid will be paid for rough cleanup defined as the removal of all rock excavated from trench, rough grading to near original contours and mounding of dirt over trench for proper settlement. Seven and one-half percent (71/2%) of the Unit Price Bid will be paid for finished cleanup defined as the grading of the trench to near original contour, preparing the soil for seeding, applying seed and fertilizer, final repair or replacement of fences and straw and mulch where required. Five percent (5%) of the Unit Price Bid will be paid for testing, sterilization, flushing and placement of waterlines in service. Normal retainage provisions as called for in other portions of these SPECIFICATIONS will be in effect.

2.4 Payment per linear foot as stated in Article 2.3 above includes full compensation for all work necessary for a complete and workable installation and not specifically covered by other items of these SPECIFICATIONS.

3. GATE VALVES

3.1 Measurement shall be on a per unit basis. The unit includes the valve, valve box, concrete pad, foster adapters, grip rings, and all other items as detailed on the PLANS.

3.2 Payment shall be made on the basis of the Unit Price bid for each size and includes furnishing four (4) valve wrenches for the PROJECT.

4. AIR RELIEF VALVES

4.1 Measurement shall be on a per unit basis. The unit shall include required excavation, backfill, tapping of line, corporation stop, air valve, box and lid, crushed stone, piping and any other items necessary to complete the installation as detailed on the PLANS.

4.2 Payment will be made on the basis of the Unit Price bid for each unit. The payment shall be the same for either type of installation whether directly over the pipeline or offset to a fence line.

5. METERS AND BOXES

5.1 Measurement shall be on a per unit basis. The unit shall include required excavation, backfill, tapping of line, corporation stop, meter setter, meter, meter box and lid, six feet (6") of service line on the inlet side, four feet (4') of service line on the outlet side, and other items necessary to complete the installation as detailed on the PLANS.

5.2 Payment for these items will be made on the basis of the Unit Price bid for each unit.

6. INDIVIDUAL PRESSURE REDUCING VALVES

6.1 These items include the extra cost of a dual copper setter, an enlarged meter box, and any other items necessary to complete the installation of a pressure reducing valve in the same box as the service meter. Measurement shall be on a per unit basis.

6.2 Payment for these items will be made on the basis of the Unit Price bid for each unit.

7. SERVICE LINES

7.1 Measurement for these items shall be made on a lineal foot basis. Measurement will be along the service line centerline from the mainline centerline to a point four feet (4) from the meter box. The per lineal foot cost shall include excavation, backfill, jacking beneath roads and driveways and all other items not specifically covered by other items of the SPECIFICATIONS but necessary for a complete and workable installation.

7.2 Payment will be made at the Unit price bid per lineal foot as stated in the Preposal.

8. CASING PIPE

8.1 Bored and Jacked Installations:

These items include furnishing casing pipe in sizes specified, excavation and backfill of the bore pit, boring the hole under the embankment, jacking the casing pipe into place, installing the carrier pipe with skids or pipe insulators to prevent movement of the carrier pipe, sealing of the ends with molded casing seals and all other items not covered by other sections of these SPECIFICATIONS necessary to complete the installation as described in the SPECIFICATIONS and detailed on the PLANS.

8.2 Open Cut Installation:

These items include the furnishing of steel casing pipe, sawing of pavements, excavation and removal of any rock, placement of casing pipe, backfilling as specified for surface replacement, installing the carrier pipe with skids of pipe insulators to prevent movement of the carrier pipe, sealing of the ends with molded casing seals and all other items not covered by other sections of these SPECIFICATION and necessary to complete the installation.

8.3 Measurement for these items shall be on the basis of lineal feet as measured along the centerline of the casing pipe.

8.4 Payment for these items will be on the basis of Unit Price bid per lineal foot as stated in the Proposal. Payment under these items does not include the cost of the carrier pipe.

9. BORES WITHOUT CASING PIPE

9.1 These items include only the extra cost of boring beneath a road, driveway or sidewalk surface and installing the water pipe in the bore hole.

9.2 Measurement will be on a lineal foot basis along the centerline of the bore. The length shall be the distance between each edge of the road, driveway, sidewalk or other object requiring boring.

9.3 Payment for these items will be on the basis of the Unit Price bid as stated in the PROPOSAL and CONTRACT. Payment under these items does not include the cost of the carrier pipe.

10. CRUSHED STONE (D.G.A. SURFACING)

10.1 This item includes only the crushed stone (D.G.A.) necessary to restore gravel roads, driveways, City streets, roads' shoulder, parking areas or any other areas subject to traffic to their original conditions. Depth of application shall be six inches (6) over the entire excavated area and shall include compaction to ninety-five percent (95%) STANDARD PROCTOR DENSITY.

10.2 Measurement shall be on the basis of the trench width allowed in other section of these SPECIFICATIONS and on the length of trench covered with stone. From these measurements a volume in cubic feet will be computed. This cubic foot value will be converted to tons on the basis of 150 pounds per cubic foot.

10.3 Payment for this item will be paid for at the Unit price bid per ton for Dense Graded Aggregate (D.G.A.) This does not include crushed stone used as bedding and backfill.

11. CRUSHED STONE PIPE BEDDING AND BACKFILL

11.1 This item includes the cost of furnishing and placing crushed stone bedding in areas of rock excavation or where directed by the ENGINEER. Depth of application is six inches (6) below and twelve inches (12) above the pipeline.

11.2 Measurement of this item shall be on the basis of tons determined by measuring the lineal feet installed, multiplying that number by the actual trench width but not to exceed width allowed in other sections of these SPECIFICATIONS, then multiplying by (1.3 feet + pipe diameter) one hundred fifty pounds (150 lbs) per cubic foot to determine the amount of stone. In areas requiring additional bedding as determined and directed by the ENGINEER, the amount of stone will be determined by computing the volume required for a standard size ditch and for the depth directed.

11.3 Payment will be made on the basis of the Unit Price per ton as stated in the Proposal.

12. ASPHALT REPLACEMENT

12.1 This item includes the cost of furnishing labor, materials, equipment and supplies necessary to level the base and to place the asphalt surface to the depths indicated on the PLANS.

12.2 Measurement shall be on the basis of the width of asphalt replacement required per dimensions given in the plans on Standard Details and for the length of trench covered. The tonnage shall be calculated by converting the area measured to square yards and multiplying that value by (115 lbs) per square yard per inch of compacted asphalt depth per standard details and then dividing by two thousand pounds (2,000 lbs.)

12.3 Payment will be made on the basis of the Unit Price bid per ton as shown on the Proposal.

13. STREAM CROSSINGS

13.1 Measurement of these items on a lineal foot basis includes the furnishing of all labor, material, equipment and supplies necessary to complete the installation in accordance with the details shown on the PLANS for the type specified. Work under these items includes only the extra cost associated with this installations. Cost of pipe will be paid under the items identified by ARTICLE 2 of this section.

13.2 Payment will be made on the basis of the Unit Price bid per lineal foot and shall include only the extra cost of the crossing not covered by other items of the Proposal.

14. CONCRETE REPLACEMENT

14.1 Concrete replacement shall be determined by measuring the lineal feet of trench over which concrete is placed and multiplying that value by the allowable width approved by the ENGINEER. Measurement shall be on the basis of a six inch (6") depth of concrete. If greater depths are required, an equivalent surface area will be determined by dividing the actual depth by six (6).

14.2 Payment for those items will be on the basis of the Unit Price bid in the Proposal per square yard for a concrete depth of six inches (6").

15. BLOWOFFS

15.1 These items shall include the cost of furnishing all labor, materials, equipment, and supplies necessary to make a complete installation as detailed on the PLANS. Measurement shall be on a per unit basis.

15.2 Payment shall be at the Unit Price bid per each unit as stated in the Proposal and CONTRACT.

16. FIRE HYDRANTS

16.1 These items shall include the cost of furnishing all labor, materials, equipment, and supplies necessary to make a complete and workable installation. The installations shall be made as detailed on the PLANS. Measurement shall be on the basis of a per unit cost.

16.2 Payment shall be at the Unit Price bid per each unit as stated in the Proposal and CONTRACT.

17. SODDING

17.1 Sod placement in areas directed by the ENGINEER shall be measured by the allowable area approved by the ENGINEER.

17.2 Payment for this item will be on the basis of the Unit Price bid in the Proposal per square yard.

18. BOOSTER PUMP STATION

18.1 These items include the cost of furnishing all labor, materials, equipment, and supplies necessary to make a complete and workable installation in accordance with details in the PLANS and SPECIFICATIONS. Work includes excavation, setting and anchoring the packaged pump station on the foundation, backfilling,

connecting electrical service, connection suction and discharge piping, startup and testing.

18.2 Measurement shall be on the basis of all the work within the tank site fencing.

18.3 Payment will be on the basis of the Lump Sum Price bid as stated in the Proposal and CONTRACT.

19. PRESSURE REDUCING STATION

19.1 These items include the cost of furnishing all labor, materials, equipment, and supplies necessary to make a complete and workable installation in accordance with details in the PLANS and SPECIFICATIONS. Work includes excavation, constructing pit, valves and appurtenances in the pit, backfilling, restoration, cleanup and any other incidental items to make a complete and workable installation.

19.2 Measurement shall be on the basis of the Lump Sum Price bid as stated in the Proposal and CONTRACT.

19.3 Payment will be on the basis of the Lump Sum Price bid as stated in the Proposal and CONTRACT.

N O T I C E

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
(LETTER OF PERMISSION AUTHORIZATION)

PROJECT: KY 56 Widening
Union County, Kentucky
KYTC item #2-310.1

The Section 404 activities for this project have been permitted under the authority of the Department of the Army Letter of Permission and Nationwide Permit #14 (Linear Transportation Projects). In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Letter of Permission and Nationwide Permit in a conspicuous location at the project site for the duration of construction and comply with the general conditions as required.

To more readily expedite construction, the contractor may elect to alter the design or perform the work in a manner different from what was originally proposed and specified. Prior to commencing such alternative work, the contractor shall obtain **written** permission from the Division of Construction and the Corps of Engineers. A copy of any request to the Corps of Engineers to alter this proposal and subsequent responses shall be forwarded to the Division of Environmental Analysis, DA Permit Coordinator, for office records and for informational purposes.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
REGULATORY BRANCH, WEST SECTION
P.O. Box 489
NEWBURGH, INDIANA 47629-0489
FAX: (812) 858-2678
http://www.lrl.usace.army.mil

August 11, 2010

Operations Division
Regulatory Branch (West)
ID No. LRL-2009-1241-rjb

Mr. John Purdy
Kentucky Transportation Cabinet
Division of Environmental Analysis
200 Mero Street
Frankfort, Kentucky 40622

Dear Mr. Purdy:

This letter is in regard to your application dated November 9, 2009 for a Department of the Army (DA) permit concerning a plan to place fill material into "waters of the United States" associated with the reconstruction of Kentucky 56 (KY56). The project is located in the Lower Ohio River-Bay watershed, in Union County, Kentucky. This permit specificially addresses two of the eighteen separate impact sites proposed. (1) Site SO4i at STA 50+40-58+30 lat 37.684804 lon 87.997486 and (2) Site SO9i at STA 103+42 lat 37.683722 lon 87.980895, both are proposed to impact UNT to Sugg Cr. We have reviewed your application 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, your proposed work satisfies the Letter of Permission criteria, as specified in our regulations and the procedures outlined in the LOP No. 200600250-pgj issued on October 3, 2007. Therefore, you are authorized, in accordance with 33 USC 404 of the Clean Water Act (CWA), to discharge dredged and fill materials in waters of the United States associated with the widening of KY-56.

This permission is granted with the following conditions:

(1) The project shall be constructed in accordance with plans included in the November 9, 2009 application for Kentucky Transportation Cabinet, idem No. 2-310.10 for Department of Army Permit.

(2) The permittee shall install and maintain adequate erosion/sedimentation controls around all disturbed earthen areas until such time as those areas have been stabilized and revegetated.

(3) The permittee shall provide receipt of payment from the Kentucky Department of Fish and Wildlife Resources Stream and Wetland Mitigation program for the purchase

of 901 Adjusted Mitigation Units (AMUs) totaling $91,920. AMUs must be purchased prior to the discharge of fill into "waters of the United States".

(4) The time limit for completing the work authorized ends five years from the date of this letter. 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. 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 your proposed project. 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 Rivers Division Office at the following address:

Ms. Pauline D. Thorndike
U.S. Army Engineer Division,
Great Lakes and Ohio River
550 Main Street - Room 10032
Cincinnati, Ohio 45202-3222
(513) 684-6212

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 August 28, 2010. It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter.

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

FOR THE DISTRICT ENGINEER:

Robert J. Brown
Regulatory Specialist
Regulatory Branch

Enclosures

(I accept the conditions of this authorization):

Kentucky Transportation Cabinet

8/18/10
Date

Brown/OP-FW/pl/lp.doc

RECORD COPY

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
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August 12, 2010

Operations Division
Regulatory Branch (West)
ID No. LRL-2009-1241-rjb

Mr. John Purdy
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, KY 40622

Dear Mr. Purdy:

This is in response to your request for authorization to complete improvements to Kentucky 56 including sixteen separate crossings of "Waters of the U.S.". The information supplied by you was reviewed to determine whether a Department of the Army (DA) permit will be required under the provisions of Section 404 of the Clean Water Act.

Your project is considered a discharge of backfill or bedding material for a road crossing. The multiple project crossings are authorized under the provisions of 33 CFR 330 A Nationwide Permit (NWP) No. 14, Linear Transportation Projects, as published in the Federal Register March 12, 2007. Under the provisions of this authorization you must comply with the enclosed:

1. Terms for Nationwide Permit No. 14;

2. Nationwide Permit General Conditions; and

3. Water Quality Certification (WQC) Conditions for Nationwide Permit No. 14 dated March 19, 2007, issued by the Kentucky Division of Water.

Once you obtain your certification, or if no application was required, you may proceed with the project without further contact or verification from us.

This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you

will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit. The enclosed Compliance Certification should be signed and returned when the project is completed. If your project is not completed within this timeframe or if your project is modified, you must contact us for another permit determination. A copy of this letter is being sent to your agent and to the KDOW.

If you have any questions, please contact this office by writing to the above address, ATTN: CELRL-OP-FW, or by calling me at (812) 853-7632. All correspondence pertaining to this matter should refer to our ID No. LRL-2009-1241-rjb.

Sincerely,

Robert J. Brown
Regulatory Project Manager
Regulatory Branch West

Enclosures

RB/CE LRL-OP-FW/nw14-KY.doc

ADDRESS FOR COORDINATING AGENCY

Ms. Sandra Gruzesky
Director
Kentucky Energy and Environment Cabinet
Division of Water
200 Fair Oaks, 4th Floor
Frankfort, Kentucky 40601

ADDRESS FOR AUTHORIZED AGENT

*

Compliance Certification:

Permit Number: LRL-2009-1241-rjb

Name of Permittee: Kentucky Transportation Cabinet

Date of Issuance: August 12, 2010

Upon completion of the activity authorized by this permit and any mitigation required by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
CELRL-OP-FN
P.O. Box 59
Louisville, Kentucky 40201

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____

_____
Signature of Permittee
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 ®

Nationwide Permit Conditions

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

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

2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Water Quality. (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)). (b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs). This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

11. Endangered Species. (a) No activity is authorized under any NWP 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 (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

(b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their World Wide Web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity 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 State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

(a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed \1/3\-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow. This condition is only applicable to projects that have the potential to affect water flows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps. For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

*** Some NWP conditions that are not applicable for this verification were omitted from above list. If you are interested in a complete list, you should contact the Corps of Engineers office that handled your request.**

US Army Corps of Engineers ®

Nationwide Permit

No. 14, Linear Transportation Projects

Activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, airport runways, and taxiways) in waters of the US, including wetlands, if the activity meets the following criteria:

a. The discharge does not cause the loss of greater than 1/2-acre of waters of the US;

b. The width of the fill is limited to the minimum necessary for the crossing;

c. This permit does not authorize stream channelization, and the authorized activities must not cause more than minimal changes to the hydraulic flow characteristics of the stream, increase flooding, or cause more than minimal degradation of water quality of any stream (see General Conditions 9 and 21);

d. This permit cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars; and

e. The crossing is a single and complete project for crossing waters of the US. Where a road segment (i.e., the shortest segment of a road with independent utility that is part of a larger project) has multiple crossings of streams (several single and complete projects) the Corps will consider whether it should use its discretionary authority to require an Individual Permit. (Sections 10 and 404)

Mitigation Plan for KYTC Item # 2-310.1 Letter of Permission Project
KY-56 Widening in Union County

1. Construct a 790' long and four foot wide flat-bottom stream channel/ditch with stream embankment and channel bottom stabilized by the establishment of permanent vegetative groundcover. The channel bottom and side-slopes will be further stabilized by the installation of erosion control blanket. The erosion control blanket will be installed as outlined in the "Kentucky 2008 Standard Specifications for Road and Bridge Construction". The specifications and installation methods are outlined in the "Special Note for Channel Change Erosion Control Blanket" section of the Standard Specifications. The new channel will be constructed at the onset of the project and will have established vegetation prior to the re-routing of the existing stream into the new portion of the channel. Although the water will eventually kill the grass in the bottom of the channel, establishing vegetation before releasing water in the channel will limit the potential for sediment mobilization and erosion while allowing the stream to find its own way through the constructed channel.

2. Establish a 30' grass buffer strip between the adjacent cropland and the stream.

3. Employ best management practices for erosion and sediment control during the roadway construction to protect the newly created stream channel. Erodible areas will be graded to a uniform cross section or slope as soon as practical and permanent seeding and protection will be performed at the earliest possible time. This may include installing and maintaining silt fence on both sides of the stream bank and using erosion control blankets if deemed necessary by the project engineer.

4. All areas within the construction limits will be seeded according to the specifications for Seed Mix Type 1 found in the "Kentucky 2008 Standard Specifications for Road and Bridge Construction". Seed Mix Type 1 consists of 30% Kentucky 31 Tall Fescue (*Festuca arundinacea*), 20% Creeping Red Fescue (*Festuca ruba*), 35% Hard Fescue (*Festuca longifolia*), and 10% Perennial Ryegrass (*Lolium perenne*). The minimum application rate will be 100 pounds per acre.

5. Monitor the project at 3 months, 6 months and at one year after completion to ensure that the vegetation is well established and the stream banks are stable. If problems are identified, KYTC will re-work the damaged area to establish permanent vegetative cover. After one year of monitoring, the successful establishment of permanent vegetation will be documented by a monitoring

report containing photographs and a narrative that will demonstrate compliance with this proposal. This report will be sent to USACE for review.

6. KYTC is required to address the difference in the mitigated length and the stream impact length for S04i (63') by paying $7,560 to the Kentucky Department of Fish and Wildlife Resources Wetland and Stream Mitigation Program.

7. KYTC is required to mitigate for 703' of impact to the intermittent steam S09i by paying $84,360 to the Kentucky Department of Fish and Wildlife Resources Wetland and Stream Mitigation Program.

8. The constructed stream channel will begin approximately at Station 51+00 [Sheet R7] and will intercept the existing drainage, redirecting it eastward approximately 790 feet until it rejoins the original stream channel at Station 58+00 [Sheet R9].

9. The proposed stream channel is separated from the roadway drainage by a 2 foot wide flat-bottomed ditch. This roadside ditch will intercept run-off from the roadway and re-direct it to the stream at Station 58+00.

N O T I C E

DIVISION OF WATER
(INDIVIDUAL WATER QUALITY CERTIFICATION)

PROJECT: KY 56 Widening
Union County, Kentucky
KYTC Item # 2-310.1

The Division of Water has approved the Section 401 activities for this project by issuance of an Individual Water Quality Certification for a Letter of Permission project authorized by the U.S. Army Corps of Engineers. In order for this authorization to be valid, the attached conditions must be followed. The contractor shall post a copy of this Water Quality Certification in a conspicuous location at the project site for the duration of construction and comply with the general conditions as required.

To more readily expedite construction, the contractor may elect to alter the design or perform the work in a manner different from what was originally proposed and specified. Prior to commencing such alternative work, the contractor shall obtain **written** permission from the Division of Construction and the appropriate permit agency. A copy of any request to alter this proposal and subsequent responses shall be forwarded to the Division of Environmental Analysis, DA Permit Coordinator, for office records and for informational purposes.

STEVEN L. BESHEAR
GOVERNOR

LEONARD K. PETERS
SECRETARY

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

December 10, 2009

David Waldner
KYTC Environmental Analysis
200 Mero Street, 5th Floor
Frankfort, KY 40622

Re: Water Quality Certification #2008-0036-1REV
KY 56 - Union Co
KYTC Item No. 2-310.1
USACE LOP
AI No.: 99302
Activity ID: APE20090001
UTs to Sugg and Eagle Creeks
Union County, Kentucky

Dear Mr. Waldner:

Pursuant to Section 401 of the Clean Water Act (CWA), the Commonwealth of Kentucky certifies it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 5, established pursuant to Sections 301, 302, 303, 304, 306, and 307 of the CWA, will not be violated by the above referenced project provided that the U.S. Army Corps of Engineers authorizes the activity under 33 CFR part 330, and the attached conditions are met.

All future correspondence on this project must reference **AI No. 99302. The attached document is your official Water Quality Certification; please read it carefully.** If you should have any questions concerning the conditions of this water quality certification, please contact Adam Jackson of my staff by calling (502) 564-3410.

Sincerely,

E-Signed by Alan Grant
VERIFY authenticity with ApproveIt

Alan Grant

Alan Grant, Supervisor
Water Quality Certification Section
Kentucky Division of Water

AG:AJ:aj
Attachment
cc: Rob Brown, USACE: Louisville District, Newburgh Office
Lee Andrews, USFWS: Frankfort
John Purdy, KYTC DEA
Dale Reynolds, Green River Basin Coordinator

AAZZ0000000001 (continued):

Narrative Requirements:

Condition No.	Condition
T-2	The Kentucky Division of Water will not require mitigation for the impacts associated with this project due to the lack of any single stream impact, requiring individual certificaiton, with an upstream watershed greater than 250 acres in size. Your revised on-site mitigation plans, coupled with the purchase of appropriate stream bank credits has been reviewed. The Kentucky Division of Water (KDOW) accepts the proposed mitigation offered by the Kentucky Transportation Cabinet (KYTC) for the 1556 linear feet of intermittent stream impacts located within the Sugg Creek Watershed. On-site mitigation procedures shall follow the design plans submitted to KDOW on November 2, 2009. Additionally, the KYTC shall debit the appropriate amount of stream credits from the KYTC Exel Clark stream bank located in Butler County, Kentucky for the remaining 766 linear feet of poor quality intermittent stream impacts not mitigated for through on-site stream construction. [Clean Water Act]
T-3	All work performed under this certification shall adhere to the design and specifications set forth in the "Application for Water Quality Certification Letter of Permission Project, Union County, Item No. 2-310.10, KY 56 Major Widening" received by the Kentucky Division of Water on January 11, 2008, with the exception of previously proposed mitigation procedures. All work performed under this certification shall also adhere to the design and specifications set forth in the "Mitigation Proposal for KYTC Item #2-310.1 Letter of Permission Project KY-56 Widening in Union County" received by the Kentucky Division of Water on November 2, 2009, as well as the USACE Public Notice No. LOP No. 200600259-pgj issued on October 3, 2007. [Clean Water Act]
T-4	The Kentucky Transportation Cabinet shall notify the Kentucky Division of Water prior to the start of construction. [Clean Water Act]
T-5	The Kentucky Transportation Cabinet shall notify the Kentucky Division of Water once construction is complete. [Clean Water Act]
T-6	Kentucky Transportation Cabinet is responsible for preventing degradation of waters of the Commonwealth from soil erosion. An erosion and sedimentation control plan must be designed, implemented, and maintained in effective operating condition at all times during construction. [Clean Water Act]
T-7	The Division of Water reserves the right to modify or revoke this certification should it be determined that the activity is in noncompliance with any condition set forth in this certification. [Clean Water Act]
T-8	If construction does not commence within two years of the date of this letter, this certification will become void. A letter requesting a renewal should be submitted. [Clean Water Act]
T-9	Other permits may be required from the Division of Water for this project. If this project takes place within the floodplain, a permit may be required from the Water Resources Branch. The contact person is Barry Elmore. If this project will disturb one acre or more of land, or is part of a larger common plan of development or sale that will ultimately disturb one acre or more of land, a KPDES stormwater permit shall be required from the KPDES Branch. The contact person is Allen Ingram. Both can be reached at 502-564-3410. [Clean Water Act]

KTC Water Quality Certification

KY 56 - Union Co
Facility Requirements
Permit Number:WQC #2008-0036-11
Activity ID No.: APE20090001

AAZZ0000000001 (KYTC Item No. 2-310.1) KY 56 Widening in Union County, Kentucky (LOP):

Submittal/Action Requirements:

Condition No.	Condition
S-1	The Kentucky Transportation Cabinet must submit a monitoring report: Due annually, by the 31st of December to the Water Quality Certification Section of the Kentucky Division of Water. The monitoring report shall address the on-site stream mitigation construction and progress of the proposed intermittent stream relocation and restoration. [Clean Water Act]
S-2	The Kentucky Transportation Cabinet shall submit information: Due prior to construction commencement pertaining to debiting of the appropriate amount of stream mitigation credits from the KYTC Excel Clark stream bank in Butler County, Kentucky. Submitted information shall address the amount of credits debited due to this approved project, as well as credits remaining within the mitigation bank. [Clean Water Act]

Narrative Requirements:

Condition No.	Condition
T-1	The work approved by this certification shall be limited to: - the loss of 77 linear feet of unnamed intermittent tributary to Sugg Creek due to culvert construction (Station 52+00). - the loss of 853 linear feet of unnamed intermittent tributary to Sugg Creek due to a channel relocation (Station 50+40-58+30). - the loss of 132 linear feet of unnamed intermittent tributary to Sugg Creek due to culvert construction (Station 100+25). - the loss of 703 linear feet of unnamed intermittent tributary to Sugg Creek due to channel change and culvert construction (Station 103+42). - the loss of 133 linear feet of unnamed intermittent tributary to Sugg Creek due to culvert construction (Station 142+70). - the loss of 182 linear feet of unnamed perennial tributary to Eagle Creek due to culvert construction (Station 161+41). - the loss of 123 linear feet of unnamed intermittent tributary to Eagle Creek due to culvert construction(Station 178+08). - the loss of 170 linear feet of unnamed intermittent tributary to Eagle Creek due to channel change and placement of fill material (Station 185+95). - the loss of 229 linear feet of unnamed intermittent tributary to Eagle Creek due to culvert construction (Station 208+85). - the loss of 234 linear feet of unnamed intermittent tributary to Eagle Creek due to culvert construction (Station 213+16). [Clean Water Act]

GENERAL CONDITIONS FOR WATER QUALITY CERTIFICATION

1. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.

2. All dredged material shall be removed to an upland location and/or graded on adjacent areas (so long as such areas are not regulated wetlands), to obtain original streamside elevations, i.e. overbank flooding shall not be artificially obstructed.

3. In areas not riprapped or other wise stabilized, revegetation of stream banks and riparian zones shall occur concurrently with project progression. At a minimum, revegetation will approximate pre-disturbance conditions.

4. To the maximum extent practicable, all instream work under this certification shall be performed during low flow.

5. Heavy equipment, e.g. bulldozers, backhoes, draglines, etc., if required for this project, should not be used or operated within the stream channel. In those instances where such instream work is unavoidable, then it shall be performed in such a manner and duration as to minimize resuspension of sediments and disturbance to substrates and bank or riparian vegetation.

6. Any fill or riprap including refuse fill, shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If riprap is utilized, it is to be of such weight and size that bank stress or slump conditions will not be created because of its placement.

7. If there are water supply intakes located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when work will be done.

8. Removal of existing riparian vegetation should be restricted to the minimum necessary for project construction.

9. Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling 800/564-2380.

STEPHEN L. BESHEAR
GOVERNOR

ENVIRONMENTAL AND PUBLIC PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER
14 REILLY ROAD
FRANKFORT, KENTUCKY 40601
www.kentucky.gov

ROBERT D. VANCE
SECRETARY

ATTENTION APPLICANT

If your project involves one or more of the following activities, you may need more than one permit from the Kentucky Division of Water.

***building in a floodplain *road culvert in a stream**
***streambank stabilization *stream cleanout**
***utility line crossing a stream**
***construction sites greater than 1 acre**

- **Construction sites greater than 1 acre will require the filing of a Notice of Intent to be covered under the KPDES General Stormwater Permit. This permit requires the creation of an erosion control plan.**
  Contact: Allen Ingram

- **Projects that involve filling in the floodplain will require a floodplain construction permit from the Water Resources Branch.**
  Contact: Jim Oerther

- **Projects that involve work IN a stream, such as bank stabilization, road culverts, utility line crossings, and stream alteration will require a floodplain permit and a Water Quality Certification from the Division of Water.**
  Contact: Alan Grant

All three contacts listed above can be reached at (502) 564-3410. A complete listing of environmental programs administered by the Kentucky Department for Environmental Protection is available from Pete Goodmann by calling (502) 564-3410.

Kentucky Transportation Cabinet

Highway District 2 (1)

And

_____(2), Construction

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

Groundwater protection plan

For Highway Construction Activities

For

Minor Widening of KY 56 from KY 360 to the Morganfield By-Pass (US 60) near Morganfield, Kentucky

Project: PCN ## -

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

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 2

2. Resident Engineer: (2)

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

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

4. Project Control Number (2)

5. Route (Address) : KY 56

6. Latitude/Longitude (project mid-point) dd/mm/ss, dd/mm/ss:

   Lat: 37/40/00, Long: 87/03/00

7. County (project mid-point): UNION

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

9. Projected completion date: (2)

A. Site description:

1. Nature of Construction Activity (from letting project description): **Minor widening of KY 56 from KY 360 to the Morganfield Bypass, adding shoulders, eliminating horizontal and vertical deficiencies**

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

3. Projected volume of material to be moved : 314,987 C. Y.(1)

4. Estimate of total project area (acres) : 90 acres(1)

5. Estimate of area to be disturbed (acres) : 73 acres(1)

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

7. Data describing existing soil condition: See Geotech report if available. See Roadway Plans(1) & (2)

8. Data describing existing discharge water quality (if any): N/A (1) & (2)

9. Receiving water name: Sugg Creek (1)

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

11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters 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 : Seeding and Protection, Erosion Control Blanket, Grassed Waterways (1)

C. Other Control Measures

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

2. Waste Materials

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

3. Hazardous Waste

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

4. Spill Prevention

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

- **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. –None required (1)

E. Maintenance

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

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

- Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. (1)

F. Inspections

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

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

G. Non – Storm Water discharges

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

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

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

H. Groundwater Protection Plan (3)

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

- Contractors statement: (3)

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

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

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

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

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

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

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

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

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.

2-310.10 UNION County

NOI password: 09855e97-8d3e-4d29-a0ba-9d231f939a68

MicroStation v8.11.7.443 | E-SHEET NAME: | USER: alexl.smith | DATE PLOTTED: October 11, 2010 | FILE NAME: C:\PWWORK\MSP\D0144517\KYTC_SHEET.CEL

GROVE CENTER AND MORGANFIELD Topographic Quadrangles

Point Discharge	Latitude (N)	Longitude (E)
PD #1	37.685964	-88.010202
PD #2	37.686449	-88.008293
PD #3	37.685166	-88.006978
PD #4	37.685009	-88.003885
PD #5	37.684850	-88.001635
PD #6	37.684466	-87.996286
PD #7	37.684048	-87.988764
PD #8	37.684073	-87.983576
PD #9	37.684012	-87.981934
PD #10	37.683907	-87.981170
PD #11	37.683622	-87.976693
PD #12	37.684507	-87.967386
PD #13	37.685400	-87.961193
PD #14	37.686297	-87.955330
PD #15	37.688445	-87.948714
PD #16	37.687161	-87.946569
PD #17	37.687483	-87.944906
PD #18	37.687777	-87.943311

NOISW PERMIT MAP

COUNTY OF: UNION | ITEM NO.: 2-310.10 | SHEET NO.:

KENTUCKY TRANSPORTATION CABINET
COMMUNICATION ALL PROMISES (CAP)

Item Number	County	Route	Project Manager
02-0310.10	UNION	KY 56	KYTC\JOHN.RUDD

CAP #	Date of Promise	Requestor	ocation of Promise:	CAP Description
1	10/29/13	J Kelley	Parcel 18	Contractor shall grade the disturbed area between entrances at approximate Sta. 118+20, such that ponding of water will not occur on, nor at the roadside area of Parcel 18, as a result of the construction of 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: **Revision:**	723.03.11 Wiring Installation. Add the following sentence between the fifth and sixth sentences: Provide an extra two feet of loop wire and lead-in past the installed conduit in poles, pedestals, and junction boxes.
Subsection: **Revision:**	723.03.12 Loop Installation. Replace the 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: **Revision:**	723.04.02 Junction Box. Replace subsection title with the following: Electrical Junction Box Type.
Subsection: **Revision:**	723.04.03 Trenching and Backfilling. Replace the second sentence with the following: The Department will not measure excavation, backfilling, underground utility warning tape (if required), the restoration of disturbed areas to original condition, and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.10 Signal Pedestal. Replace the second sentence with the following: The Department will not measure excavation, concrete, reinforcing steel, specified conduits, fittings, ground rod, ground wire, backfilling, restoring disturbed areas, or other necessary hardware and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.15 Loop Saw Slot and Fill. Replace the second sentence with the following: The Department will not measure sawing, cleaning and filling induction loop saw slot, loop sealant, backer rod, and grout and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.16 Pedestrian Detector. Replace the paragraph with the following: The Department will measure the quantity as each individual unit furnished, installed and connected to pole/pedestal. The Department will not measure installing R10-3e (with arrow) sign, furnishing and installing mounting hardware for sign and will consider them incidental to this item of work.
Subsection: **Revision:**	723.04.18 Signal Controller- Type 170. Replace the second sentence with the following: The Department will not measure constructing the concrete base or mounting the cabinet to the pole, connecting the signal and detectors, excavation, backfilling, restoration, any necessary pole mounting hardware, electric service, or electrical inspection fees and will consider them incidental to this item of work. The Department will also not measure furnishing and connecting the induction of loop amplifiers, pedestrian isolators, load switches, model 400 modem card; furnishing and installing electrical service conductors, specified conduits, anchors, meter base, fused cutout, fuses, ground rods, ground wires and will consider them incidental to this item of work.

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: **Revision:**	723.04.36 Traffic Signal Pole Base. 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: **Revision:**	723.04.37 Install Signal Pedestal. 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: **Revision:**	723.04.38 Install Pedestal Post. 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: **Revision:**	723.05 PAYMENT. 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: **Revision:**	813.04 Gray Iron Castings. Replace the reference to "AASHTO M105" with "ASTM A48".
Subsection: **Number:** **Revision:**	813.09.02 High Strength Steel Bolts, Nuts, and Washers. A) Bolts. Delete first paragraph and "Hardness Number" Table. Replace with the following: A) Bolts. Conform to ASTM A325 (AASHTO M164) or ASTM A490 (AASHTO 253) as applicable.
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Third paragraph, replace the reference to "AWPA C14" with "AWPA U1, Section B, Paragraph 4.1".
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Replace the first sentence of the fourth paragraph with the following: Use any of the species of wood for round or square posts covered under AWPA U1.
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Fourth paragraph, replace the reference to "AWPA C2" with "AWPA U1, Section B, Paragraph 4.1".
Subsection: **Revision:**	814.04.02 Timber Guardrail Posts. Delete the second sentence of the fourth paragraph.
Subsection: **Revision:**	816.07.02 Wood Posts and Braces. First paragraph, replace the reference to "AWPA C5" with "AWPA U1, Section B, Paragraph 4.1".

Subsection: **Revision:**	816.07.02 Wood Posts and Braces. Delete the second sentence of the first paragraph.
Subsection: **Revision:**	818.07 Preservative Treatment. First paragraph, replace all references to "AWPA C14" with "AWPA U1, Section A".
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

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.

General Decision Number: KY130102 11/08/2013 KY102

Superseded General Decision Number: KY20120127

State: Kentucky

Construction Type: Highway

Counties: Allen, Ballard, Butler, Caldwell, Calloway, Carlisle, Christian, Crittenden, Daviess, Edmonson, Fulton, Graves, Hancock, Henderson, Hickman, Hopkins, Livingston, Logan, Lyon, Marshall, McCracken, McLean, Muhlenberg, Ohio, Simpson, Todd, Trigg, Union, Warren and Webster Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Modification Number	Publication Date
0	01/04/2013
1	02/01/2013
2	04/05/2013
3	04/26/2013
4	05/03/2013
5	05/31/2013
6	06/07/2013
7	06/14/2013
8	06/21/2013
9	06/28/2013
10	07/05/2013
11	07/26/2013
12	08/09/2013
13	09/20/2013
14	10/04/2013
15	11/08/2013

* BRIN0004-002 06/01/2013

BALLARD, BUTLER, CALDWELL, CARLISLE, CRITTENDEN, DAVIESS, EDMONSON, FULTON, GRAVES, HANCOCK, HENDERSON, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN, MCLEAN, MUHLENBERG, OHIO, UNION, and WEBSTER COUNTIES

	Rates	Fringes
BRICKLAYER		
Ballard, Caldwell, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, Marshall, and McCracken Counties	$ 24.11	10.30
Butler, Edmonson, Hopkins, Muhlenberg, and Ohio		

Counties.....$ 24.61 10.22
Daviess, Hancock,
Henderson, McLean, Union,
and Webster Counties.....$ 28.68 13.72

BRTN0004-005 05/01/2009

ALLEN, CALLOWAY, CHRISTIAN, LOGAN, SIMPSON, TODD, TRIGG, and WARREN COUNTIES

	Rates	Fringes
BRICKLAYER	$ 24.52	1.83

CARP0357-002 04/01/2013

	Rates	Fringes
CARPENTER	$ 26.90	14.42
Diver	$ 40.73	14.42
PILEDRIVERMAN	$ 27.15	14.42

ELEC0369-006 05/29/2013

BUTLER, EDMONSON, LOGAN, TODD & WARREN COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 29.48	14.37

ELEC0429-001 02/01/2010

ALLEN & SIMPSON COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 21.85	10.35

ELEC0816-002 06/01/2013

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON (Except a 5 mile radius of City Hall in Fulton), GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
ELECTRICIAN	$ 30.40	25.5%+5.60

Cable spicers receive $.25 per hour additional.

ELEC1701-003 06/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO, UNION & WEBSTER COUNTIES:

	Rates	Fringes

ELECTRICIAN.....$ 30.03 13.72

Cable spicers receive $.25 per hour additional.

ELEC1925-002 06/01/2012

FULTON COUNTY (Up to a 5 mile radius of City Hall in Fulton):

	Rates	Fringes
CABLE SPLICER	$ 25.00	10.27
ELECTRICIAN	$ 25.00	10.43

ENGI0181-017 07/01/2013

	Rates	Fringes
Operating Engineer:		
GROUP 1	$ 28.00	13.90
GROUP 2	$ 25.45	13.90
GROUP 3	$ 25.85	13.90
GROUP 4	$ 25.17	13.90

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batcher Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Gurries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

GROUP 2 - Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Conrete Pump; Skid Steer Machine with all Attachments; Switchman or Brakeman;

Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points;& Whirley Oiler

GROUP 3 -All Off Road Material Handling Equipment, including Articulating Dump Trucks; Greaser on Grease Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine; Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler; Paving Joint Machine; Power Form Handling Equipment; Pump; Roller (Earth); Steerman; Tamping Machine; Tractor (Under 50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where the length of the boom in combination with the length of the piling equals or exceeds 150 ft. - $1.00 above Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID 10% ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

IRON0070-005 06/01/2013

BUTLER COUNTY (Eastern eighth, including the Townships of Decker, Lee & Tilford);
EDMONSON COUNTY (Northern three-fourths, including the Townships of Asphalt, Bee Spring, Brownsville, Grassland, Huff, Kyrock, Lindseyville, Mammoth Cave, Ollie, Prosperity, Rhoda, Sunfish & Sweden)

	Rates	Fringes
Ironworkers: Structural; Ornamental; Reinforcing; Precast Concrete Erectors	$ 26.47	19.30

IRON0103-004 04/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, OHIO, UNION & WEBSTER COUNTIES
BUTLER COUNTY (Townships of Aberdeen, Bancock, Casey, Dexterville, Dunbar, Elfie, Gilstrap, Huntsville, Logansport, Monford, Morgantown, Provo, Rochester, South Hill & Welchs Creek);
CALDWELL COUNTY (Northeastern third, including the Township of Creswell);
CHRISTIAN COUNTY (Northern third, including the Townships of Apex, Crofton, Kelly, Mannington & Wynns);
CRITTENDEN COUNTY (Northeastern half, including the Townships of Grove, Mattoon, Repton, Shady Grove & Tribune);
MUHLENBERG COUNTY (Townships of Bavier, Beech Creek Junction, Benton, Brennen, Browder, Central City, Cleaton, Depoy, Drakesboro, Eunis, Graham, Hillside, Luzerne, Lynn City, Martwick, McNary, Millport, Moorman, Nelson, Paradise,

Powderly, South Carrollton, Tarina & Weir)

	Rates	Fringes
Ironworkers:.....	$ 27.82	16.555

IRON0492-003 05/01/2013

ALLEN, LOGAN, SIMPSON, TODD & WARREN COUNTIES
BUTLER COUNTY (Southern third, including the Townships of Boston, Berrys Lick, Dimple, Jetson, Quality, Sharer, Sugar Grove & Woodbury);
CHRISTIAN COUNTY (Eastern two-thirds, including the Townships of Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
EDMONSON COUNTY (Southern fourth, including the Townships of Chalybeate & Rocky Hill);
MUHLENBERG COUNTY (Southern eighth, including the Townships of Dunnior, Penrod & Rosewood)

	Rates	Fringes
Ironworkers:.....	$ 23.84	10.96

IRON0782-006 05/01/2013

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES
CALDWELL COUNTY (Southwestern two-thirds, including the Townships of Cedar Bluff, Cider, Claxton, Cobb, Crowtown, Dulaney, Farmersville, Fredonia, McGowan, Otter Pond & Princeton);
CHRISTIAN COUNTY (Western third, Excluding the Townships of Apex, Crofton, Kelly, Mannington, Wynns, Bennettstown, Casky, Herndon, Hopkinsville, Howell, Masonville, Pembroke & Thompsonville);
CRITTENDEN COUNTY (Southwestern half, including the Townships of Crayne, Dycusburg, Frances, Marion, Mexico, Midway, Sheridan & Told)

	Rates	Fringes
Ironworkers:		
Projects with a total contract cost of $20,000,000.00 or above.....	$ 26.46	19.91
All Other Work.....	$ 24.95	18.65

LABO0189-005 07/01/2013

BALLARD, CALLOWAY, CARLISLE, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL & MCCRACKEN COUNTIES

	Rates	Fringes
Laborers:		

GROUP 1	$ 20.95	12.01
GROUP 2	$ 21.20	12.01
GROUP 3	$ 21.25	12.01
GROUP 4	$ 21.85	12.01

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0189-006 07/01/2013

ALLEN, BUTLER, CALDWELL, CHRISTIAN, DAVIESS, EDMONSON, HANCOCK, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, SIMPSON, TODD, TRIGG & WARREN COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 21.96	11.00
GROUP 2	$ 22.21	11.00
GROUP 3	$ 22.26	11.00
GROUP 4	$ 22.86	11.00

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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LABO0561-001 07/01/2013

CRITTENDEN, HENDERSON, UNION & WEBSTER COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1	$ 21.11	12.25
GROUP 2	$ 21.36	12.25
GROUP 3	$ 21.41	12.25
GROUP 4	$ 22.01	12.25

LABORER CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter Tender; Cement Mason Tender; Cleaning of Machines; Concrete; Demolition; Dredging; Environmental - Nuclear,

Radiation, Toxic & Hazardous Waste - Level D; Flagperson; Grade Checker; Hand Digging & Hand Back Filling; Highway Marker Placer; Landscaping, Mesh Handler & Placer; Puddler; Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail & Fence Installer; Signal Person; Sound Barrier Installer; Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper; Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer); Brickmason Tender; Mortar Mixer Operator; Scaffold Builder; Burner & Welder; Bushammer; Chain Saw Operator; Concrete Saw Operator; Deckhand Scow Man; Dry Cement Handler; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Level C; Forklift Operator for Masonary; Form Setter; Green Concrete Cutting; Hand Operated Grouter & Grinder Machine Operator; Jackhammer; Pavement Breaker; Paving Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven Georgia Buggy & Wheel Barrow; Power Post Hole Digger; Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind Trencher; Sand Blaster; Concrete Chipper; Surface Grinder; Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman; Gunnite Operator & Mixer; Grout Pump Operator; Blaster; Side Rail Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher; Environmental - Nuclear, Radiation, Toxic & Hazardous Waste - Levels A & B; Miner & Driller (Free Air); Tunnel Blaster; & Tunnel Mucker (Free Air); Directional & Horizontal Boring; Air Track Drillers (All Types); Powdermen & Blasters; Troxler & Concrete Tester if Laborer is Utilized

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PAIN0032-002 05/01/2013

BALLARD COUNTY

	Rates	Fringes
Painters:		
Bridges	$ 30.56	15.18
All Other Work	$ 28.26	15.18

Spray, Blast, Steam, High & Hazardous (Including Lead Abatement) and All Epoxy - $1.00 Premium

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PAIN0118-003 05/01/2010

EDMONSON COUNTY:

	Rates	Fringes
Painters:		
Brush & Roller	$ 18.50	10.30
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning	$ 19.50	10.30

PAIN0156-006 04/01/2010

DAVIESS, HANCOCK, HENDERSON, MCLEAN, OHIO, UNION & WEBSTER COUNTIES

	Rates	Fringes
Painters:		
BRIDGES		
GROUP 1	$ 25.60	10.05
GROUP 2	$ 25.85	10.05
GROUP 3	$ 26.60	10.05
GROUP 4	$ 27.60	10.05
ALL OTHER WORK:		
GROUP 1	$ 25.60	11.30
GROUP 2	$ 25.85	11.30
GROUP 3	$ 26.60	11.30
GROUP 4	$ 27.60	11.30

PAINTER CLASSIFICATIONS

GROUP 1 - Brush & Roller

GROUP 2 - Plasterers

GROUP 3 - Spray; Sandblast; Power Tools; Waterblast; Steamcleaning; Brush & Roller of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

GROUP 4 - Spray of Mastics, Creosotes, Kwinch Koate & Coal Tar Epoxy

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PAIN0456-003 07/01/2011

ALLEN, BUTLER, LOGAN, MUHLENBERG, SIMPSON, TODD & WARREN COUNTIES:

	Rates	Fringes
Painters:		
BRIDGES		
Brush & Roller	$ 22.55	9.65
Spray; Sandblast; Power Tools; Waterblast & Steam Cleaning	$ 23.55	9.65
ALL OTHER WORK		
Brush & Roller	$ 17.55	9.65
Spray; Sandblast; Power Tools; Waterblast & Steam Cleaning	$ 18.55	9.65

ALL OTHER WORK - HIGH TIME PAY
Over 35 feet (up to 100 feet) - $1.00 above base wage
100 feet and over - $2.00 above base wage

DURING SPRAY PAINTING AND SANDBLASTING OPERATIONS, POT

TENDERS SHALL RECEIVE THE SAME WAGE RATES AS THE SPRAY PAINTER OR NOZZLE OPERATOR

PAIN0500-002 07/01/2013

CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, HOPKINS, LIVINGSTON, LYON, MARSHALL, MCCRACKEN & TRIGG COUNTIES:

	Rates	Fringes
Painters:		
Bridges	$ 25.80	11.95
All Other Work	$ 19.55	11.95

Waterblasting units with 3500 PSI and above - $.50 premium
Spraypainting and all abrasive blasting - $1.00 premium
Work 40 ft. and above ground level - $1.00 premium

PLUM0184-002 07/01/2013

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN and TRIGG COUNTIES

	Rates	Fringes
Plumber; Steamfitter	$ 33.11	14.83

PLUM0502-004 08/01/2013

ALLEN, BUTLER, EDMONSON, SIMPSON & WARREN

	Rates	Fringes
Plumber; Steamfitter	$ 32.00	17.17

PLUM0633-002 08/01/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, LOGAN, MCLEAN, MUHLENBERG, OHIO, TODD, UNION & WEBSTER COUNTIES:

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 29.87	14.25

TEAM0089-003 03/31/2013

ALLEN, BUTLER, EDMONSON, LOGAN, SIMPSON & WARREN COUNTIES

	Rates	Fringes
Truck drivers:		
Zone 1:		
Group 1	$ 19.38	16.85

Group 2	$ 19.56	16.85
Group 3	$ 19.64	16.85
Group 4	$ 19.66	16.85

GROUP 1 - Greaser; Tire Changer

GROUP 2 - Truck Mechanic; Single Axle Dump; Flat Bed; All Terrain Vehicles when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors

GROUP 3 - Mixer All Types

GROUP 4 - Winch and A-Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker; Euclid and Other Heavy Earth Moving Equipment; Low Boy; Articulator Cat; Five Axle Vehicle

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TEAM0215-003 03/31/2013

DAVIESS, HANCOCK, HENDERSON, HOPKINS, MCLEAN, MUHLENBERG, OHIO & WEBSTER COUNTIES

	Rates	Fringes
TRUCK DRIVER		
Group 1	$ 20.93	16.85
Group 2	$ 21.16	16.85
Group 3	$ 21.23	16.85
Group 4	$ 21.24	16.85

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Driver of Distributors; Mixer All Types

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; 5 Axle Vehicle; Winch and A- Frame when used in transporting materials; Ross Carrier; Fork Lift when used to transport building materials; Driver on Pavement Breaker

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TEAM0236-001 03/31/2013

BALLARD, CALDWELL, CALLOWAY, CARLISLE, CHRISTIAN, CRITTENDEN, FULTON, GRAVES, HICKMAN, LIVINGSTON, LYON, MARSHALL, MCCRACKEN,TODD & TRIGG COUNTIES

	Rates	Fringes
TRUCK DRIVER		

Group 1	$ 19.38	16.85
Group 2	$ 19.56	16.85
Group 3	$ 19.56	16.85
Group 4	$ 19.66	16.85
Group 5	$ 19.64	16.85

GROUP 1: Greaser, Tire Changer

GROUP 2: Truck Mechanic

GROUP 3: Single Axle Dump; Flat Bed; All Terrain Vehicle when used to haul materials; Semi Trailer or Pole Trailer when used to pull building materials and equipment; Tandem Axle Dump; Drivers of Distributors

GROUP 4: Euclid and other heavy earth moving equipment; Low Boy; Articulator Cat; Five Axle Vehicle; Winch and A-Frame when used in transporting materials; Ross Carrier

GROUP 5: Mixer All Types

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

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

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above

example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

2.) If the answer to the question in 1.) is yes, then an

interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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

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

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

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

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

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END OF GENERAL DECISION

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

These rates are listed pursuant to the Kentucky Determination No. CR-13-I-HWY dated April 15, 2013.

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

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

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

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

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

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

OVERTIME:

Overtime is to be paid after an employee works eight (8) hours a day or forty (40) hours a week, whichever gives the employee the greater wages. At least time and one-half the base rate is required for all overtime. A laborer, workman or mechanic and an employer may enter into a written agreement or a collective bargaining agreement to work more than eight (8) hours a calendar day but not more than ten (10) hours a calendar day for the straight time hourly rate. Wage violations or questions should be directed to the designated Engineer or the undersigned.

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

131083

PROPOSAL BID ITEMS

Report Date 1/21/13

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0010	00003		CRUSHED STONE BASE	91,273.00	TON		$	
0020	00020		TRAFFIC BOUND BASE	1,848.00	TON		$	
0030	00078		CRUSHED AGGREGATE SIZE NO 2	14,420.00	TON		$	
0040	00100		ASPHALT SEAL AGGREGATE	350.00	TON		$	
0050	00103		ASPHALT SEAL COAT	42.00	TON		$	
0060	00190		LEVELING & WEDGING PG64-22	292.00	TON		$	
0070	00212		CL2 ASPH BASE 1.00D PG64-22	44,585.00	TON		$	
0080	00301		CL2 ASPH SURF 0.38D PG64-22	7,691.00	TON		$	
0090	02101		CEM CONC ENT PAVEMENT-8 IN	44.00	SQYD		$	
0100	02599		FABRIC-GEOTEXTILE TYPE IVFOR SUBGRADE STABILIZATION	49,160.00	SQYD		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0110	01825		ISLAND CURB AND GUTTER	50.00	LF		$	
0120	01987		DELINEATOR FOR GUARDRAIL BI DIRECTIONAL WHITE	16.00	EACH		$	
0130	02014		BARRICADE-TYPE III	8.00	EACH		$	
0140	02091		REMOVE PAVEMENT	2,599.00	SQYD		$	
0150	02159		TEMP DITCH	22,240.00	LF		$	
0160	02200		ROADWAY EXCAVATION	165,506.00	CUYD		$	
0170	02223		GRANULAR EMBANKMENT	30,000.00	CUYD		$	
0180	02242		WATER	2,000.00	MGAL		$	
0190	02351		GUARDRAIL-STEEL W BEAM-S FACE	675.00	LF		$	
0200	02360		GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH		$	
0210	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	4.00	EACH		$	
0220	02391		GUARDRAIL END TREATMENT TYPE 4A	4.00	EACH		$	
0230	02483		CHANNEL LINING CLASS II	3,147.00	TON		$	
0240	02545		CLEARING AND GRUBBING73 ACRES	1.00	LS		$	
0250	02562		TEMPORARY SIGNS	975.00	SQFT		$	
0260	02585		EDGE KEY	138.00	LF		$	
0270	02596		FABRIC-GEOTEXTILE TYPE I	3,143.00	SQYD		$	
0280	02599		FABRIC-GEOTEXTILE TYPE IV	89,000.00	SQYD		$	
0290	02600		FABRIC GEOTEXTILE TY IV FOR PIPE	7,668.00	SQYD	$2.00	$	$15,336.00
0300	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0310	02651		DIVERSIONS (BY-PASS DETOURS)	1.00	LS		$	
0320	02671		PORTABLE CHANGEABLE MESSAGE SIGN	3.00	EACH		$	
0330	02696		SHOULDER RUMBLE STRIPS-SAWED	39,400.00	LF		$	
0340	02701		TEMP SILT FENCE	22,240.00	LF		$	
0350	02703		SILT TRAP TYPE A	73.00	EACH		$	
0360	02704		SILT TRAP TYPE B	73.00	EACH		$	
0370	02705		SILT TRAP TYPE C	73.00	EACH		$	
0380	02706		CLEAN SILT TRAP TYPE A	219.00	EACH		$	
0390	02707		CLEAN SILT TRAP TYPE B	219.00	EACH		$	
0400	02708		CLEAN SILT TRAP TYPE C	219.00	EACH		$	

PROPOSAL BID ITEMS

131083

Report Date 1/21/13

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0410	02709		CLEAN TEMP SILT FENCE	22,240.00	LF		$	
0420	02726		STAKING	1.00	LS		$	
0430	05950		EROSION CONTROL BLANKET	32,269.00	SQYD		$	
0440	05952		TEMP MULCH	353,320.00	SQYD		$	
0450	05953		TEMP SEEDING AND PROTECTION	57,466.00	SQYD		$	
0460	05966		TOPDRESSING FERTILIZER	10.55	TON		$	
0470	05985		SEEDING AND PROTECTION	202,166.00	SQYD		$	
0480	06510		PAVE STRIPING-TEMP PAINT-4 IN	50,000.00	LF		$	
0490	06514		PAVE STRIPING-PERM PAINT-4 IN	83,880.00	LF		$	
0500	10020NS		FUEL ADJUSTMENT	148,015.00	DOLL	$1.00	$	$148,015.00
0510	10030NS		ASPHALT ADJUSTMENT	204,378.00	DOLL	$1.00	$	$204,378.00
0520	20458ES403		CENTERLINE RUMBLE STRIPS	19,700.00	LF		$	
0530	20482NC		DRIFT/SEDIMENT REMOVAL	1.00	LS		$	
0540	21289ED		LONGITUDINAL EDGE KEY	1,600.00	LF		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0550	00078		CRUSHED AGGREGATE SIZE NO 2	19.00	TON		$	
0560	00440		ENTRANCE PIPE-15 IN	625.00	LF		$	
0570	00441		ENTRANCE PIPE-18 IN	195.00	LF		$	
0580	00443		ENTRANCE PIPE-24 IN	197.00	LF		$	
0590	00445		ENTRANCE PIPE-30 IN	33.00	LF		$	
0600	00462		CULVERT PIPE-18 IN	341.00	LF		$	
0610	00464		CULVERT PIPE-24 IN	349.00	LF		$	
0620	00466		CULVERT PIPE-30 IN	424.00	LF		$	
0630	00468		CULVERT PIPE-36 IN	140.00	LF		$	
0640	00469		CULVERT PIPE-42 IN	369.00	LF		$	
0650	01000		PERFORATED PIPE-4 IN	1,369.00	LF		$	
0660	01010		NON-PERFORATED PIPE-4 IN	190.00	LF		$	
0670	01028		PERF PIPE HEADWALL TY 3-4 IN	6.00	EACH		$	
0680	01032		PERF PIPE HEADWALL TY 4-4 IN	13.00	EACH		$	
0690	01208		PIPE CULVERT HEADWALL-24 IN	3.00	EACH		$	
0700	01214		PIPE CULVERT HEADWALL-42 IN	8.00	EACH		$	
0710	01391		METAL END SECTION TY 3-18 IN	2.00	EACH		$	
0720	01450		S & F BOX INLET-OUTLET-18 IN	8.00	EACH		$	
0730	01451		S & F BOX INLET-OUTLET-24 IN	1.00	EACH		$	
0740	01452		S & F BOX INLET-OUTLET-30 IN	8.00	EACH		$	
0750	01453		S & F BOX INLET-OUTLET-36 IN	4.00	EACH		$	
0760	02597		FABRIC-GEOTEXTILE TYPE II	866.00	SQYD		$	
0770	23131ER701		PIPELINE VIDEO INSPECTION	1,623.00	LF		$	

Section: 0004 - BRIDGE-BOX CULVERT

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0780	08003		FOUNDATION PREPARATION	1.00	LS		$	
0790	08100		CONCRETE-CLASS A	122.70	CUYD		$	
0800	08150		STEEL REINFORCEMENT	15,014.00	LB		$	

131083

PROPOSAL BID ITEMS

Report Date 1/21/13

Section: 0005 - UTILITY-GAS

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0810	21773NN		GAS LINE MARKER	15.00	EACH		$	
0820	24641EC		DEMOLITION	1.00	LS		$	
0830	24642EC		3/4 IN FARM TAP TO 3/4 IN MDPE	2.00	EACH		$	
0840	24643EC		3/4 IN FARM TAP TO 2 IN MDPE	2.00	EACH		$	
0850	24644EC		SERVICE TAPPING TEE3/4 IN	23.00	EACH		$	
0860	24645EC		MDPE PIPELINE2 IN	800.00	LF		$	
0870	24645EC		MDPE PIPELINE3/4 IN	50.00	LF		$	
0880	24646EC		STEEL PIPELINE6.625 IN	4,300.00	LF		$	
0890	24650EC		CATHODIC TEST STATION	2.00	EACH		$	

Section: 0006 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
0900	01315		BLOW-OFF ASSEMBLY6 IN	1.00	EACH		$	
0910	01315		BLOW-OFF ASSEMBLY3 IN	1.00	EACH		$	
0920	03382		PVC PIPE-3 IN	316.00	LF		$	
0930	03385		PVC PIPE-6 IN	13,540.00	LF		$	
0940	03545		BEND 22.50 DEG 6 IN	14.00	EACH		$	
0950	03554		BEND 45 DEG 6 IN	7.00	EACH		$	
0960	03560		BEND 90 DEG 6 IN	15.00	EACH		$	
0970	20248NC		DUCTILE IRON CROSS6 IN	1.00	EACH		$	
0980	20333EN		SERVICE LINE2 IN PE	549.00	LF		$	
0990	20333EN		SERVICE LINE3/4 IN PE	524.00	LF		$	
1000	20794ND		REDUCER 8 IN X 6 IN	2.00	EACH		$	
1010	21384ED		BORE AND JACK PIPE-6 IN	62.00	LF		$	
1020	21558EC		SERVICE LINE - 1 IN	336.00	LF		$	
1030	21788ED		OPEN CUT W/ STEEL ENCASEMENT6 IN	88.00	LF		$	
1040	21788ED		OPEN CUT W/ STEEL ENCASEMENT12 IN	223.00	LF		$	
1050	21863EN		OPEN CUT AND CASE FOR 3 IN WATERLINE	98.00	LF		$	
1060	21940EN		BORED LINER PIPE-8 IN	220.00	LF		$	
1070	22870NN		SADDLE-CORP STOP & METER RECONN-3/4 IN	13.00	EACH		$	
1080	22960ED		BORE & JACK ENCASEMENT PIPE-INSTALL	80.00	LF		$	
1090	23349EC		BORED LINER PIPE-12 IN	357.00	LF		$	
1100	23358EC		TEE-6 IN X 6 IN	1.00	EACH		$	
1110	23442EC		RESILIENT SEATED GATE VALVE-6 IN	7.00	EACH		$	
1120	23457EC		AIR RELEASE VALVE-3/4 IN	6.00	EACH		$	
1130	23513EC		CRUSHED STONE PAVEMENT REPLACEMENT	89.00	LF		$	
1140	23596EC		TAPPING SLEEVE AND VALVE-6 IN	10.00	EACH		$	
1150	23667EC		WATER MAIN CREEK CROSSING6 IN TYPE III	51.00	LF		$	
1160	23830EC		BEND 90 DEG-3 IN	1.00	EACH		$	
1170	23903EC		TAPPING SADDLE 6 X 1 IN WITH CORP STOP	1.00	EACH		$	
1180	24329EC		GROUND WIRE-SOLID COPPER #6 SD	13,856.00	LF		$	
1190	24482ED		BYPASS METER ASSEMBLY1 IN	1.00	EACH		$	

PROPOSAL BID ITEMS

131083

Report Date 1/21/13

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1200	24485ED		CUT AND BLOCK6 IN	10.00	EACH		$	
1210	24486ED		TEE6 IN X 3 IN	1.00	EACH		$	
1220	24647EC		RESILIENT SEAT GATE VALVE3 IN	1.00	EACH		$	
1230	24648EC		FOSTER ADAPTER6 IN	9.00	EACH		$	
1240	24648EC		FOSTER ADAPTER3 IN	1.00	EACH		$	

Section: 0007 - MOB AND DEMOB

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	FP	AMOUNT
1250	02568		MOBILIZATION	1.00	LS		$	
1260	02569		DEMOBILIZATION	1.00	LS		$	