



CALL NO. 104

CONTRACT ID. 201016

NELSON COUNTY

FED/STATE PROJECT NUMBER STP BRO 5038(104)

DESCRIPTION US-62

WORK TYPE BRIDGE WITH GRADE, DRAIN & SURFACE

PRIMARY COMPLETION DATE 9/1/2021

LETTING DATE: April 24,2020

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME April 24,2020. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

PLANS AVAILABLE FOR THIS PROJECT.

DBE CERTIFICATION REQUIRED - 0%

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

TABLE OF CONTENTS

PART I	SCOPE OF WORK
	<ul style="list-style-type: none">• PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES• CONTRACT NOTES• FEDERAL CONTRACT NOTES• DGA BASE• DGA BASE FOR SHOULDERS• INCIDENTAL SURFACING• COMPACTION OPTION B• SPECIAL NOTE(S) APPLICABLE TO PROJECT• TREE REMOVAL• CONCRETE SLURRY• BRIDGE DEMOLITION, RENOVATION• ASBESTOS ABATEMENT REPORT• RIGHT OF WAY NOTES• UTILITY IMPACT & RAIL CERTIFICATION NOTES• GENERAL UTILITY NOTES• WATER STANDARD UTILITY BID ITEMS• SEWER STANDARD UTILITY BID ITEMS• UTILITY SPECIFICATIONS• DEPT OF ARMY - NATIONWIDE PERMIT• COMMUNICATING ALL PROMISES• GUARDRAIL DELIVERY VERIFICATION SHEET
PART II	SPECIFICATIONS AND STANDARD DRAWINGS
	<ul style="list-style-type: none">• SPECIFICATIONS REFERENCE• SUPPLEMENTAL SPECIFICATION• [SN-11] PORTABLE CHANGEABLE SIGNS• [SP-69] EMBANKMENT AT BRIDGE END BENT STRUCTURES
PART III	EMPLOYMENT, WAGE AND RECORD REQUIREMENTS
	<ul style="list-style-type: none">• FEDERAL-AID CONSTRUCTION CONTRACTS - FHWA 1273• NONDISCRIMINATION OF EMPLOYEES• EXECUTIVE BRANCH CODE OF ETHICS• PROJECT WAGE RATES LOCALITY 3 / FEDERAL• NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EEO NELSON
PART IV	INSURANCE
PART V	BID ITEMS

PART I
SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 04

CONTRACT ID - 201016

STP BRO 5038(104)

COUNTY - NELSON

PCN - DE09000622008

STP BRO 5038(104)

US-62 ADDRESS DEFICIENCIES OF BRIDGES ON US-62(HINKLE CREEK) AND KY-48 IN BLOOMFIELD, A
DISTANCE OF 0.11 MILES.BRIDGE WITH GRADE, DRAIN & SURFACE SYP NO. 04-01078.00.
GEOGRAPHIC COORDINATES LATITUDE 37:54:44.00 LONGITUDE 85:19:04.00

COMPLETION DATE(S):

COMPLETED BY 09/01/2021

APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

PROPOSAL ADDENDA

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

BID SUBMITTAL

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

JOINT VENTURE BIDDING

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

UNDERGROUND FACILITY DAMAGE PROTECTION

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

REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY

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

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

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

SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT

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

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

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

HARDWOOD REMOVAL RESTRICTIONS

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

INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES

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

ACCESS TO RECORDS

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

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

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

April 30, 2018

FEDERAL CONTRACT NOTES

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

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

CIVIL RIGHTS ACT OF 1964

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

NOTICE TO ALL BIDDERS

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

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

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

SECOND TIER SUBCONTRACTS

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

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

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

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

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

DBE GOAL

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

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

OBLIGATION OF CONTRACTORS

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

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

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

CERTIFICATION OF CONTRACT GOAL

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

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

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

DBE PARTICIPATION PLAN

Lowest responsive bidders must submit the *DBE Plan/ Subcontractor Request*, form TC 14-35 DBE, within **5** days of the letting. This is necessary before the Awards Committee will review and make a recommendation. **The project will not be considered for award prior to submission and approval of the apparent low bidder’s DBE Plan/Subcontractor Request.**

The DBE Participation Plan shall include the following:

1. Name and address of DBE Subcontractor(s) and/or supplier(s) intended to be used in the proposed project;
2. Description of the work each is to perform including the work item, unit, quantity, unit price and total amount of the work to be performed by the individual DBE. The Proposal Line Number, Category Number, and the Project Line Number can be found in the “material listing” on the Construction Procurement website under the specific letting;
3. The dollar value of each proposed DBE subcontract and the percentage of total project contract value this represents. DBE participation may be counted as follows:
 - a. If DBE suppliers and manufactures assume actual and contractual responsibility, the dollar value of materials to be furnished will be counted toward the goal as follows:
 - The entire expenditure paid to a DBE manufacturer;
 - 60 percent of expenditures to DBE suppliers that are not manufacturers provided the supplier is a regular dealer in the product involved. A regular dealer must be engaged in, as its principal business and in its own name, the sale of products to the public, maintain an inventory and own and operate distribution equipment; and
 - The amount of fees or commissions charged by the DBE firms for a bona fide service, such as professional, technical, consultant, or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials, supplies, delivery of materials and supplies or for furnishing bonds, or insurance, providing such fees or commissions are determined to be reasonable and customary.

- b) The dollar value of services provided by DBEs such as quality control testing, equipment repair and maintenance, engineering, staking, etc.;
 - c) The dollar value of joint ventures. DBE credit for joint ventures will be limited to the dollar amount of the work actually performed by the DBE in the joint venture;
4. Written and signed documentation of the bidder's commitment to use a DBE contractor whose participation is being utilized to meet the DBE goal; and
 5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment.

UPON AWARD AND BEFORE A WORK ORDER WILL BE ISSUED

Contractors must submit the signed subcontract between the contractor and the DBE contractor, along with the DBE's certificate of insurance. If the DBE is a supplier of materials for the project, a signed purchase order must be submitted to the Division of Construction Procurement.

Changes to DBE Participation Plans must be approved by the Cabinet. The Cabinet may consider extenuating circumstances including, but not limited to, changes in the nature or scope of the project, the inability or unwillingness of a DBE to perform the work in accordance with the bid, and/or other circumstances beyond the control of the prime contractor.

CONSIDERATION OF GOOD FAITH EFFORTS REQUESTS

If the DBE participation submitted in the bid by the apparent lowest responsive bidder does not meet or exceed the DBE contract goal, the apparent lowest responsive bidder must submit a Good Faith Effort Package to satisfy the Cabinet that sufficient good faith efforts were made to meet the contract goals prior to submission of the bid. Efforts to increase the goal after bid submission will not be considered in justifying the good faith effort, unless the contractor can show that the proposed DBE was solicited prior to the letting date. DBEs utilized in achieving the DBE goal must be certified and prequalified for the work items at the time the bid is submitted. One complete set (hard copy along with an electronic copy) of this information must be received in the Division of Contract Procurement no later than 12:00 noon of the tenth calendar day after receipt of notification that they are the apparent low bidder.

Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a sample representative letter along with a distribution list of the firms solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the Cabinet considers in judging good faith efforts. This documentation may include written subcontractors' quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The Good Faith Effort Package shall include, but may not be limited to information showing evidence of the following:

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

FAILURE TO MEET GOOD FAITH REQUIREMENT

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

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

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

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

SANCTIONS FOR FAILURE TO MEET DBE REQUIREMENTS OF THE PROJECT

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

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

PROMPT PAYMENT

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

CONTRACTOR REPORTING

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

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

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

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

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

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

DEFAULT OR DECERTIFICATION OF THE DBE

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

7/19/2019

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – CARGO PREFERENCE ACT (CPA).

(REV 12-17-15) (1-16)

SECTION 7 is expanded by the following new Article:

102.10 **Cargo Preference Act – Use of United States-flag vessels.**

Pursuant to Title 46CFR Part 381, the Contractor agrees

- To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

- To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph 1 of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

- To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

DGA BASE

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

DGA BASE FOR SHOULDERS

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

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

INCIDENTAL SURFACING

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

OPTION B

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

**SPECIAL NOTE FOR PRE-BID CONFERENCE MINUTES
NELSON COUNTY
4-1078
ADDRESS DEFICIENCIES OF BRIDGES ON US 62 (090B00095) AND KY 48 IN
BLOOMFIELD (090B00096)**

The Department conducted a Pre-Bid Conference of the subject project on **Wednesday, January 15, 2019 at 1:00 PM Eastern** at;

**Bloomfield Public Library
Community Room
34 Arnold Lane
Bloomfield, KY 40008**

There will not be an additional Pre-Bid Meeting required for this letting. However, the attached minutes should be considered when preparing bids for this project.

PRE-BID MEETING MINUTES

US 62 ADDRESS DEFICIENCIES OF BRIDGES ON US-62(HINKLE CREEK) AND KY-48 IN BLOOMFIELD, A DISTANCE OF 0.11 MILES.BRIDGE WITH GRADE, DRAIN & SURFACE SYP NO. 04-01078.00.

JANUARY 24, 202 LETTING
CALL 101
CID – 20-1008
NELSON COUNTY

Attendees:

Joseph Ferguson	KYTC District 4
Gary Clifford	Cleary Construction
Brad Bottoms	KYTC District 4
James Beauchamp	KYTC District 4
Ben Steinhauer	SSRG
Matt Cullen	Louisville Paving & Construction
Isaac Weddington	Louisville Paving & Construction
Travis Thompson	KYTC CO Highway Design
Randy Crawford	KYTC CO Construction Procurement
Mike Rogers	MAGO Construction Co.
Paxx Burk	Burk Construction, LLC
Chris Profitt	Scott and Murphy, Inc.
Heath Crawford	Scott and Murphy, Inc.
Frieda Myers	DECA
Jim Potts	Potts Architects
Josh Hornbeck	KYTC District 4
Chad Filiatreau	KYTC District 4
Paul Sanders	KYTC District 4

On Wednesday January 15, 2020 a Mandatory Pre-Bid Meeting was held for CID 20-1008 project in Nelson County at the Bloomfield Public Library. Attendees were directed to sign-in and reminded only confirmed attendees would be eligible to bid on this project. Mr. Ferguson introduced the Project Team members in attendance and presented an overview of the project. The first item discussed was the fixed completion date of October 01, 2020. The special note for KY 48 closure was discussed. The contractor is allowed to close KY 48 from Riverside Dr. through the intersection of US 62/KY 48 for 60 days. The road closure may begin on June 1st, 2020 and the road must be open to traffic by August 1st, 2020. An overview of the bridge construction phases was presented.

- I. PHASE I – KY 48 BRIDGE/NETTIE JARVIS RETAINING WALL (60 DAYS)
- II. PHASE II – ONE LANE US 62W CULVERT (TWO WEEKS)
- III. PHASE III – REMAINDER US 62W CULVERT (TWO WEEKS)
- IV. PHASE IV – CULVERT BELOW GAS STATION THROUGH ONE LANE US 62 E BRIDGE

- V. PHASE V – REMAINDER OF US 62 CULVERT
- VI. PHASE VI – SIDEWALK CONSTRUCTION

Discussion turned to the porch construction. Ms. Myers, DECA Cabinet Project Manager, led with a discussion of the porch specifications. Contrary to any specifications in the Finance Cabinet's General Specifications, the KYTC Prime Contractor will have to be bonded and insured for the full project amount to include the porch demolition and reconstruction. Liquidated damages in the amount of \$300 dollars/day beyond substantial completion and \$200/day for final completion (Phase IV). The porch construction schedule was discussed as outlined below noting that Phase 1 of the porch work may not begin until May 18, 2020, which coincides with the start of the 60 day KY 48 road closure:

- I. PHASE 1 – DEMOLITION (14 DAYS)
- II. PHASE 2 – RETAINING WALL (60 DAYS)
- III. PHASE 3 – PORCH CONSTRUCTION – SUBSTANTIAL COMPLETION (30 DAYS)
- IV. PHAVE 4 – PUNCH LIST WORK (15 DAYS)

Mr. Potts continued discussion of the porch work by pointing out the porch contractor must meet standards for work on historic buildings and these qualifications must be approved by the architect and DECA. He next further defined 'Substantial Completions' means the porch has been reconstructed and finished to a point where the business may reopen and that only 'punch list' items are remaining. Mr. Potts pointed out there are allowances within the proposal for the following items:

- 1. Masonry Tuck Point – 100 square ft
- 2. New Dry Stacked Stone – 20 square ft
- 3. Natural Stone Coping – 10 linear ft

The contractor shall also furnish Unit Bid Prices for those items which will be used to pay for any overage of those amounts. After discussion it was determined the allowances will be updated and addressed in an Addendum. The stated allowances for dry stacked stone and natural stone coping will be removed and the allowance for stone or brick masonry tuckpointing shall be increased to 500 square feet of brick or stone tuckpointing on the existing building where required. It was also called out that the decking material wood species shall consist of Ipe which is a specialty hardwood.

A KY Department of Housing, Building and Construction Permit has been obtained through DECA.

Any subcontractor working on the porch shall meet the qualifications laid out in the official bid documents.

Questions and statements raised by contractors in attendance

1. It was stated that the construction phasing for the bridge was too aggressive. It is possible to get the KY 48 bridge, retaining wall and porch constructed within the 60 closure but including the US 62 west culvert was unreasonable.
 - a. After further discussion, KYTC will lengthen the KY 48 road closure to 90 days. Phases I, II and III must still be completed by the end of the KY 48 road closure. The closure shall not begin before June 1, 2020. Additionally, the fixed completion date shall be extended to November 1, 2020.
2. Would sub-contractors working on the porch have to be pre-qualified by KYTC?
 - a. It was confirmed with KYTC Construction Procurement that specialty sub-contractors could be approved post bid. This is independent of the verification and approval of the requirements for work on historic buildings and dry stone masonry laid out by the DECA.
3. Will the existing culvert be removed?
 - a. No, the plans call for leaving the existing outer walls in place and forming new walls and footers within the existing culvert. All interior culvert walls shall be removed leaving a continuous single barrel culvert.
4. Will overhead utilities be relocated.
 - a. Overhead utilities will be completely removed from the KY 48 bridge and in front of the Nettie Jarvis building. The overhead utilities crossing US 62 on the east side of the project will be raised to a higher elevation. All utilities are scheduled to be clear by April 15, 2020.
5. Will electric work (removal of the fans and cameras) require a licensed electrician?
 - a. Yes, all electrical work on the project shall be performed by a licensed electrician.
6. Has the roof been tested for asbestos containing materials (ACM)?
 - a. No. The DECA shall have the roof tested but results will not be available prior to bid submittal. The contractor shall bid as if the roof were free of ACM, if testing shows ACM are present the scope of work and abatement shall be addressed through a change order.
7. The result of the discussion on allowances within the porch work is that the allowance for brick or stone masonry tuckpointing has increased to 500 square feet. The allowance for new dry stack stone and natural stone coping is removed. Four tons of structural granular backfill was added as an allowance for the retaining wall and the Architect has recommended locating the 4" drain to outlet at the bottom of the wall rather than the top.

**SPECIAL NOTE FOR PRE-CONSTRUCTION INSPECTION
NELSON COUNTY
4-1078
ADDRESS DEFICIENCIES OF BRIDGES ON US 62 (090B00095) AND KY 48 IN
BLOOMFIELD (090B00096)**

Due to the proximity of the project to adjacent buildings listed on the National Register of Historic Places the contractor shall perform a Pre-Construction Inspection of all buildings within 100 feet of proposed excavation in solid rock. Prior to commencing solid rock excavation, arrange for a pre-construction condition survey of buildings within 100 feet of the proposed excavation or which could be at risk from vibration damage from such work. Provide the Engineer a listing of all properties surveyed and any owners denying entry or failing to respond. It is further recommended that immediately adjacent structures are monitored for vibration during excavation. The Pre-Construction Inspection shall be similar in scope to the Preblast condition survey of structures required in Section 107.11 of the 2019 KYTC Standard and Specifications.

This item shall be considered incidental to Bid Item 08002 – Structure Excavation, Solid Rock.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

DIVISION 1

SECTION 010100 – SPECIAL CONDITIONS

Contents

<u>Article</u>	<u>Title</u>
'1	Special Conditions Supplement
'2	The Project
'3	Project Contacts
'4	Times for Completion
'5	Liquidated Damages
'6	Temporary Facilities and Controls
'7	Special Inspections and Testing
'8	Allowances
'9	Unit Prices
'10	Schedule of Additive Alternates
'11	Additional Project Completion or Close-out Requirements
'12	Special Project Site Security or Access Required
'13	Special Delegated Design Requirements
'14	Other Special Conditions of Contract

Articles

- '1 **Special Conditions:**
These Special Conditions are provided as a supplement to the General Conditions in the Specifications. Special Conditions will also supersede General Conditions where changes are necessary to coordinate with specific project requirements.
- '2 **The Project:**
These specifications and drawings describe the work to be performed and materials to be furnished by a Porch Contractor for the:

**Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC Acct. No. 12FD-625-1900-04-0071-FD52-090-8674601D**

The porch reconstruction work is to a portion of an overall Prime Road Contract project and shall be bid as a Subcontract to the Prime Road Contract. The Subcontractor also called "Porch Contractor" is required to meet the terms and conditions of the overall Road Contract. The Prime Road Contract project is described as follows and has a set of documents specific to that construction work:

4-1078 - REPLACE BRIDGES ON US 62 (HINKLE CREEK) AND KY 48 IN BLOOMFIELD 090B00096N (SR 28.2) 090B00095N (SR 49.7) (12CCR).

1. Replace Bridge work shall demolish the adjacent bridge and portions of highway asphalt adjacent to the Netti-Jarvis Porch. Bridge contractor will demolish the retaining wall supporting the porch columns.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- 2. Replace Bridge project shall construct the foundation wall that support the porch columns and steel beams. Steel beams are included in Bridge project.

Porch Reconstruction Project Description:

This project includes the reconstruction of a porch for the Nettie Jarvis Building. Reconstruction work includes removal and replacement of the existing porch that spans over a storm-water drainage system. The porch bears on an historic two-story building on one side and on a road concrete retaining wall on the other side.

Kentucky Transportation Cabinet (KYTC) District 4 bridge and road project necessitates the removal of the Nettie Jarvis porch in order to replace the road retaining wall that the porch bears upon. This road retaining wall also serves as the side of a storm drainage system running under the porch. KYTC project as described also includes the replacement of a bridge that is adjacent to the Nettie Jarvis porch. Sequencing of the porch work is therefore critical to the construction of the bridge roadway project.

Given the critical nature of the sequencing and interconnections of the Road project to the Porch project, the Porch Contractor will be a Subcontractor to the Prime Road Contractor.

The Porch Contractor is to coordinate and schedule all work per direction of the Prime Road Contractor and is in essence of the overall contract, a Subcontractor to the Prime. In addition to this role as Subcontractor, the Porch Contractor shall be obligated to meet the requirements as a General Contractor under the General Conditions – General Contractor for the Porch demolition/ reconstruction work.

The Nettie Jarvis building plus porch is listed on the National Register of Historic Places. Work for this reconstruction must adhere to the Secretary Of The Interior's Standards For Reconstruction of historic structures.

The Porch Contractor shall provide evidence of a minimum of 15 years of related work experience on historic register buildings. The successful bidder shall supply a list of related historic construction experience listing building project and contact references within 1 hour after bid opening.

The Porch Contractor successful bidder shall also include Proof Of Certification within one hour after bid opening showing their stone mason certification by Dry Stone Conservancy or a list of evidence showing equivalent skill level. Stone installation is a small portion of the work, but highly visible.

‘3 Project Contacts:

In the roles defined by the General Conditions as “Architect” and as used throughout the Contract Documents as the Architect of the work being constructed, the following firm and its sub-consultants are working under separate contract with the Owner to provide the services under this role:

Architect: Company Name: Potts Architects, PLLC
Principal-In-Charge: James Potts, AIA
Project Manager: James Potts, AIA

Porch Structural Engineer: Company Name: Poage Engineers & Associates
Principal-In-Charge: Brian Scott, PE (Brian Scott (bscott@poageengineers.com))

Road-Bridge Engineer/s: Company Name: HDR, Inc.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

Principal-In-Charge: Wes Hagerman, PE (Wesley.hagerman@hdrinc.com)

In the roles defined by the General Conditions – General Contractor for Porch reconstruction work as “Owner” and as used throughout the Contract Documents as the Owner of the work being constructed through the 2 year bond warranty is represented by the following:

Owner (as referenced in General Conditions – General Contractor for purposes of the Porch Reconstruction Contract):

Finance and Administration Cabinet
Facilities and Support Services
Division of Engineering and Contract Administration
Project Manager: Frieda Myers
Branch Manager: Frieda Myers
Executive Director: Jennifer Linton

Kentucky Transportation Cabinet
District 4 Office
Project Manager: Joseph M. Ferguson

Warranties and Insurance shall also be extended to cover the private building owner as additional insured. Coordination with the Private Building Owner during construction will be through the Architect, DECA and KYTC:

In the role defined by General Conditions, “Agency or Using Agency”, for the Porch reconstruction is the Private Building Owner. The porch will be turned over to the Private Building Owner for use once Substantial Completion is achieved.

Private Building Owner (actual Owner of the Nettie Jarvis Building and Porch property):

Olde Boomfield Holding Company, LLC
As represented by:
Law Office of Suzanne Baker Hite
211 South Charity Heights
Bardstown, KY 40004

In the roles defined by the General Conditions as “Special Inspector” and as used throughout the Contract Documents as the firm performing Special Inspections as required by the Kentucky Building Code for the work being constructed, the following firm is working under separate contract with the Owner to provide the services under this role:

Special Inspector: Company Name: To Be Selected & Paid by Dept. of Transportation
Principal-In-Charge: _____
Project Manager: _____

‘4 Times of Completion:

Subject to the conditions of Article ‘16 – “Delays and Extension of Time” of the General Conditions, the work to be performed under this Contract shall be completed as follows:

The Prime Road Contractor will be constructing a new retaining wall, adjacent highway bridge and asphalt street. Construction time will be very limited on this project.

Phase 1 (14 days): The Porch Contractor shall demolish - remove the Porch within 14 days after notice to Proceed is given by the Prime Road Contractor.

Phase 2 (60 days): The Porch Contractor orders/delivers all materials for reconstruction. The Prime Road Contractor shall remove/rebuild the road retaining wall and bridge.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

Phase 3 (30 days): The Porch Contractor is to rebuild the new porch within 30 days after Phase 2 where the highway and bridge work is completed. Phase 3 completion scheduled date shall be the date of Substantial Completion.

Phase 4 (15 days): The Porch Contractor is to complete all items on the punch list created at the Substantial Completion walk thru within 15 days after Phase 3.

Substantial Completion: shall be by phases and the Porch Contractor shall be liable for liquidated damages for each phase not met. Phase 1 shall start from schedule as provided in the overall Road-Bridge Contract.

Article '19.4 of the General Conditions set forth specific requirements of the Commonwealth of Kentucky that are necessary to be fulfilled by the Contractor in order to be determined to have accomplished Substantial Completion by this date. Refer to Article '11 of these Special Conditions for additional requirements of this specific project required to accomplish Substantial Completion.

Final Completion: Phase 4 Porch work shall have Fifteen (15) Calendar Days after Phase 3 completion in order to complete any Punch list items noted.

Article '19.5 of the General Conditions set forth specific requirements of the Commonwealth of Kentucky that are necessary to be fulfilled by the Contractor in order to be determined to have accomplished Final Completion by this date. Refer to Article '11 of these Special Conditions for additional requirements of this specific project required to accomplish Final Completion.

As indicated in Article '4 of the General Conditions, "Construction Schedule", the following limitations of work times are set forth herein that are to be accounted for by the Contractor in scheduling and sequencing of the work: No Restrictions.

Work Restrictions and "Black-Out" Dates: The work shall be performed during daylight hours Monday thru Sunday. Porch Contractor is to provide schedule for working hours at pre-construction meeting.

Project Phasing (Separate start and completion dates): The start date for Phases shall commence on notice from Owner after Contract Execution and Owner acceptance of Prime Road Contractor overall schedule. The highway bridge construction schedule will impact this project's schedule.

Private Building Owner shall have full access to the rear entrance of the Nettie Jarvis building during construction. Building front entry will be closed to public.

Work being Performed by the Owner or by Others: New Highway Bridge and Highway paving by Department of Transportation will impact this project.

Products ordered by the Owner in Advance/ Anticipated Delivery Dates: It is not anticipated that products or materials will be ordered by the Owner for use on this project.

'5 **Liquidated Damages / Damages from Untimely Performance:**

In accordance with Article '19.7 of the General Conditions, the Contractor shall pay the Owner the following identified amount for each and every calendar day of unexcused delay in achieving Substantial Completion and Final Completion beyond the date set for below for each:

Substantial Completion Liquidated Damages are \$300.00/calendar day for each day beyond the established Date of Substantial Completion until the Actual Date of Substantial Completion is achieved. (See Article '19.4 of the General Conditions and Article '11 of these Special Conditions for requirements for Substantial Completion).

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

Final Completion Liquidated Damages are \$200.00/calendar day for each day beyond the established Date of Final Completion until the Actual Date of Final Completion is achieved. (See Article '19.5 of the General Conditions and Article '11 of these Special Conditions for requirements for Final Completion).

'6 Contractor Provided Temporary Facilities and Controls:

Construction Office/Trailer: A Construction Office or Trailer can be omitted on this project. Contractor is to have access to email and cell phone at all times. Job Superintendent to submit cell phone/contact information as soon at Pre-construction meeting.

Staging / Parking: Refer to Drawings for parking and storage areas to be used by Contractor.

Temporary Fencing and Signage: Porch Contractor to provide 6' ht. Portable Chainlink with Concrete Blocks or as required for project specific security or safety where materials are stored on site outside the building.

Portable Toilet Facilities: to be provided by Porch Contractor and to be located within construction fencing.

Utilities: Contractor to set up new temporary utilities or coordinate with Owner for hook-up of existing where applicable

Water: Use Owner Existing Utility, provide all hoses and lines required.

Electric: Use Owner provided for Renovation, provide all lines required. **Contractor shall reimburse the Owner for electric useage or use portable generators.**

Gas: Not Required for this Project.

'7 Special Inspections and Testing:

Article '12 of the General Conditions and the technical specifications of the Contract Documents define and establish the requirements and provisions for Inspection of the Work, Special Inspections performed by others working under separate contract with the Owner, and testing to be provided by the Contractor.

Structural Special Inspections and Testing: Owner provided. To be selected. Structural inspections shall be preformed for steel, concrete and masonry work.

Site Special Inspections and Testing: Not Required this Project.

Contractor Provided Testing: All other testing required by the Contract Documents are Contractor Provided Testing.

'8 Allowances included in the Contract Amount:

- a. Include 100 square feet stone or brick tuckpointing on existing building.
- b. Include 20 square feet of additional new dry stacked stone.
- c. Include 10 lineal feet of natural stone coping.

'9 Unit Prices established by the Form of Proposal:

The Contractor is required at time of submitting a bid proposal for this work to provide specific Unit Prices that will be used to add or deduct those specific work items or services by an established unit of measure and the stated price per unit.

Unit prices include all necessary materials, costs of delivery, installation labor, tools and equipment necessary to provide the unit measured item. If a unit price is used in a change to the work by Change Order, the contractor's overhead, profit, insurance and bonds, and administrative costs are included in

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

the prescribed markup permitted by Article '14 of the General Conditions "Changes in the Work" and are not to be included in the unit price.

For a schedule of Unit Prices see the "Unit Prices" section of the Bid Form of Proposal.

'10 Schedule of Additive Alternates:

There are NO Additive Alternates for the Porch reconstruction work.

'11 Additional Project Completion or Project Close-Out Required: Refer to Article '19.4 of the General Conditions. See article 14 below.

'12 Special Project Site, Security or Access Requirements:

Building Owner shall have full access to rear building entrance at all times. Otherwise the front of building will be closed to public.

The building has an existing security system that remain intact at all times.

Porch Contractor to fence off porch area and maintain fence to keep out pedestrian traffic at all times.

'13 Special Delegated Design Requirements:

There is no Special Delegated Design allowed for in this project.

'14 Other Special Conditions of Contract:

Construction:

Porch Contractor shall provide plywood cover to protect windows in front of building during demolition/reconstruction and patch/repair/paint any attachment damage to existing structure. The

Porch Contractor shall submit Invoices and any Change Order pricing for the porch work on DECA forms to the Prime Road Contractor. The Architect shall review all porch invoices and pricing making a recommendation to the DECA project manager and KYTC Project Manager.

Close-Out Documents:

All Close-out Documents including materials and warranties shall be provided to the Architect for review. Once approved, the Porch Contractor shall provide the Private Building Owner one hard copy ring binder and one PDF of all documents on a thumb drive.

Warranties:

All Warranties for the Porch Reconstruction work shall be owned by the Private Building Owner. During the one year construction warranty period, the Commonwealth of Kentucky will assist the Private Building Owner with communication of warranty claims/repairs to the Porch Contractor. The porch roof warranty from the Porch Contractor shall be a 20 year NDL warranty plus a 2 year installer labor warranty listing the Private Building Owner as Warranty Owner. The Private Building Owner will be responsible for maintaining the porch after the one year construction warranty and for contacting the roofing manufacturer or installer on any roofing claims.

Bonds/Insurance:

Bonds/Insurance for the Porch reconstruction project shall list the Commonwealth of Kentucky as Owner and Olde Bloomfield Holding Company, LLC as Additional Insured. Any latent defects that occur after the one year warranty period but before the two year bond expiration, shall be handled by the Commonwealth of Kentucky jointly with Olde Bloomfield Holding Company, LLC.

END OF SPECIAL CONDITIONS

**OFFICIAL BID DOCUMENT
FOR**

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

DESCRIPTION OF WORK

This project includes work on Nettie Jarvis Porch Reconstruction listed on the National Register of Historic Places. Work must adhere to the Secretary Of The Interior's Standards For Reconstruction of historic structures. The General Contractor shall provide evidence he/she has past work experience with similar construction. Stone masons constructing the stone wall must be certified by Dry Stone Conservancy or provide evidence of equal skill level. This is a very small portion of the work, but highly visible. The General Contractor shall have experience working on buildings listed on the National Register.

This project includes replacement of the existing wood constructed porch spanning over a creek, attached to historic two-story building on one side and concrete retaining wall on the other side. Work must be coordinated with other contractors constructing the new retaining wall, adjacent highway bridge and asphalt street.

Construction time will be very limited on this project. The highway and bridge work will be completed within 90 calendar days. The porch work must be completed 30 days afterwards. Total time for this project is 120 days. Liquidated damages will be included for not completing on time. Work will be impacted by coordination with others.

A lump sum proposal shall be submitted for the work indicated, including Allowances specified. Unit prices are being requested for more or less work.

Architect Contact: James W. Potts, AIA
Potts Architects, PLLC
431 South Mill Street
Lexington, Kentucky 40508
Telephone 859/252-0166
Email: jwpotts@pottsarch.com

**OFFICIAL BID DOCUMENT
FOR**

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

ALL BLANKS IN THE BID DOCUMENTS SHALL BE COMPLETED AND ALL REQUIRED SUPPORT DATA SHALL BE FURNISHED. IF INDICATED IN THE BIDDING DOCUMENTS, SUMS SHALL BE EXPRESSED IN BOTH WORDS AND FIGURES. IN THE CASE OF DISCREPANCY BETWEEN THE TWO, THE AMOUNT IN WORDS SHALL PREVAIL.

LUMP SUM BASE BID:

The Bidder agrees to furnish all labor, materials, supplies and services required to complete this project defined as Nettie Jarvis Porch Reconstruction, in accordance with the Drawings, Specifications, and Contract Documents, and any duly issued Addenda for the LUMP SUM BID AMOUNT set forth below:

LUMP SUM BASE BID AMOUNT:

_____ Dollars
(USE WORDS)

_____ CENTS
(USE WORDS)

(\$ _____)
(USE NUMBERS)

REFER TO ADDITIONAL PAGES FOR EXPERIENCE MODIFICATION RATING AFFIDAVIT. THE AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST PAGE MUST BE PROPERLY EXECUTED FOR THE LUMP SUM BASE BID TO BE VALID.

**OFFICIAL BID DOCUMENT
FOR**
 Nettie Jarvis Porch Reconstruction
 Bloomfield, Kentucky
 Eng. Acct. No. 625-1900
 KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

LIST OF UNIT PRICES:
(Must be submitted with Bid)

Unit Prices shall include the furnishing of all labor, materials, suppliers, services and shall include all items of costs, overhead and profit for the Contractor and any Subcontractor involved, and shall be used uniformly without modification for either additions or deductions. The Unit Prices as established shall be used to determine the equitable adjustment of the Contract Price in connection with changes or extra work performed under the Contract. Failure to completely fill out all unit prices requested may result in bid rejection.

UNIT PRICES
DESCRIPTION OF WORK **UNIT PRICE** **QUANTITY**

1.	Replace existing retaining wall with new reinforced concrete block and stone veneer as detailed and specified	\$	/SF
2.	Brick tuckpointing	\$	/SF
3.	Stone tuckpointing	\$	/SF
4.			
5.			
6.			

**OFFICIAL BID DOCUMENT
FOR**

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

LIST OF PROPOSED SUBCONTRACTORS
(Must be submitted with Bid)

The following list of proposed subcontractors is required by the Owner to be executed, completed, and submitted with the Bidders Proposal. All subcontractors are subject to approval of the Division of Engineering and Contract Administration, Department of Facilities and Support Services, Frankfort, Kentucky. Failure to submit this list, completely filled out, may result in bid rejection.

If certain branches of work are to be done by the Prime Contractor, so state.

Review/evaluation of subcontractors will occur on the bid opening day. If the Commonwealth requests replacement of a subcontractor, on bid opening day, then the apparent low bidder will provide a replacement subcontractor prior to the close of the Commonwealth's business day on that day. Failure to the apparent low bidder to comply with the preceding sentence will result in bid rejection. If subcontractor review/evaluation is not completed on the bid opening day, then procedures for any replacement will be issued based on the uniqueness of each situation. The responsibility for selection, offering of qualified, competent subcontractors to accomplish the work intended is solely the responsibility for the bidder to the Commonwealth.

BRANCH OF WORK

NAME & ADDRESS OF SUBCONTRACTOR
(If Prime/General Contractor, please state)

1.	Demolition	
2.	Masonry	
3.	Rough Carpentry	
4.	Finish Carpentry	
5.	Roofing	
6.		
7.		

**OFFICIAL BID DOCUMENT
FOR**

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

LIST OF MATERIALS AND EQUIPMENT:

Every item listed under the different phases of construction must be clearly identified so that the Owner will definitely know what the bidder proposes to furnish. Bidders are hereby advised that this list shall be required to be filled out completely by the apparent low bidder within ONE (1) HOUR from the close of the official reading of the bids.

The above requirement does not preclude any bidder from submitting this list, fully executed, at the time the bids are submitted.

The use of the manufacturer's dealer's name only, or stating "as per plans and specifications", will not be considered as sufficient identification.

Where more than one "Make of Brand" is listed for any one item, the Owner has the right to select the one to be used,

Failure to submit a proper list may result in rejection of Bidder's Proposal.

The following list of proposed materials or equipment is required by the Owner to be executed, completed, and submitted with the Bidders Proposal. All materials or equipment is subject to approval of the Division of Engineering and Contract Administration, Department of Facilities and Support Services, Frankfort, Kentucky. Failure to submit this list, completely filled out, may result in bid rejection.

MATERIAL AND/OR EQUIPMENT:

MANUFACTURER AND BRAND NAME:

1.	Roofing	
2.	Paint	
3.		
4.		
5.		

**OFFICIAL BID DOCUMENT
FOR
Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D**

GENERAL CONTRACTOR'S QUALIFICATIONS

(To be submitted within one hour of Bid Opening by apparent Low Bidder)

This project includes work on the Wells Building listed on The National Register of Historic Places. Work must adhere to the Secretary of the Interior's Standards for Reconstruction of Historic Structures. The General Contractor shall have had 15 years' experience working on buildings listed on the National Register.

1. Name of Contractor: _____

2. List projects Contractor has successfully completed for buildings on the National Register of Historic Places that are of similar nature and scope of this project.

A.	Project Name	Location	Year	Cost	Owner Name/Ph #.

B.	Project Name	Location	Year	Cost	Owner Name/Ph #.

C.	Project Name	Location	Year	Cost	Owner Name/Ph #.

D.	Project Name	Location	Year	Cost	Owner Name/Ph #.

If you wish, additional projects may be listed on a separate sheet. Photographs of projects would be helpful or website address to review projects.

3. Provide names of Contractor key personnel for this project.

	Name	# Years of Experience	National Historic Register Projects Completed	Project Role
A.				
B.				
C.				
D.				

**OFFICIAL BID DOCUMENT
FOR
Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D**

MASONRY CONTRACTOR'S QUALIFICATIONS

(To be submitted within one hour of Bid Opening by apparent Low Bidder)

Stone mason shall have a full-time employee supervising the work, who possesses the qualification of MASTER CRAFTSMAN, Level 3 as designated by the Dry Stone Conservancy. This person shall be on-site supervising the masonry work specified. Masonry Contractor shall provide evidence of this certification or equivalency of experience and knowledge prior to being accepted to provide this work.

The Masonry Contractor shall have had 15 years' experience working on buildings listed on the National Register.

1. Name of Subcontractor: _____
2. List projects Contractor has successfully completed for buildings on the National Register of Historic Places that are of similar nature and scope of this project.

A.	Project Name	Location	Year	Cost	Owner Name/Ph #.

B.	Project Name	Location	Year	Cost	Owner Name/Ph #.

C.	Project Name	Location	Year	Cost	Owner Name/Ph #.

D.	Project Name	Location	Year	Cost	Owner Name/Ph #.

If you wish, additional projects may be listed on a separate sheet. Photographs of projects would be helpful or website address to review projects.

3. Provide names of Contractor key personnel for this project.

	Name	# Years of Experience	National Historic Register Projects Completed	Project Role
A.				
B.				
C.				
D.				

**OFFICIAL BID DOCUMENT
FOR**

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 12F0-625-1900-04-0071-FD52-090-8674601D

ROOFING SYSTEMS MANUFACTURER'S CERTIFICATION

THIS CERTIFICATION MUST BE COMPLETED AND EMAILED TO BUYER WITHIN 5 DAYS OF
BID OPENING.

Email to: Kristi.Sharp@ky.gov

Date: _____

For and on behalf of _____

(Print or type name and address of roofing systems manufacturer)

I certify that _____
(Name of Roofing Installer)

Is an approved applicator of our roofing systems, and upon completion of this project, providing all terms and conditions for the manufacturer's guarantee are met, we shall provide a No Dollar Limit manufacturer's guarantee for the roof as specified in the Technical Specifications.

Signed: _____

Title: _____

(Print or type name, address and telephone number below)

SPECIAL NOTE FOR PORCH RECONSTRUCTION

US 62/KY 48 BRIDGE REPLACEMENT NELSON COUNTY ITEM NO. 4-1078

The below list of contractors is not meant to be exclusive or exhaustive but does provide a resource for potential sub-contractors who are qualified to complete the porch work. Any contractor not listed below is eligible to participate in this project if they meet the qualifications laid out in the included OFFICIAL BID DOCUMENT FOR NETTIE JARVIS PORCH RECONSTRUCTION. Final determination of qualification is determined by the designing Architect and KY Finance Cabinet. The qualification documents included should be submitted with the bid proposal.

LEWIS BROTHERS
4847 LEFT FORK ROAD
VIPER, KY 41774
(606)439-4618

MARKSBURY CORNETT
804 NORTH ENGLISH STATION RD
LOUISVILLE, KY 40223-4728
(502) 244-5000

SCHNELL CONTRACTING, INC
1343 TILE FACTORY LN
LOUISVILLE, KY 40213
(502) 969-7534

SPECTRUM CONTRACTING
109B WIND HAVEN DR
NICHOLASVILLE, KY 40356-8007
(589) 881-9656

SSRG
2824 STANTON AVE
CINCINNATI, OH 45206
(513) 751-7774

WOODFORD BUILDERS
PO BOX 12977
LEXINGTON, KY 40583
(859)252-0815

VANHOOK ENTERPRISES
P.O. BOX 3547
WEST SOMERSET, KY 42564-3547
606-678-2737

NETTIE JARVIS PORCH RECONSTRUCTION

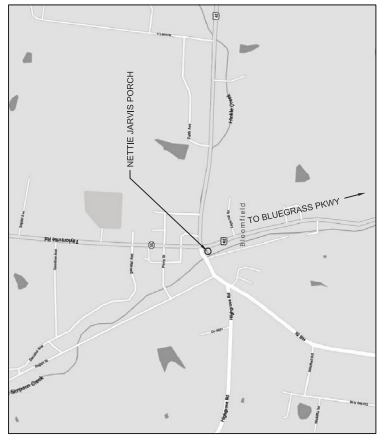
101 FAIRFIELD HILL ROAD, BLOOMFIELD, KENTUCKY
ENGINEERING ACCOUNT NO. 625-1900
KENTUCKY TRANSPORTATION CABINET
NO. 12F0-625-1900-04-0071-FD52-090-8674601D



GOVERNOR:
MATTHEW G. BEVIN

FINANCE CABINET SECRETARY:
WILLIAM LANDRUM III

OWNER:
COMMONWEALTH OF KENTUCKY
FINANCE AND ADMINISTRATION CABINET
DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION
DEPARTMENT FOR FACILITIES AND SUPPORT SERVICES
BUSH BUILDING
403 WAPPING STREET
FRANKFORT, KENTUCKY



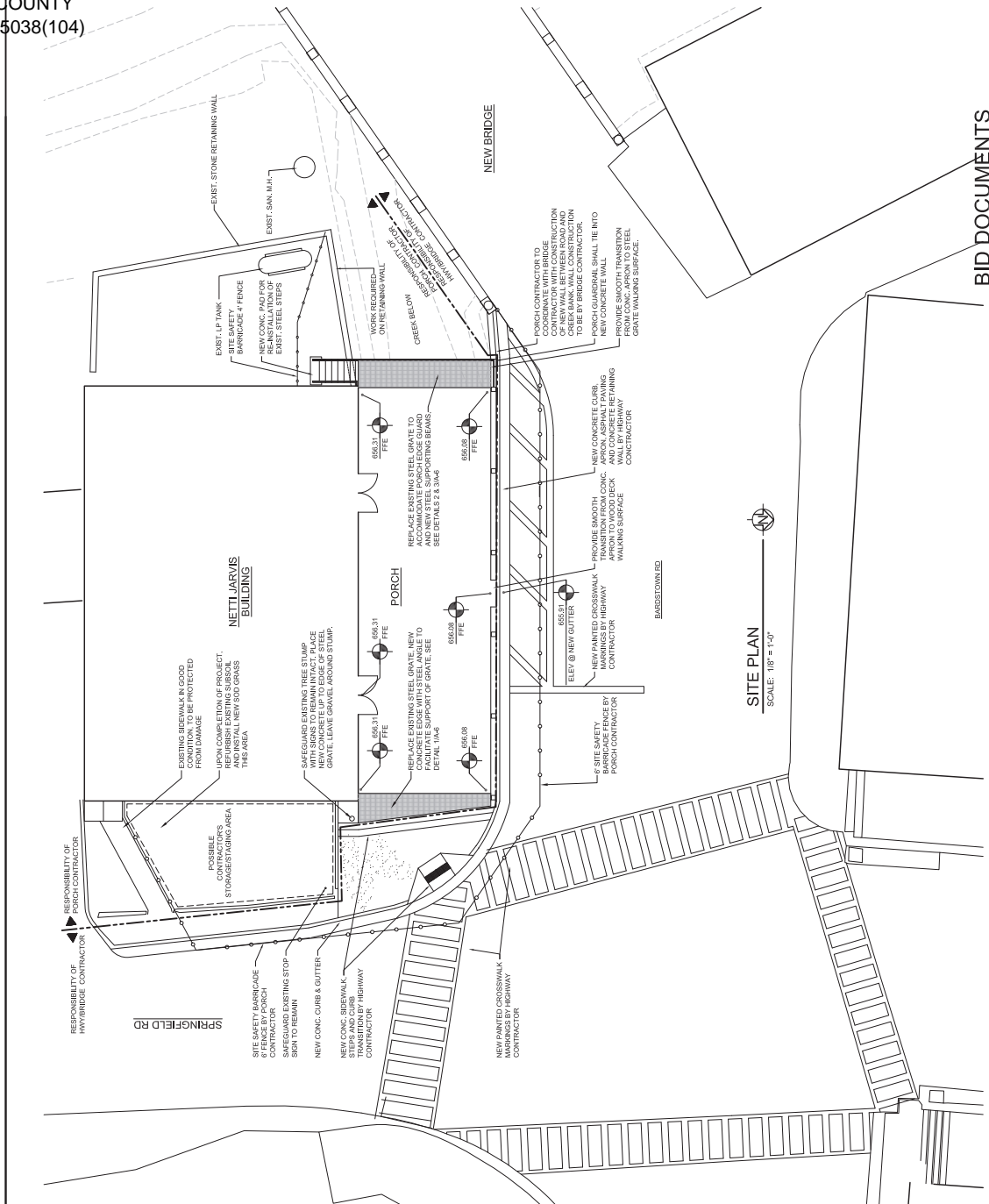
VICINITY MAP
SCALE: NOT TO SCALE



ARCHITECT
POTTS
ARCHITECTS - P L L C
431 SOUTH MILL STREET LEXINGTON, KENTUCKY 40508-2925
PH. (859) 252-0166
WWW.POTTSARCH.COM

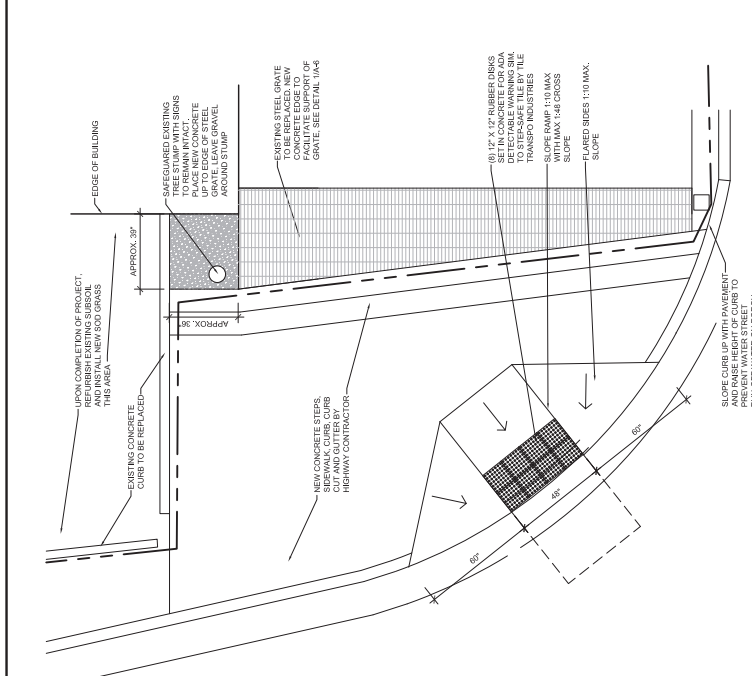
BID DOCUMENTS

BUILDING CODES	PROJECT DESCRIPTION
<p>DESIGN AND WORK ON THIS PROJECT IS BASED ON THE FOLLOWING:</p> <ul style="list-style-type: none"> 2018 KENTUCKY INTERNATIONAL BUILDING CODE 2018 KENTUCKY BUILDING CODE, APRIL 2018 EDITION BUILDING TYPE IS 3B - USE GROUP IS BUSINESS NO INTERIOR WORK IS PLANNED, NO MODIFICATIONS ARE BEING MADE TO ENTRANCES, AT THE PORCH WITH NEW CONSTRUCTION MEETING CURRENT BUILDING CODE. PORCH FLOOR IS NOT FOR PUBLIC USE AND RAILING IS DECORATIVE ONLY. PORCH FLOOR IS DESIGNED FOR 100 PSF LIVE LOAD. EXISTING HEAVY TIMBER IS BEING REPLACED FOR EXISTING COLUMNS AND BEAMS DUE TO EXISTING ROT DECAY. SIDE OF PORCH OVERLOOKING CREEK BELOW IS TO INCLUDE NEW 4" HIGH GUARDS, INCLUDING GUARDS FROM NEAR, HAND RAILING OVER CREEK. 	<p>THIS PROJECT INCLUDES THE RECONSTRUCTION OF A PORCH FOR THE NETTIE JARVIS BUILDINGS. RECONSTRUCTION WORK INCLUDES REMOVAL AND REPLACEMENT OF EXISTING CONCRETE RETAINING WALL ON ONE SIDE AND ONE ROAD CONCRETE RETAINING WALL ON THE OTHER SIDE. KENTUCKY TRANSPORTATION CABINET (KYTC) DISTRICT 4 BRIDGE AND ROAD PROJECT NECESSITATES THE REMOVAL OF THE NETTIE JARVIS PORCH IN ORDER TO REPLACE THE ROAD RETAINING WALL THAT THE PORCH BEARS UPON. THIS ROAD RETAINING WALL ALSO SERVES AS THE SIDE OF A STORM DRAINAGE SYSTEM. SEQUENCING OF THE PORCH WORK IS THEREFORE CRITICAL TO THE CONSTRUCTION OF THE BRIDGE ROADWAY PROJECT. GIVEN THE CRITICAL NATURE OF THE SEQUENCING AND INTERCONNECTIONS OF THE ROAD PROJECT TO THE PORCH PROJECT, THE PORCH CONTRACTOR WILL BE A SUBCONTRACTOR TO THE PRIME ROAD CONTRACTOR.</p> <p>THE PORCH CONTRACTOR IS TO COORDINATE AND SCHEDULE ALL WORK PER DIRECTION OF THE PRIME ROAD CONTRACTOR AND IS IN ESSENCE OF THE OVERALL PROJECT. THE PORCH CONTRACTOR SHALL PROVIDE EVIDENCE OF A MINIMUM OF 15 YEARS OF RELATED HISTORIC CONSTRUCTION EXPERIENCE LISTING BUILDING PROJECTS AND CONTACT REFERENCES WITHIN 1 HOUR AFTER BID OPENING.</p> <p>THE NETTIE JARVIS BUILDING PORCH IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES. WORK FOR THIS RECONSTRUCTION MUST ADHERE TO THE REQUIREMENTS AS A GENERAL CONTRACTOR UNDER THE GENERAL CONDITIONS - GENERAL CONTRACTOR FOR THE PORCH RECONSTRUCTION WORK. SECRETARY OF THE INTERIOR'S STANDARDS FOR RECONSTRUCTION OF HISTORIC STRUCTURES.</p> <p>THE NETTIE JARVIS BUILDING PORCH IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES. WORK FOR THIS RECONSTRUCTION MUST ADHERE TO THE REQUIREMENTS AS A GENERAL CONTRACTOR UNDER THE GENERAL CONDITIONS - GENERAL CONTRACTOR FOR THE PORCH RECONSTRUCTION WORK. SECRETARY OF THE INTERIOR'S STANDARDS FOR RECONSTRUCTION OF HISTORIC STRUCTURES.</p> <p>THE PORCH CONTRACTOR SHALL PROVIDE EVIDENCE OF A MINIMUM OF 15 YEARS OF RELATED HISTORIC CONSTRUCTION EXPERIENCE LISTING BUILDING PROJECTS AND CONTACT REFERENCES WITHIN 1 HOUR AFTER BID OPENING.</p> <p>THE PORCH CONTRACTOR SUCCESSFUL BIDDERS SHALL ALSO INCLUDE PROOF OF CERTIFICATION WITHIN ONE HOUR AFTER BID OPENING SHOWING THEIR STONE MASON CERTIFICATION BY DRY STONE CONSERVANCY OR A LIST OF EVIDENCE SHOWING EQUIVALENT SKILL LEVEL. STONE INSTALLATION IS A SMALL PORTION OF THE WORK, BUT HIGHLY VISIBLE.</p>
INDEX TO DRAWINGS	DRAWING INFORMATION
<ul style="list-style-type: none"> C-1 COVER SHEET SD-1 SITE PLAN D-1 DEMOLITION PLAN & ELEVATION D-2 DEMOLITION PLANS D-3 DEMOLITION ELEVATION A-1 PLAN, ELEVATION & NOTES A-2 FRAMING & CREEK PLANS A-3 ROOF & FRAMING PLANS A-4 SCHEMATIC FRAMING PLANS A-5 CREEK ELEVATION & DETAILS A-6 DETAILS A-7 STRUCTURAL DETAILS 	<p>AWK FILE NO. 1601</p> <p>DRAWING DATE 7/29/2019</p> <p>DRAWN BY POTTS STAFF</p> <p>CHECKED BY POTTS</p> <p>PHASE BID</p> <p>ETA DATE 10/29/2019</p> <p>W. POTTS ARCHITECTS - P L L C 2210 CHITTYVILLE, KY</p>
	<p>NETTIE JARVIS PORCH RECONSTRUCTION BLOOMFIELD, KENTUCKY</p> <p>COVER SHEET</p> <p>COMMONWEALTH OF KENTUCKY DEPARTMENT FOR FACILITIES AND SUPPORT SERVICES DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION</p> <p>ACCOUNT NO. 625-1900</p> <p>DECA REVIEWED FOR NERDC ONLY</p> <p>BECA LOG # AIC-5568</p> <p>DATE APPROVED 10/29/2019</p> <p>APPROVED BY [Signature]</p> <p>DATE APPROVED 10/29/2019</p>



BID DOCUMENTS

DRAWING INFORMATION		DRAWING NO. SD-1																
DATE FILE NO. 10/10/2019	DATE 7/29/2019	AS BUILT DATE 11/01/2019	DETAILED DATE 11/01/2019															
DRAWN BY POTT'S STAFF	CHECKED BY POTT'S	ACCOUNT NO. 658-1900	DESIGNER'S NAME POTT'S ARCHITECTS, P.C.															
SCALE 1/8" = 1'-0"	DATE 10/10/2019	PROJECT NO. 1900-04-071-1922-096-89746010	PROJECT NAME NETTIE JARVIS PORCH RECONSTRUCTION															
<p>COMMONWEALTH OF KENTUCKY DEPARTMENT OF REVENUE AND SUPPORT SERVICES DIVISION OF ENGINEERING AND ADMINISTRATION REVENUE BUREAU, KENTUCKY</p> <p>POTT'S ARCHITECTS, P.C. 1000 WEST MAIN STREET, SUITE 200 LOUISVILLE, KY 40202 TEL: 502-251-1111 FAX: 502-251-1112 AIC-6589</p>		<p>DESCRIPTION OF REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION OF REVISIONS</th> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> </table>		NO.	DATE	DESCRIPTION OF REVISIONS	1			2			3			4		
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ADA GUIDELINES FOR CURB CUT

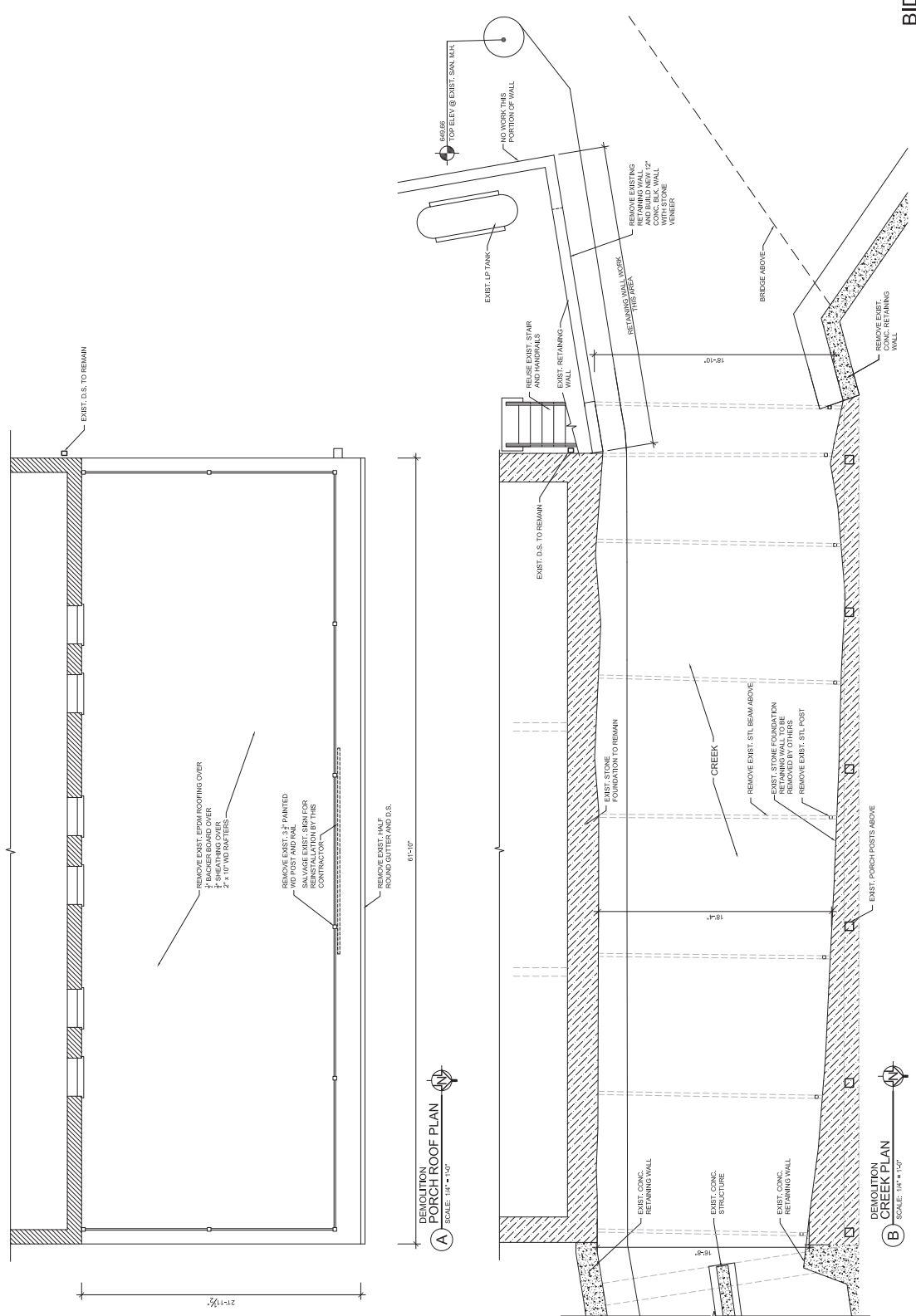
THE CURB CUT SHALL BE DESIGNED TO MEET CURRENT ADA STANDARDS WITH A DIAGONAL CURB RAMP FOR 6" GRADE DIFFERENCE BETWEEN CURB AND SIDEWALK. THE RAMP SHALL BE 1:12 SLOPE. THE WIDTH OF RAMP SHALL BE 48" MIN. THE TOP OF RAMP SHALL HAVE LEVEL LANDING 36" X 36". BOTTOM OF RAMP SHALL BE 1" BELOW FINISH GRADE. THE CURB CUT SHALL BE MIN. 24" WIDE OF PAINTED SIDEWALK. THE CURB CUT SHALL ACCOMMODATE ACTUAL GRADE DIFFERENCE IN STREET AND SIDEWALK ELEVATIONS.

CORNER SIDEWALK DETAIL

SCALE: 3/8" = 1'-0"

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE CORNER SIDEWALK DETAIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE CORNER SIDEWALK DETAIL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE CORNER SIDEWALK DETAIL.

- GENERAL WORK GUIDELINES:**
- WORK ON THIS PROJECT MUST ADDRESS SAFEGUARDS FOR WORKING OVER THE CREEK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CATCH AND COLLECT ANY CONSTRUCTION DEBRIS FROM THIS PARTICULAR PROJECT THAT MAY END UP IN THE WATER.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADHERE TO OSHA REGULATIONS AND GUIDELINES, INCLUDING USE OF MECHANICAL LIFTS AND FALL PROTECTION AND ETC. AS IT APPLIES TO THIS PROJECT.
 - THE BUILDING'S FRONT ENTRANCES WILL BE CLOSED DURING THE DURATION OF THIS PROJECT. DO NOT BLOCK ACCESS IN THE REAR FOR THE BUILDING. THE CONTRACTOR SHALL MAINTAIN ACCESS TO THE INTERIOR OF THE BUILDING MAY BE USED BY THE PUBLIC DURING CONSTRUCTION PERIOD.
 - REFER TO DEMOLITION DRAWING FOR ADDITIONAL NOTES.
 - REFER TO SPECIAL CONDITIONS INCLUDED IN SPECIFICATIONS FOR CONSTRUCTION OF THE PROJECT FOR ADDITIONAL INFORMATION. TOILET FACILITIES INSIDE WORK AREA FOR WORKERS. ACCESS TO WATER AND ELECTRICITY SOURCES WILL BE PROVIDED. HOSES AND LINES BY CONTRACTOR. WORKMEN ARE NOT ALLOWED IN THE BUILDING.
 - CONTRACTOR SHALL MAINTAIN MATERIAL STAGING AREA IN NEAT AND CLEAN APPEARANCE AT ALL TIMES. PROVIDED 6 FOOT HIGH CHAIN LINK FENCE AROUND WORK AREA AND PUBLIC STREET.
 - EXISTING GRASS AREA DESIGNATED FOR CONTRACTORS STORAGE AREA TO BE PREPARED AND NEW GRASS SOO Laid AFTER PROJECT IS COMPLETED.



BID DOCUMENTS

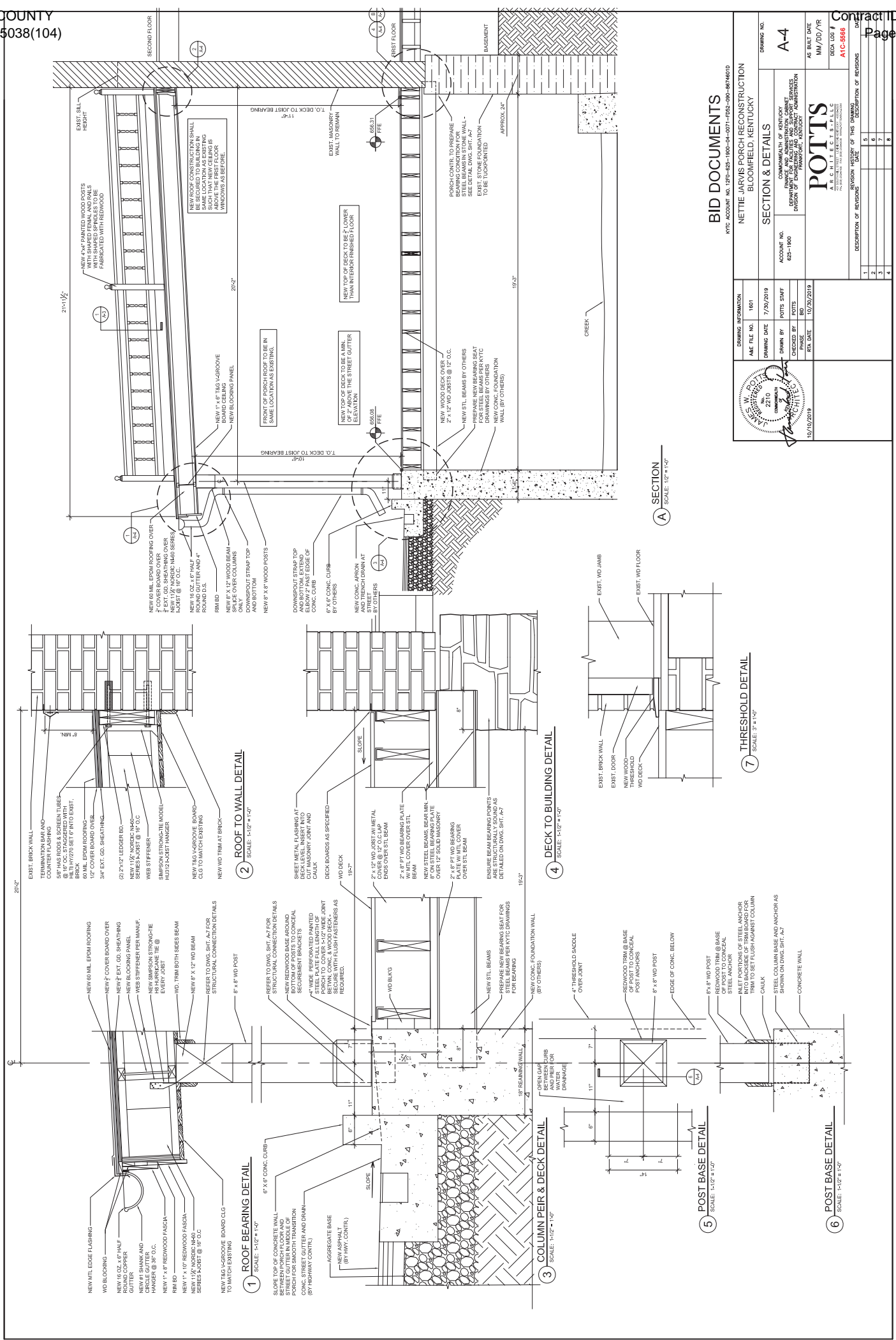
KYTC ACCOUNT NO. 1275-625-1900-04-0071-1922-098-99746010

NETTIE JARVIS PORCH RECONSTRUCTION
BLOOMFIELD, KENTUCKY

DRAWING INFORMATION		DRAWING NO.	
AKF FILE NO.	1601	DRAWING NO.	D-2
DRAWING DATE	7/20/2019	ACCOUNT NO.	625-1900
DRAWN BY	POTTS STAFF	AS BUILT DATE	MM/DD/YY
CHECKED BY	POTTS	DESA LOC #	
INCHES	8 1/2	PROJECT NO.	A1C-6561
RVA DATE	10/20/2019	REVISION HISTORY OF THIS DRAWING	

POTTS
ARCHITECTS PLLC
1000 W. MARKET STREET
BLOOMFIELD, KY 40302

NO.	DESCRIPTION OF REVISIONS	DATE
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BID DOCUMENTS
NYC ACCOUNT NO. 192-625-1900-04-0071-1952-090-8946910

DRAWING INFORMATION		DRAWING NO.	
AME FILE NO.	1601	A-4	
DRAWING DATE	7/20/2019	SECTION & DETAILS	
DRAWN BY	POTTS STAFF	NETTIE JARVIS PORCH RECONSTRUCTION BLOOMFIELD, KENTUCKY	
CHECKED BY	POTTS	ACCOUNT NO.	
PHASE	BD	625-1900	
RVA DATE	10/30/2019	COMMONWEALTH OF KENTUCKY DEPARTMENT FOR CULTURES AND SPORTS SERVICES DIVISION OF ENGINEERING AND ADMINISTRATION FRANKFORT, KENTUCKY	
		<p>POTTS ARCHITECTS-P.L.L.C. 1000 W. MARKET STREET, SUITE 100 FRANKFORT, KY 40601 TEL: 502-225-1111</p>	
REVISION HISTORY OF THIS DRAWING		AS BUILT DATE	
NO.	DESCRIPTION OF REVISIONS	DATE	MM/DD/YY
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(A) SECTION
SCALE: 1/2" = 1'-0"

(4) DECK TO BUILDING DETAIL
SCALE: 1/2" = 1'-0"

(7) THRESHOLD DETAIL
SCALE: 3/4" = 1'-0"

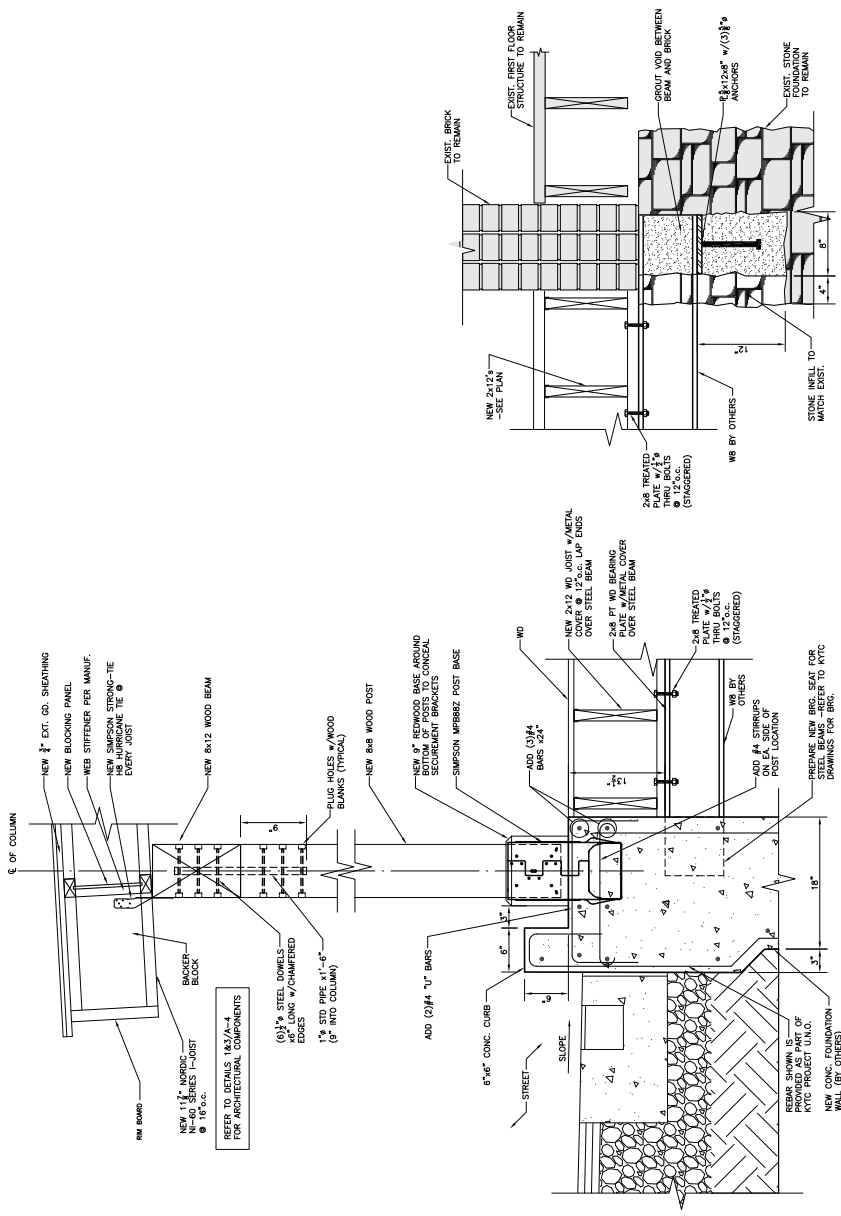
(3) COLUMN PIER & DECK DETAIL
SCALE: 1/2" = 1'-0"

(5) POST BASE DETAIL
SCALE: 1/2" = 1'-0"

(6) POST BASE DETAIL
SCALE: 1/2" = 1'-0"

(2) ROOF TO WALL DETAIL
SCALE: 1/2" = 1'-0"

(1) ROOF BEARING DETAIL
SCALE: 1/2" = 1'-0"



DETAIL
B
A-7

DETAIL
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A-7

BID READY
NETTIE JARVIS PORCH RECONSTRUCTION
BLOOMFIELD, KENTUCKY

DRAWING INFORMATION		DRAWING NO.	
DATE	10/9/2019	FILE NO.	1601
DRAWN BY		POTTS STAFF	
CHECKED BY		POTTS	
DATE		10/9/2019	
ACCOUNT NO.		625-1900	
PROJECT NAME		NETTIE JARVIS PORCH RECONSTRUCTION	
DRAWING TITLE		STRUCTURAL DETAIL SHEET	
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Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

TABLE OF CONTENTS

ARCHITECTURAL SPECIFICATIONS

PAGES

Section 010100 - Special Conditions	010100-1 thru 5
Section 011000 - Summary and Coordination	011000-1 thru 4
Section 014110 – Structural Special Inspections	014110-1 thru 5
Section 024119 – Selective Demolition	024119-1 thru 4
Section 033075 - Miscellaneous Concrete	033075-1 thru 4
Section 042200 – Concrete Unit Masonry	042200-1 thru 5
Section 044145 – Brick and Natural Stone Masonry	044145-1 thru 10
Section 055213 – Pipe and Tube Railings	055213-1 thru 3
Section 055300 – Metal Gratings	055300-1 thru 3
Section 061000 – Rough Carpentry	061000-1 thru 5
Section 062013 – Exterior Finish Carpentry	061100-1 thru 4
Section 075323 – EPDM Roofing	075323-1 thru 4
Section 076220 – Copper Flashing, Gutters & Downspouts	076323-1 thru 6
Section 079200 – Joint Sealants	079200-1 thru 3
Section 099100 – Painting	099100-1 thru 6
Section 329223 - Lawn Sod	329223-1 thru 4

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

DIVISION 1

SECTION 010100 – SPECIAL CONDITIONS

Contents

<u>Article</u>	<u>Title</u>
'1	Special Conditions Supplement
'2	The Project
'3	Project Contacts
'4	Times for Completion
'5	Liquidated Damages
'6	Temporary Facilities and Controls
'7	Special Inspections and Testing
'8	Allowances
'9	Unit Prices
'10	Schedule of Additive Alternates
'11	Additional Project Completion or Close-out Requirements
'12	Special Project Site Security or Access Required
'13	Special Delegated Design Requirements
'14	Other Special Conditions of Contract

Articles

'1 **Special Conditions:**
These Special Conditions are provided as a supplement to the General Conditions in the Specifications. Special Conditions will also supersede General Conditions where changes are necessary to coordinate with specific project requirements.

'2 **The Project:**
These specifications and drawings accompanying them describe the work to be performed and materials to be furnished for the:

**Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield**

Project Description:

This project includes work on Netti Jarvis Porch Reconstruction listed on the National Register of Historic Places. Work must adhere to the Secretary Of The Interior's Standards For Reconstruction of historic structures. The General Contractor shall provide evidence he/she has past work experience with similar construction. Stone masons constructing the stone wall must be certified by Dry Stone Conservancy or provide evidence of equal skill level. This is a very small portion of the work, but highly visible. The General Contractor shall have experience working on buildings listed on the National Register.

This project includes replacement of the existing wood constructed porch spanning over a creek, attached to historic two-story building on one side and concrete retaining wall on the other side. Work

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

must be coordinated with other contractors constructing the new retaining wall, adjacent highway bridge and asphalt street.

Construction time will be very limited on this project. The highway and bridge work will be completed within 60 calendar days. The porch work must be completed 30 days afterwards. Total time for this project is 90 days. Liquidated damages will be included for not completing on time. Work will be impacted by coordination with others.

'3

Project Contacts:

(Refer to Drawings for Company Addresses / Phone Numbers)

In the roles defined by the General Conditions as "Architect" and as used throughout the Contract Documents as the Architect of the work being constructed, the following firm and its sub-consultants are working under separate contract with the Owner to provide the services under this role:

Architect: Company Name: Potts Architects, PLLC
Principal-In-Charge: James Potts, AIA
Project Manager: James Potts, AIA

Porch Engineer/s: Company Name: Poage Engineers & Associates
Principal-In-Charge: Brian Scott, PE (Brian Scott (bscott@poageengineers.com))

Bridge Engineer/s: Company Name: HDR, Inc.
Principal-In-Charge: Wes Hagerman, PE (Wesley.hagerman@hdrinc.com)

In the roles defined by the General Conditions as "Owner" and as used throughout the Contract Documents as the Owner of the work being constructed, is the Commonwealth of Kentucky, acting through the Finance and Administration Cabinet, Department for Facilities Management and Support Services, Division of Engineering and Contract Administration. The Owner is solely represented by the following:

Owner: Finance and Administration Cabinet
Facilities and Support Services
Division of Engineering and Contract Administration
Associate Director & Project Manager: Frieda Myers
Director: Andy Casebier
Executive Director: Jennifer Linton

In the role defined by General Conditions, "Agency or Using Agency", is a state government entity which utilizes the work being constructed. This agency is a client of the Owner and advises the Owner on matters related to the project. This Using Agency does not possess the legal authority of Owner:

Using Agency: Cabinet / Dept. of the Using Agency: Kentucky Transportation Cabinet
Project Manager: Joseph M. Ferguson
District 4 Environmental Coordinator

This project must be coordinated with the following project:

4-1078 - REPLACE BRIDGES ON US 62 (HINKLE CREEK) AND KY 48 IN BLOOMFIELD 090B00096N (SR 28.2) 090B00095N (SR 49.7) (12CCR).

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Replace Bridge work shall demolish the adjacent bridge and portions of highway asphalt adjacent to the Netti-Jarvis Porch. Bridge contractor will demolish the retaining wall supporting the porch columns.
2. Replace Bridge project shall construct the foundation wall that support the porch columns and steel beams. Steel beams are included in Bridge project.

In the roles defined by the General Conditions as “Special Inspector” and as used throughout the Contract Documents as the firm performing Special Inspections as required by the Kentucky Building Code for the work being constructed, the following firm is working under separate contract with the Owner to provide the services under this role:

Special Inspector: Company Name: To Be Selected & Paid by Dept. of Transportation
 Principal-In-Charge: _____
 Project Manager: _____

‘4 Times of Completion:

Subject to the conditions of Article ‘16 – “Delays and Extension of Time” of the General Conditions, the work to be performed under this Contract shall be completed as follows:

Substantial Completion Ninety (90) Calendar Days from date of Executed Contract for Construction. Article ‘19.4 of the General Conditions set forth specific requirements of the Commonwealth of Kentucky that are necessary to be fulfilled by the Contractor in order to be determined to have accomplished Substantial Completion by this date. Refer to Article ‘11 of these Special Conditions for additional requirements of this specific project required to accomplish Substantial Completion.

Final Completion Fifteen (15) Calendar Days beyond Substantial Completion or Specific Date of 90 calendar days. Article ‘19.5 of the General Conditions set forth specific requirements of the Commonwealth of Kentucky that are necessary to be fulfilled by the Contractor in order to be determined to have accomplished Final Completion by this date. Refer to Article ‘11 of these Special Conditions for additional requirements of this specific project required to accomplish Final Completion.

As indicated in Article ‘4 of the General Conditions, “Construction Schedule”, the following limitations of work times are set forth herein that are to be accounted for by the Contractor in scheduling and sequencing of the work: No Restrictions.

Work Restrictions and “Black-Out” Dates: The work shall be performed during daylight hours of 8:00am to 5:00pm. Monday through Friday. Any deviation shall be approved beforehand by the Owner’s Project Manager, and if deemed appropriate an extension of Contract Time shall be provided in a Change Order.

Project Phasing (Separate start and completion dates): The start date shall commence on notice from Owner after Contract Execution. The highway bridge construction schedule will impact this project’s schedule.

Limitations on daily work times: No restrictions. Building owner shall have full access to rear entrance to building during construction. Building will be closed to public.

Work being Performed by the Owner or by Others: New Highway Bridge and Highway paving by Department of Transportation will impact this project.

Products ordered by the Owner in Advance/ Anticipated Delivery Dates: It is not anticipated that products or materials will be ordered by the Owner for use on this project.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

'5 Liquidated Damages / Damages from Untimely Performance:

In accordance with Article '19.7 of the General Conditions, the Contractor shall pay the Owner the following identified amount for each and every calendar day of unexcused delay in achieving Substantial Completion and Final Completion beyond the date set for below for each:

Substantial Completion Liquidated Damages are \$300.00/calendar day for each day beyond the established Date of Substantial Completion until the Actual Date of Substantial Completion is achieved. (See Article '19.4 of the General Conditions and Article '11 of these Special Conditions for requirements for Substantial Completion).

Final Completion Liquidated Damages are \$200.00/calendar day for each day beyond the established Date of Final Completion until the Actual Date of Final Completion is achieved. (See Article '19.5 of the General Conditions and Article '11 of these Special Conditions for requirements for Final Completion).

'6 Contractor Provided Temporary Facilities and Controls:

Construction Office/Trailer: A Construction Office or Trailer can be omitted on this project. A room or space will be designated if deemed appropriate by the Owner's Project Manager.

Staging / Parking: Refer to Drawings for parking and storage areas to be used by Contractor.

Temporary Fencing and Signage: Orange Plastic Fence or Portable Chainlink with Concrete Blocks or as required for project specific security or safety where materials are stored on site outside the building.

Portable Toilet Facilities: are Required by Contractor and to be located within construction fencing.

Utilities: Contractor to set up new temporary utilities or coordinate with Owner for hook-up of existing where applicable

Water: Use Owner Existing Utility, provide all hoses and lines required.

Electric: Use Owner provided for Renovation, provide all lines required. **Contractor shall reimburse the Owner for electric usage or use portable generators.**

Gas: Not Required for this Project.

'7 Special Inspections and Testing:

Article '12 of the General Conditions and the technical specifications of the Contract Documents define and establish the requirements and provisions for Inspection of the Work, Special Inspections performed by others working under separate contract with the Owner, and testing to be provided by the Contractor.

Structural Special Inspections and Testing: Owner provided. To be selected.

Site Special Inspections and Testing: Not Required this Project.

Contractor Provided Testing: All other testing required by the Contract Documents are Contractor Provided Testing.

'8 Allowances included in the Contract Amount:

- a. Include 20 square feet stone tuckpointing.
- b. Include 20 square feet of additional dry stacked stone.
- c. Include 10 lineal feet of natural stone coping.

'9 Unit Prices established by the Form of Proposal:

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

The Contractor is required at time of submitting a bid proposal for this work to provide specific Unit Prices that will be used to add or deduct those specific work items or services by an established unit of measure and the stated price per unit.

Unit prices include all necessary materials, costs of delivery, installation labor, tools and equipment necessary to provide the unit measured item. If a unit price is used in a change to the work by Change Order, the contractor's overhead, profit, insurance and bonds, and administrative costs are included in the prescribed markup permitted by Article '14 of the General Conditions "Changes in the Work" and are not to be included in the unit price.

For a schedule of Unit Prices see the "Unit Prices" section of the Bid Form of Proposal.

'10 Schedule of Additive Alternates:

The Bid Form of Proposal includes Additive Alternates that, if accepted by the Owner during review of bids, become a part of the Contract Amount. Additive Alternates are listed in the order which they will be considered and may be accepted by the Owner to be included in the base Contract of the Work. The following is the sequential listing and description of Additive Alternates:

Additive Alternates include all necessary materials, costs of delivery, installation labor, tools and equipment, contractor's overhead, profit, insurance and bonding, and administrative costs. All work necessary to provide the work described in the Additive Alternate is to be included.

'11 Additional Project Completion or Project Close-Out Required: No Additional Required this Project. Refer to Article '19.4 of the General Conditions.

'12 Special Project Site Security or Access Requirements:

Building Owner shall have full access to rear building entrance at all times. Otherwise the building will be closed to public.

The building has an existing security system that remain intact at all times.

'13 Special Delegated Design Requirements:

There is no Special Delegated Design allowed for in this project.

'14 Other Special Conditions of Contract:

Warranties: Verify with Architect at the time of issuance the name of the holder of warranty. 20 year roof warranty shall be in the name of building Owner. General Contractor warranty and roof installer warranty to be named to the Division of Engineering, Commonwealth of Kentucky.

END OF SPECIAL CONDITIONS

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 011000 – SUMMARY AND COORDINATION OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Work covered by Contract Documents.
2. Owner's Project Manager
3. The Design Consultant
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and drawing conventions.
9. Scheduling the Work
10. Coordination with other Contractors

B. Related Requirements:

1. Section 010100 "Special Conditions" for additional information and conditions governing construction of this project.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of this Project is defined by the Contract Documents and consists of the following:

Netti-Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078

- B. Demolish and re-construct front porch in it's entirely including porch floor structure, decking, posts, beam, porch roof structure, roofing and railing and as further described under Project Description on Cover Sheet of Drawings.
- C. Type of Contract: Single Prime Contractor with Lump Sum Contract.
- D. NOT IN CONTRACT, Work required by others include the outward foundation wall under Porch Posts. This Highway Foundation wall costs not in this Contract. This wall must be constructed by others for bearing support for porch columns and floor support beams.

1.3. OWNER'S PROJECT MANAGER

A. Wherever in these Contract Documents reference is made to the Owner, it shall be understood to mean:

Division of Engineering and Contract Administration
Department of Facilities and Support Services
Finance and Administration Cabinet
Commonwealth of Kentucky
403 Wapping Street
Frankfort, Kentucky 40601

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. The Owner's Project Manager shall be appointed by the Division of Engineering
- C. Do not make contact with the financial Owner of Building, or any of their personnel unless directed to go so during the Work period.

1.4 THE DESIGN CONSULTANT

- A. Wherever in these Contract Documents reference is made to the Design Consultant, it shall be understood to mean:

James W. Potts, AIA
Potts Architects, PLLC
431 South Mill Street
Lexington, Kentucky 40508
Telephone 859/252-0166
Email: jwpotts@pottsarch.com

or their duly authorized representatives.

1.5 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
- B. Concurrent Work: KYTC **will award** separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.

C. 4-1078 - REPLACE BRIDGES ON US 62 (HINKLE CREEK) AND KY 48 IN BLOOMFIELD 090B00096N (SR 28.2) 090B00095N (SR 49.7) (12CCR).

- 1. Work shall demolish the adjacent bridge and portions of highway asphalt adjacent to the Netti-Jarvis Porch.
- 2. Replace Bridges project shall construct the foundation wall that the porch columns bear on, including steel beams supporting the porch floor.

- D. The Prime General Contractor has not been selected at this time. This project will be bid with construction in the summer of 2020.

- E. The Replace Bridges project is being administered by

Kentucky Transportation Cabinet (KYTC)
200 Mero Street
Frankfort, KY 40622

- F. The KYTC Project Manager shall be:

Project Manager:
Joseph M. Ferguson
District 4 Environmental Coordinator

Or designated representative of KYTC

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1.6 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. Use of Site: Limit use of Project site to **areas within the Contract limits** indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to front of building. Refer to Site Improvements Plan for construction storage area.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Limited Owner Occupancy: This building will be closed during the course of construction. However, from time to time, the Financial Owner of the building may use the side rear door to move furnishings in or out of the building for storage. The front doors will remain locked at all times except when replacing the door threshold.
 - 1. Maintain access to rear side entrance and existing side streets.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work on the existing building to normal business working hours of 7:00 a.m. to 5:30 p.m., Monday through Friday, unless otherwise indicated.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify **Architect** not less than **(two) 2** days in advance of proposed utility interruptions affecting building.
- D. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.
- E. Controlled Substances: Use of tobacco products and other controlled substances **on Project site** is not permitted.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Division of Specifications and separation of content is used to address subject matter and not intended to separate subcontractors or does not relieve the Prime Contractor from responsibility of the entire Contract Documents.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - SCHEDULING AND COORDINATION

2.0 SCHEDULING

- A. Scheduling the Work under this Contract will be the responsibility of this Contractor, to be coordinated with appointed Contractors doing adjacent work affecting this project.
- B. Porch Contractor work to begin on site in June/July of 2020. Exact schedule for start-up date on site to be coordinated with Highway Contractor. Porch Contractor to demolish porch first and then allow Highway Contractor to reconstruct bearing wall. Porch Contractor to then begin reconstruction work of porch no later than 5 days after Highway Contractor is complete on wall reconstruction.

END OF SECTION 011000

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 014110– STRUCTURAL SPECIAL INSPECTION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Special Inspections as defined in Section 1704 of The Kentucky Building Code are required.
- B. Special inspections are required for the following materials and work:
 - 1. Steel Construction per Section 1704.3 of the International Building Code.
 - 2. Inspection of Fabricators per Section 1704 of the International Building Code for Wood joists and trusses and attachment.
 - 3. Masonry walls

1.3 SCOPE

- A. The scope of the construction work to be inspected / tested / observed is that structural work shown on the structural construction drawings (S- sheets).
- B. All inspections and tests performed are to be documented by report including, but not limited to, inspections for grout placement, reinforcing inspection, curing, fabricators, deck attachment, etc.

1.4 DEFINITIONS

- A. In accordance with the intent of the Building Code, inspection work specified to be “continuous” shall be inspected the full, uninterrupted time that the Contractor is performing said construction work. Work specified to be “periodic” may be inspected as convenient to the Inspector, except that all work must be inspected prior to being covered by other work, during the working hours of the Contractor, and in a fashion that does not delay the Contractor. Regardless as to whether inspections are performed in “continuous” or “periodic” fashion, 100% of the construction work shall be inspected, unless noted otherwise.

1.5 SELECTION AND PAYMENT

- A. The Inspection Agency is to be retained by the Owner. Costs for reinspection and retesting, should discrepancies be found, will be paid for by the Owner, except where rework is due to negligence or omission deemed excessive by the Owner.
 - 1. In case of excessive rework, such retesting and reinspection shall be paid for by the Owner as an additional service of the Inspection Agency, but will be backcharged by deductive change order to the Contractor’s contract.
 - 2. In case of excessive waste/lost time of the Special Inspector due to inadequate scheduling by the General Contractor, such time shall be paid for by the Owner as an additional service of the Inspection Agency but will be backcharged by deductive change order to the Contractor’s contract.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. Special Inspections are additional to testing and inspection requirements shown elsewhere in the specifications and on the drawings, which is to be paid for by the General Contractor. The General Contractor shall also pay for additional structural testing and inspection required for his convenience. Inspection work not part of the Structural Special Inspections may be performed by an Inspection Agency of the Contractor's choosing, unless noted otherwise.

1.6 QUALITY ASSURANCE

- A. Qualified Certification Authorities: Subject to compliance with Kentucky Building Code Requirements, Qualified Certification Authorities providing certification which may be applicable to Project include:
 - 1. American Concrete Institute (ACI).
 - 2. American Institute of Steel Construction (AISC).
 - 3. American Society of Nondestructive Testing (ASNT).
 - 4. American Welding Society (AWS).
 - 5. Cold Formed Steel Engineers Institute (CFSEI).
 - 6. International Code Council (ICC).
 - 7. National Institute of Certified Engineering Technology (NICET).
 - 8. Truss Plate Institute (TPI).

PART 2 – EXECUTION

2.1 CONTRACTOR'S RESPONSIBILITIES

- A. Provide a complete copy all structural shop drawings to the Structural Testing/Inspection Agency.
- B. Arrange the preconstruction meeting to discuss quality issues.
- C. Notify the Structural Testing/Inspection Agency sufficiently in advance of operations to allow assignment of personnel and scheduling of tests.
- D. Cooperate with Structural Testing/Inspection Agency and provide access, including equipment with operator, to work. Access equipment includes, but is not limited to, man lifts, excavation equipment, etc.
- E. Provide samples of materials to be tested in required quantities.
- F. Provide storage space for Structural Testing/Inspection Agency's exclusive use, such as for storing and curing concrete testing samples. If required by Special Inspector, General Contractor shall provide cure box with electricity, water, and blankets for curing concrete specimens.
- G. Provide labor to assist the Structural Testing/Inspection Agency in performing tests/inspections. Labor includes, but is not limited to, construction of masonry prisms, etc.
- H. All parties who are to receive inspection and testing reports shall maintain an active email account to receive reports by.
- I. General Contractor shall create and maintain a discrepancy log on site. Log shall list each discrepancy documented by the Special Inspector; state the date of discovery and Special

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

Inspector's report number; and provide room for the Special Inspector to sign and date when said discrepancy is corrected. No work containing discrepancy shall be covered prior to having reinspection and approval by the Special Inspector.

- J. Neither the observation of the Architect/Structural Engineer in the administration of the contract, nor tests/inspections by the Testing/Inspection Agency, nor approvals by persons other than the Architect/Structural Engineer shall relieve the Contractor from his obligation to perform the work in accordance with the Contract Documents.

2.2 SPECIAL INSPECTOR'S RESPONSIBILITIES

- A. Cooperate with the Contractor and provide timely service.
- B. Notify Contractor of minimum advance notice for each type of inspection/test.
- C. Upon arriving at the construction site, sign in and notify the Contractor of presence.
- D. Select the representative samples that are to be tested/inspected.
- E. Perform tests/inspections as outlined in Contract Documents, the applicable codes, and as directed by the Structural Engineer.
- F. Keep records of all inspections.
- G. Furnish inspection reports to the Architect, Structural Engineer, and General Contractor weekly as construction progresses.
- H. Inform General Contractor and / or Fabricator of all discrepancies immediately for correction.
 - 1. Document in writing correction of discrepancies.
 - 2. Highlight discrepancies within the report.
 - 3. If discrepancies are not corrected, the discrepancies shall be brought to the attention of the Code Official and the Structural Engineer prior to the completion of that phase of the work.
- I. Leave copies of field notes with the Contractor prior to leaving the construction site. Field notes shall include the message given to the Contractor, date, time of message, name of Contractor's representative informed, type and location of work or materials tested/inspected, whether the work or materials complies with Contract Documents and name of the Structural Testing/Inspection Agency's representative.
- J. Immediately notify General Contractor, Architect, and Structural Engineer by separate letter if work yet to be inspected is found on site that is either being covered by other work or was to receive continuous inspection.
- K. Structural Testing/Inspection Agency may not alter requirements of Contract Documents, approve or reject any portion of the work, or perform duties of the Contractor.
- L. Submit a final report of inspections documenting completion of **all** required Special Inspections and correction of any discrepancies noted in inspections to the Structural Engineer. Final report shall be prepared by, sealed, and signed by the Special Inspector and shall include a complete list of materials and work inspected during the course of the project. One copy of said report is to be provided to the Contractor for his records.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

2.3 INSPECTION OF STEEL (AND OTHER METAL) CONSTRUCTION

- A. Provide special inspection of the fabrication of steel structural elements and assemblies in accordance with the *Inspection of Fabricators*.
- B. Verify that certification numbers on bolt, nut, and washer containers correspond to the identification numbers on mill test reports and that manufacturer's symbol and grade markings appear on all bolts and nuts. Also verify that bolts, nuts, and washers are being properly cared for at the site.
- C. Verify that identification markings on structural steel members conform to ASTM standards specified on the approved construction documents.
- D. Verify that identification markings on weld filler materials conform to ASTM standards specified on the approved construction documents. Also verify that weld filler material is being properly cared for.
- E. Test and inspect high-strength bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
 - 1. Perform periodic inspection of bearing type connections.
 - 2. Perform continuous inspection of slip-critical type connections.
 - 3. Verify that twist-off-type tension-control assemblies have been properly tightened.
- F. Inspect and test welds during fabrication (where applicable) and erection of structural steel as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. Inspect all weld procedures and welders according to the requirements of AWS D1.1-2000.
 - 3. Perform continuous observation and subsequent non-destructive testing according to AWS D1.1-2000, Section 6.11, on all complete penetration and/or partial penetration groove welds and on all splices of main members where those splices are required.
 - 4. Use non-destructive testing according to AWS D1.1-2000, Section 6.11, on all welds that appear to have excessive inclusions, porosities, cracks, and incomplete penetrations as described by AWS D1.1-2000, or have the questionable weld removed and rewelded.
 - 5. Perform continuous observation and subsequent non-destructive testing according to AWS D1.1-2000, Section 6.11, on all complete penetration and/or partial penetration groove welds and on all splices of main members where those splices are required.
 - 6. Perform continuous inspection according to AWS D1.1-2000, Section 6.9 (visual inspection) on all multi-pass fillet welds and on all single-pass fillet welds larger than 5/16".
- G. Inspect all steel frame connection details for compliance with approved construction documents and approved steel erection shop drawings.
 - 1. Verify completeness and construction of all bracing, stiffening, and connections.
 - 2. Verify location, completeness and accuracy of all members.

2.4 INSPECTION OF STRUCTURAL ANCHORS

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- A. Periodically proof load 25% of each type and size of drilled-in adhesive type anchor in accordance with recommendations of the Anchor Manufacturer. Adhesive anchors and capsule anchors shall not be torque tested unless otherwise directed by the Engineer. If more than 10% of the tested anchors fail to achieve the specified torque or proof load within the limits as defined in the Specifications, all anchors of the same diameter and type as the failed anchor shall be tested, unless otherwise instructed by the Engineer.
 - 1. Proof loads shall be applied with a calibrated hydraulic ram. Displacement of adhesive and capsule anchors at proof load shall not exceed $D/10$, where D is the nominal anchor diameter.
- B. Periodically verify installed torque of 100% of all wedge type expansion anchors with a calibrated torque wrench. Coordinate minimum installed torque with manufacturer of anchors installed.

2.5 INSPECTION OF CONCRETE CONSTRUCTION

- A. Special Inspections of concrete for retaining wall is not required for the Porch Reconstruction project. This is included in the Highway and Bridge project.

2.6 INSPECTION OF WOOD CONSTRUCTION

- A. Provide special inspection of the fabrication of wood structural elements and assemblies in accordance with the *Inspection of Fabricators*.
- B. Verify use of proper species and grade of lumber.
- C. Perform periodic inspection of wood construction to verify installation of blocking, fasteners, and fastening with the contract document provisions.
- D. Perform periodic inspection of roof diaphragms.
 - 1. Verify grade and thickness of shear panels.
 - 2. Verify nail or staple diameter, length, and spacing.
- E. Verify the installation of all permanent bracing of wood truss assemblies in accordance with the approved truss shop drawings and structural drawings.
 - 1. Verify placement of all compression web member bracing, laps, fastening, and intermittent cross bracing.
 - 2. Verify placement of all chord bracing, laps, fastening, and intermittent cross bracing.
 - 3. Verify connection of all truss to truss girder connections.
 - 4. Verify installation of all perimeter uplift connections to supporting structure.

2.7 INSPECTION OF SOILS

- A. Special Inspections of bearing soils is not required for the Porch Reconstruction project. This is included in the Highway and Bridge project.

END OF SECTION 014110

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal wood porch floor and supporting joists.
2. Demolition and removal of wood posts and beams supporting roof.
3. Demolition and removal of porch roof structure entirely.
4. Take care to catch all demolition debris from falling into creek.
5. Protect all windows and doors from damage during demolition process.
6. Ensure Building Owner's personnel have shut off electricity to electrical items on porch prior demolition.
7. Materials to be salvaged include the following:
 - a. Vertical wood posts for Owner's first refusal, and if not accepted shall become the contractors to haul off.
 - b. Electric fans mounted to porch ceiling
 - d. Security device mounted to porch ceiling
 - e. Existing steel steps to rear yard

B. Contractor shall take all precautions when removing or cutting structural elements.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 PREINSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.

1.4 FIELD CONDITIONS

- A. Owner will close the establishment for the work on this project.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

3.3 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain **fire watch and** portable fire-suppression devices during flame-cutting operations.
 - 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 5. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Hand over porch fans and security devices to Building Owner personnel for safe keeping.
 - 3. Store wood columns and gutters in a secure area until re-installed.
 - 4. Protect items from damage until re-installed.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition **and cleaned** and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 033075 – MISCELLANEOUS CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.
 - 1. Cast In-Place concrete under steps to rear yard.
 - 2. Concrete utilized in Masonry Wall construction.

1.2 RELATED WORK

- A. Concrete for highway retaining wall is specified and performed under **4-1078 – Replace Bridges on US 62 project.**

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Action Submittal:
 - 1. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Comply with ACI 301.
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

- A. Forms for Exposed Finish Concrete: HDO/MDO faced plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Form Release Agent: Provide commercial formulation form release agent with a maximum volatile organic compounds (VOCs), not to exceed those allowable by jurisdictional regulations, that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- D. Chamfer Strips: Dressed wood, to match size of existing construction; non-staining; in longest practical lengths.
- E. Form Joint Sealant: Elastomeric sealant complying with ASTM C920, Type M or S, Grade NS, that adheres to form joint substrates.

2.2 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I. High early strength (when specified), ASTM C150, Type III.
 - 1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.
- B. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling or surface discoloration due to oxidation.
- C. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, 1/2 to 1-1/2 inches long.
- B. Water: Potable.
- C. Bonding/Grouting Adhesive: Structural epoxy adhesive for bonding concrete patches to existing hardened concrete.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Sikadur 32 Hi-Mod LPL, Sika Corp.
 - b. Concesive Standard LVI, BASF.
 - c. EpoGel, Sonneborn.

2.3 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2.4 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

2.5 CONCRETE MIXTURES

- A. Normal-Weight Concrete: Prepare design mixes, proportioned according to ACI 301, as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50 - 0.45.
 - 3. Slump Limit: 4 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowel-finished slabs to exceed 3 percent.
- B. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate but not less than a rate of 1.5 lb/cu. yd.

2.6 CONCRETE MIXING

- A. Ready-Mixed or Field Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork to withstand lateral forces during the pouring process. Maintain until initial set-up of concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 JOINTS

- A. General - Isolation Joints: Construct joints around chimney flue liners with expansion joint filler and then apply sealant after concrete cures.

3.4 CONCRETE PLACEMENT

- A. Comply with ACI 301 for placing concrete.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Cap shall be minimum 2" at outside edge and slope minimum ¼" per foot.

3.5 FINISHING FORMED SURFACES

- A. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to smooth-formed finished as-cast concrete where indicated:

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Smooth-rubbed finish on sides and top. Ensure top has four-sided slope with straight clean miters in each corner.

3.6 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

3.7 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 033075

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units on creek retaining wall (CMU's).
2. Steel reinforcing bars.
3. Installation of natural stone specified under Section 044145.

B. Work specified under other sections but related to this section includes, but not limited to the following:

1. Section 044145 – Brick and Natural Stone Masonry

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For reinforcing steel. Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of product indicated. For masonry units include material test reports substantiating compliance with requirements.

B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.4 QUALITY ASSURANCE

A. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

1.5 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.2 CONCRETE MASONRY UNITS

A. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi (14.8 MPa).
2. Density Classification: Lightweight.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

- B. Hydrated Lime: ASTM C 207, Type S.

- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

- D. Masonry Cement: ASTM C 91.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following
 - a. Cemex S.A.B. de C.V.; Kosmortar.
 - b. Essroc, Italcementi Group; Brixment.
 - c. Lafarge North America Inc.; Lafarge Masonry Cement
 - d. Lehigh Cement Company; Lehigh Masonry Cement.
 - e. National Cement Company, Inc.; Coosa Masonry Cement.

- E. Mortar Cement: ASTM C 1329.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Lafarge North America Inc.; Lafarge Mortar Cement or [Magnolia Superbond Mortar Cement.

- F. Aggregate for Mortar: ASTM C 144.

- G. Aggregate for Grout: ASTM C 404.

- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Euclid Chemical Company (The); Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
 - c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.

- I. Water: Potable.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

2.4 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 (Grade 420).
- B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
 - 1. Exterior Walls: Hot-dip galvanized, carbon.
 - 2. Wire Size for Side Rods: 0.148-inch (3.77-mm) diameter.
 - 3. Wire Size for Cross Rods: 0.148-inch (3.77-mm) diameter.

2.5 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.6 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use mortar cement mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For masonry below grade or in contact with earth, use Type S.
 - 2. For reinforced masonry, use Type S.
 - 3. For mortar parge coats, use Type S.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 - 2. Proportion grout in accordance with ASTM C 476, Table 1.
 - 3. Provide grout with a slump of 8 to 11 inches (203 to 279 mm) as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 TOLERANCES

- A. Dimensions and Locations of Elements:

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.2 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- C. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- F. Fill cores in hollow CMUs with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

G. Fill cells solid at bond beams and where vertical steel reinforcement is located.

3.3 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.4 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).

B. Space reinforcement not more than 16 inches (406 mm) o.c.

C. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

D. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings[in addition to continuous reinforcement].

3.5 REPAIRING, POINTING, AND CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
2. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.6 MASONRY WASTE DISPOSAL

A. Waste Disposal as Fill Material not allowed on this project. Dispose of masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units off site.

END OF SECTION 042200

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 044145 – BRICK AND NATURAL STONE MASONRY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The General Conditions and the applicable portions of Division 1, Special Conditions of the Specifications are a part of this Section.
- B. This Contractor shall examine the existing building and new work proposed, prior to submitting a proposal to satisfy themselves as to the scope of work and difficulty attending the performance of the work. Submitting a proposal shall be construed as evidence that such an examination has been made.
- C. Only masonry contractors that have experience with historic buildings shall work on this project. Refer to Qualifications.
- D. Work under this Section includes the furnishing of labor, materials and equipment necessary to complete the work shown on the Drawings and specified herein. This includes, but is not necessarily limited to, the following:

1.2 SCOPE OF WORK

- A. The scope of work under this Section is limited to the following:
 - 1. Fill in solid all voids left in existing brick wall where porch ceiling joists are embedded in joist pockets. These will eventually be covered with new joist band board but a solid substrate will be required. Fill voids with brick.
 - 2. Existing stone wall under porch shall be examined after cleaning and tuckpointed where any existing mortar is loose or missing. Cleaning shall provide even clean appearance for all masonry walls under the porch and where new masonry work is specified under other sections of these specifications. Fill in solid area where old steel beams are being removed, modify or create new openings for new beams. See detail for beam bearing conditions.
 - 3. Natural mortared in-place stone veneer wall to resemble dry laid appearance and keyed into existing dry laid stone. Backup substrate is concrete block under Section 042200.
 - 4. Natural stone coping over entire retaining wall facing creek.

1.3 RELATED SECTIONS

- A. Section 042200 – Concrete Unit Masonry

1.4 TUCKPOINTING DESCRIPTION

- A. Tuckpointing will be required for the following conditions, where existing masonry joints are void, missing or where allowing water to penetrate the wall. Solid joints shall remain.

1.5 QUALITY ASSURANCE

- A. Qualifications: The work of this Section will be performed by a qualified and experienced installer, approved by the Architect. The installer shall be an organization of established reputation which is

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

regularly engaged in and which maintains a regular force of workmen skilled in the installation of the type of work specified in this Section on projects of similar size and complexity. Although the stone masonry is to be mortared in-place, it shall be done so to appear as being dry laid with tight joints in the front face. There is a small portion of existing dry laid stone that will need to be re-built to key into the new work requiring a specialized skill level of stone work.

1. Stone mason shall have a full-time employee supervising the work, who processes the qualification of MASTER CRAFTSMAN, Level 3 as designated by the Dry Stone Conservancy. Refer to document attached to end of this section. This person shall be on-site supervising the work specified under this Section of Specifications.
2. Contractor shall provide evidence of this certification or equivalency of experience and knowledge prior to being accepted to provide this work.

B. Materials and methods of construction will comply with the following standards: American Society for Testing and Materials (ASTM).

1. Regional Materials – Limestone shall be fabricated from stone that has been extracted within 200 miles of Project Site.

1.5 MOCK-UP

- A. Install mockups for observation by Architect prior to proceeding with the work. Mock up shall be in close proximity to existing wall being worked on and consist of sufficient number of stones to show compatibility.
- B. Some portions of existing wall may be disassembled to blend new work with existing work.
- C. Re-work mockup as required by Architect for approval.
- D. Actual installation work shall match approved mockup in workmanship and appearance.
- E. Incorporate approved mockup into finished work if Architect permits.

1.6 SUBMITTIALS

- A. Submit shop drawings or manufacturers literature for all manufactured products and materials included for the Work.
- B. Samples of stone materials shall be stored at project site for review by Architect and used for mock-up.
- C. Samples of the following stone unit materials, encompassing full range of textures, colors and character in sizes adequate for matching existing stone materials. Identify supplier and quarry source with their addresses.
 1. Stone for coping and veneer installation

1.7 DELIVERY, STORAGE, AND HANDLING:

- A. Protect fabricated stone unit materials from damage, breaking, chipping, and soiling during delivery and storage. Store off ground on pallets or wood platforms.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. Handle stone unit materials by hand wherever possible to prevent breakage, chipping and scarring of finish faces. Do not dump individual stones on hard surfaces. Do not dump loads of stones.
- C. Prevent contamination of granular materials with soil, stones, debris and other foreign materials.

1.8 PROTECTION/SITE CONDITIONS

- A. Cold Weather Requirements: Do not work in temperatures below 40°F, when the **substrate** is colder than 40°F, or when the temperature is expected to fall below 40°F for 48 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material Manufacturer. Remove work exposed to lower temperatures as directed by the Specifier.
- B. Hot Weather Requirements: Protect repair mortar from direct sunlight and wind using protection measures submitted and approved when the ambient air temperature exceeds 70°F. Do not use or prepare mortar when ambient air temperature is above 90°F at the location of the work.
- C. Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of other trades, the building, and the public.

PART 2 PRODUCTS

2.1 FACE BRICK FOR REPLACEMENT (where exposed to view)

- A. Face Brick used for filling in masonry voids and openings shall match the existing as close as possible. This Contractor shall provide samples of salvaged exterior brick for use on this project, to be approved by the Architect. Contractor shall locate from various local demolition sites. Contractors to include any costs in their Bid Proposal.
- B. All replacement brick shall be toothed-in with existing brick courses for consistent appearance.
- C. All salvaged brick utilized for this work shall be of good appearance, solid and sound material.
- D. Face brick used for patching areas that will be concealed when building is completed, are not required to match, and may be any standard sized brick suitable for it's intended use.

2.2 NATURAL STONE FOR NEW and REPAIR WORK (where exposed to view)

- A. Face Stone used for filling in stone wall voids or around new beam bearing pockets shall be solid stone, in color and texture to match existing as close as possible. This Contractor shall provide samples of salvaged stone for use on this project, to be approved by the Architect. Contractor shall locate from various local demolition sites. Contractors to include any costs in their Bid Proposal.
- B. All replacement stone shall be coursed-in with existing stone pattern for consistent appearance. Existing stone is a random pattern.
- C. All salvaged stone utilized for this work shall be of good appearance, solid and sound material.
- D. Natural Stone for veneer, Split face Kentucky Limestone in grey and brown tones. Irregularly shaped, approximately 4" thick x 4" to 6" high x 8" to 20" long, somewhat blockish having one reasonably one good visible face. Suitable for rustic, random stacked wall.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- E. Natural Stone Coping: 3" to 4" high x 20" to 30" long, width to be 2" more than thickness of wall, split face Kentucky Limestone in grey and brown tones, somewhat blockish having three reasonably good visible faces. Suitable for rustic coping. Coping to be mortared in place on wall.
- F. Weeps: ¼" plastic tubes.
- G. Flashing Membrane: As required and indicated.
- H. Metal wall ties for veneer installation shall to be 2" wide galvanized corrugated metal wall ties secured to masonry substrate.

2.3 FACE BRICK FOR FILLING IN VOIDS

- A. Face Brick used for filling in masonry voids and openings shall match the existing as close as possible. This Contractor shall provide salvaged exterior brick for use on this project. Contractor shall locate from various local demolition sites. Contractors to include any costs in their Bid Proposal.
- B. All replacement brick shall be toothed-in with existing brick courses for consistent appearance.
- C. All salvaged brick utilized for this work shall be of good appearance, solid and sound material.
- D. Face brick used for patching areas that will be concealed when building is completed, are not required to match, and may be any standard sized brick suitable for it's intended use.

2.4 MORTAR MATERIALS FOR BRICK ONLY (Lime Putty)

- A. Hydraulic lime mortar NHL 3.5 - Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following Manufacturers that offer pre-blended hydraulic lime mortars:
 - 1. US Heritage Group, Inc. Model – Heritage Pre-Blended Lime putty Mortar.
 - 2. Limetec Hydraulic Lime Mortars
 - 3. Conserv, supplied by Stone Tech
 - 4. Edison Coatings
 - 5. LaFarge
 - 6. Substitutions: Permitted – Approved equal by Architect only. If submitting substitution, please send all product literature for reference.
- B. Mortar Aggregate: ASTM C144, to match existing historic mortar.
 - 1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve
- C. Hydraulic Lime. (NHL 3.5)
- D. Mortar Color: Color to match existing mortar color.
- E. Grout Aggregate: ASTM C404, reference mortar lab analysis report.
- F. Water: Clean and potable.
- G. Calcium chloride is not permitted.

2.3 MORTAR MIXES FOR STONE WORK

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following
 - a. Cemex S.A.B. de C.V.; Kosmortar.
 - b. Essroc, Italcementi Group; Brixment.
 - c. Lafarge North America Inc.; Lafarge Masonry Cement
 - d. Lehigh Cement Company; Lehigh Masonry Cement.
 - e. National Cement Company, Inc.; Coosa Masonry Cement.
- E. Mortar Cement: ASTM C 1329.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Lafarge North America Inc.; Lafarge Mortar Cement or [Magnolia Superbond Mortar Cement.
- F. Aggregate for Mortar: ASTM C 144.
- G. Aggregate for Grout: ASTM C 404.
- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Euclid Chemical Company (The); Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
 - c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.
- I. Water: Potable.

PART 3 EXECUTION

3.1 CLEANING AND PROTECTION

- A. Clean stone work of dirt, dust and grime using brushes, water or other approved methods. Concentration of algae removal.
- B. Light cleaning of all stone under porch on building and retaining wall such that new stone and tuckpointing can be matched to existing mortar color.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- C. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s). It is not the intent to remove all stains, but to generally match materials to blend with existing colors. High pressure will not be permitted.
- D. No chemicals will be allowed due to proximity to creek.
- E. Cold Weather Requirements: Do not work in temperatures below 40°F, when the **substrate** is colder than 40°F, or when the temperature is expected to fall below 40°F for 48 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the material Manufacturer. Remove work exposed to lower temperatures as directed by the Specifier.
- F. Hot Weather Requirements: Protect repair mortar from direct sunlight and wind using protection measures submitted and approved when the ambient air temperature exceeds 70°F. Do not use or prepare mortar when ambient air temperature is above 90°F at the location of the work.
- G. Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of other trades, the building, and the public.

3.1 PREPARATION

- A. Examine underlying surfaces and surrounding conditions for installation tolerances and other conditions affecting performance of installed work. Do not start installation until unsatisfactory conditions have been corrected.

3.2 REPOINTING EXTERIOR BRICK AND EXISTING STONE (only where required)

- A. Rake out LOOSE joints as follows:

1. Rake out mortar from joints to depths equal to 2-1/2 times their widths, but not less than 1/2 inch or not less than that required to expose sound, unweathered mortar.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace damaged masonry units.
4. Cut out old mortar by hand with a chisel and mallet, unless otherwise indicated. The use of power grinders will be allowed only if under direct supervision by Mason with historic experience to not cause damage to existing brick surfaces. Thickness of diamond-impregnated metal blades shall have maximum thickness of 1/8" and 4" diameter. If in the opinion of the Architect, damage occurs, the damaged area shall be replaced by this Contractor at no additional cost to the Owner.

- B. Point joints as follows:

1. Rinse masonry-joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at the time of pointing, excess water has evaporated or run off and joint surfaces are damp but free of standing water.
2. Apply the first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

is formed. Compact each layer thoroughly and allow it to become thumbprint hard before applying the next layer.

3. After joints have been filled to a uniform depth, place remaining pointing mortar in 3 layers with first and second layers each filling about two-fifths of joint depth; third layer, the remaining one-fifth. Fully compact each layer and allow to become thumbprint hard before applying next layer.
4. Where existing bricks have rounded edges, slightly recess final layer from face. Take care not to spread mortar over edges onto exposed masonry surfaces or to featheredge mortar.
5. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. Remove excess mortar from edge of joint by brushing.
6. Cure mortar by maintaining in a damp condition for at least 72 hours.
7. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.3 STONE VENEER

- A. Use staking, string lines and batter boards for setting up. Maintain through whole installation. Have levels, batter boards and straight edges at job for workmen during installation.
- B. Construct faces of walls with consistent planes, uniformly vertical in random pattern to match existing. Construct tops and faces with smooth flowing lines and curves, without sudden breaks. Keep edges and corners sharply defined. Make work plumb. Set slight wash across capstone and coping course to drain.
- C. Lay stones, making them well keyed, bonded and anchored together so as to avoid settlement and failure, with full bed of mortar in rear edge, tapering to thin joint in front face. It is the design intent for stone face to appear as being dry laid.
- D. Select and work stones for size and shape that will both articulate top of wall and stabilize underlying mass.
- E. Work stones by clefting, splitting and chipping as necessary to fit need.
- F. Lay stones in rustic, broken ashlar pattern with stones arranged with long face dimension laid horizontally. Provide consistent blend of color, size range and character for full length.
- G. Retaining wall at Creek: Re-lay top several courses of stone for better stability. Start new stone up to height indicated. Top with new coping stone.

3.4 COPING

- A. Coping shall be laid level, plumb and straight. Shim as required. End joints shall be tight.
- B. Cement mortar shall be used to secure the copings.

3.5 FINAL CLEANING

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use stiff-nylon or -fiber brushes and clean water, spray applied at a low pressure.
- B. Do not use metal scrapers or brushes.
- C. After 60 days, inspect tuckpointing and remove any efflorescence that may appear with a stiff natural or nylon bristle brush and water. Hydrochloric (muriatic) acid shall not be used.

3.6 CERTIFICATION PROGRAM FOR DRY LAID STONE MASONS

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield



CERTIFICATION PROGRAM FOR DRY STONE MASONS

GENERAL INFORMATION

The Dry Stone Conservancy (DSC) is a publicly supported nonprofit 501(c)3 organization whose purpose is preserving drystone structures and promoting the craft of drystone masonry—the technique of building rock fences and stone walls without mortar.

The Conservancy's Certification Program, federally registered in 2001, is designed to promote public confidence in dry-laid stone as a desirable building technique and in the skills of certified drystone craftsmen. As a part of this purpose, the DSC conducts training courses to teach generally accepted international drystone construction standards, and maintains a register of independent professional masons.

The DSC program is the only national certification program for dry stone craftsmen in the United States. The program was modeled after the highly successful professional registry of the Dry Stone Walling Association of Great Britain (DSWA), and was tailored to the needs of preservationists and professional designers in the United States, including the Kentucky Transportation Cabinet and the National Park Service.

Basic training in drystone fence building is regularly offered in Kentucky for aspiring craftsmen and the general public. Special courses are taught on request in other states for aspiring drystone masons, and at various national and state parks for park maintenance personnel. Advanced training is offered periodically in partnership with sponsoring agencies at restoration sites throughout the country. It is not mandatory, however, to attend a DSC training course to become certified.

DSC-certified drystone masons may be included on the Conservancy's Referral List of Certified Dry Stone Craftsmen, which is supplied upon request to government agencies and the general public. This list is posted on the DSC web site: www.DryStoneUSA.org. DSC-certified craftsmen may incorporate the federally copyrighted DSC Registration Mark on their promotional materials.

CERTIFICATION LEVELS

The Dry Stone Conservancy has multiple certification levels - for drystone masons, journeymen, master craftsmen, drystone authorities, examiners, instructors, and garden masons. All levels in the certification program are for professional drystone masons

Although participation in the DSC training program is not required for certification, it will be of great assistance in acquiring needed skills. As part of the training, the Instructors show slides and a how-to video, and carefully explain the theories of internationally accepted standards. Courses are hands-on and provide the trainees with instruction in every part of building a double-faced drystone fence, while providing continuous monitoring in the field.

QUALIFIED DRYSTONE MASON (Level 1):

Qualified Drystone Mason is the first, beginning, level in the Dry Stone Conservancy's certification program. Candidates who pass the test for correctly building a wallhead, a low retaining wall, and a (timed) drystone fence section, achieve the initial level of Qualified Drystone Mason.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

JOURNEYMAN MASON (Level 2):

Journeyman Mason is the second level in advancement in the Dry Stone Conservancy's certification program. It is earned by drystone masons with skills above the beginning (basic) level. Journeyman masons are skilled in building and repairing strong field fences, retaining walls, roadside fences, and stream bank walls, as well as common drystone features such as curved fences, corners, culverts, and stepped foundations. Their abilities include sound techniques, durable construction, and a good production rate.

It will greatly assist a drystone mason who aspires to journeyman certification to participate in the DSC's training projects or to work with Journeymen or Master Craftsmen. These projects give the masons experience in more advanced construction and production techniques, ensure that they understand the theories of internationally accepted standards, and provide continuous monitoring in the field.

MASTER CRAFTSMAN (Level 3):

Master Craftsman certifies masons who are fully proficient in all aspects of building freestanding fences, retaining walls up to 5 feet in height, special features commonly incorporated in drystone fences, and use of a variety of rock types. In addition to excellence in building drystone fences and retaining walls, the Master Craftsman builds pillars, arches, and stiles. Master Craftsmen must conduct their work in a fully professional manner. Essential requirements are construction techniques that provide structural strength combined with a superior production rate.

END OF SECTION 044145

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel tube exterior posts for guard railing (galvanized).
2. Attachment brackets and gate hinges.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

B. Handrails and Top Rails of Guards:

1. Uniform load of 50 lbf/ ft. applied in any direction.
2. Concentrated load of 200 lbf applied in any direction.
3. Uniform and concentrated loads need not be assumed to act concurrently.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines for molded or stamped elements.
2. Railing brackets.
3. Accessories, hinges, latches, etc.
4. Grout, anchoring cement, and paint products.

PART 2 - PRODUCTS

2.1 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

E. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners: Provide the following:

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Hot-Dip Galvanized Posts: Hot-dip zinc-coated steel
- B. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
- C. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- D. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- F. Shop Primers: Provide primers that comply with Galvanized Steel: Water based galvanized metal primer complying with MPI#134.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for exterior applications.

2.3 FABRICATION

- A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- B. Form work true to line and level with accurate angles and surfaces.
- C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- D. Form changes in direction by bending or mitering.
- E. Bend members in jigs to produce uniform curvature without buckling or otherwise deforming exposed surfaces.
- F. Close exposed ends of railing members with prefabricated end fittings.
- G. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
- H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

2.4 STEEL AND IRON FINISHES

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

A. Galvanized Posts:

1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized steel.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.

B. Preparing Galvanized Posts for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

PART 4 - ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

END OF SECTION 055213

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 055300 - METAL GRATINGS

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes:

1. New welded steel grating on both ends of porch (match profile sizes of existing).
2. Installation of existing steel stairs on rear of porch (west end).

1.2 RELATED DOCUMENTS & SECTIONS

A. Other related sections include:

1. 055213 – Pipe and Tube Railings
2. 055000 – Structural Steel

1.3 SUBMITTALS

- A. Verify profile spacings sizes of existing grate and match new grate profiles to existing.
- B. Verify sizes as required for deck construction.
- C. Submit drawings of Grating products, accessories and attachments.
- D. Submit manufacturer's product data including, but not limited to; types, materials, finishes, gauge thickness, surface patterns. For each grating cross-section, submit dimensional information, span, load capacity and deflection requirements.
- E. Shop Drawings:
1. Show fabrication and installation details, including plans.
 2. Coordination of drawings: Floor plans and sections, drawn to scale. Include scaled layout and relationships between grating and adjacent structural elements.

1.4 REFERENCES

- A. ASTM A 123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- B. ASTM A 240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- C. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- D. ASTM A 924 – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
- E. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability
- F. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- G. OSHA-Occupational Safety and Health Administration- Standards for walking-working surfaces. Part Number 1910, Subpart D.

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- H. RR-G-1602D- Federal Specification For Safety Grating (other than bar type & excluding naval vessels)
- I. ISO 9001:2000 Quality Management System- Requirements.

1.5 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of Grating of the types required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. OSHA Compliance: All grating installations must comply with OSHA Standards for walking-working surfaces.
- C. Federal Specification RR-G-1602D (or current revision) defines the criteria for items to be considered "Safety Grating". Slip resistant performance data must be available to support compliance.
- D. Manufacturer must have an ISO registered quality system in place, and Manual available upon request.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver Grating and components carefully to avoid damage, denting and scoring of finishes. Do not install damaged material.
- B. Store materials in original packaging and in clean, dry space; protect from weather and construction traffic. Materials to be elevated off of ground by blocks or skids or pallets.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Safety Gratings: Subject to compliance with these specifications, Safety Gratings shall be installed as manufactured by Cooper B-Line Grip Strut Safety Grating (or engineer approved equal).

2.2 MATERIALS AND FINISH

- A. Hot-Dip Galvanized After Fabrication: Commercial steel per ASTM A 1011, minimum yield of 33 ksi, hot-dip galvanized after fabrication per ASTM A 123. Touch up steel cut in field.

2.3 GRATINGS AND COMPONENTS

- A. Safety Grating: Walkways shall meet or exceed the Federal Standard for Safety Grating, RR-G-1602D.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Inspect areas to receive Grating for obstacles. Notify the Engineer of conditions that would adversely affect the installation or subsequent utilization of the areas. Do not proceed with installation until unsatisfactory conditions are corrected.

Nettie Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. Install Grating according to manufacturer's recommendations and as shown on the construction drawings.
- C. Position Grating sections flat and square with ends bearing minimum 1-1/2" on supporting structure.
- D. Keep sections at least 1/4" away from vertical steel sections and 1/2" from concrete walls.
- E. Allow clearance at joints between sections of maximum 1/4" at side channels and maximum 3/8" at ends.
- F. Band random cut ends and diagonal or circular cut exposed edges with a minimum 1/8" thick bar welded at contact points.
- G. Join abutting walkway sections with manufacturer supplied splice plates; bolted or welded as specified.

END OF SECTION

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with heavy timber including anchorage devices.
3. Framing with engineered wood products.
4. Wood blocking and nailers.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Structural Special Inspection."
2. Division 6 Section "Exterior Finish Carpentry"

1.2 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Engineered I Joists.
3. Power-driven fasteners.
4. Powder-actuated fasteners.
5. Expansion anchors.
6. Metal framing anchors.

1.3 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent for 2-inch nominal (38-mm actual) thickness or less, no limit for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

C. Heavy Timber: Comply with DOC PS 20 and grading rules of lumber grading agencies certified by American Lumber Standards Committee Board of Review, as applicable.

1. Factory mark each item of timber with grade stamp of grading agency.
2. For exposed timber indicated to receive a stained or natural finish, apply grade stamps to surfaces that will not be exposed to view or omit grade stamps and provide certificates of grade compliance issued by grading agency.

D. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

1.3 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Pressure treated framing lumber for porch floor, and the following:
 1. Wood nailers, blocking, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, blocking, and similar concealed members in contact with masonry or concrete.

1.4 DIMENSION LUMBER FRAMING

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.
 1. Application: All interior partitions.
 2. Species:
 - a. Mixed southern pine; SPIB.
 - b. Northern species; NLGA.
 - c. Eastern softwoods; NeLMA.
 - d. Western woods; WCLIB or WWPA.
- B. Framing Other Than Non-Load-Bearing Interior Partitions: **Construction or No. 2** grade.
 1. Application: Framing.
 2. Species:
 - a. Hem-fir (north); NLGA.
 - b. Southern pine; SPIB.
 - c. Douglas fir-larch; WCLIB or WWPA.
 - d. Mixed southern pine; SPIB.
 - e. Spruce-pine-fir; NLGA.
 - f. Douglas fir-south; WWPA.
- C. Framing Other Than Non-Load-Bearing Interior Partitions: Any species and grade with a modulus of elasticity of at least **1,500,000 psi (10 350 MPa)** width for single-member use.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- D. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
 - 1. Application: Exposed **exterior** framing.
 - 2. Species and Grade: **As indicated above.**

1.5 HEAVY TIMBER

- A. Timber Species and Grade: Douglas fir-larch or Douglas fir-larch (North); No. 2 or Better, NLGA, WCLIB, or WWPA.
- B. Timber Species and Grade: Southern pine; No. 2 or Better, SPIB.
- C. Moisture Content: Provide timber with 19 percent maximum moisture content at time of dressing or timber that is unseasoned at time of dressing but with 19 percent maximum moisture content at time of installation.
- D. Dressing: Provide dressed timber (S4S), unless otherwise indicated.
- E. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.
 - 1. Use sealer that meets or exceeds VOC and chemical component limits of Green Seal requirements.
- F. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.
 - 1. Use sealer that meets or exceeds VOC and chemical component limits of Green Seal requirements.
- G. Refer to Drawings for anchorage devices.

1.6 ENGINEERED WOOD PRODUCTS

- A. Engineered Wood Products, General: Products shall contain no urea formaldehyde.
- B. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
- C. Basis of Design: Units shall be equal to Nordic I-Joist Engineered Wood, 11-7/8" height, 2-1/2" wide plates and 3/8" web member, length as required, single span, spaced at 16" on center.
 - 1. Web Material: OSB or Plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1.
 - 2. Structural Properties: Provide units with depths and design values not less than those indicated.
 - 3. Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.
- D. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Material: Glued-laminated wood or product made from any combination solid lumber, wood strands, and veneers.
2. Thickness 1-1/8 inches (28 mm).
3. Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

1.7 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 1. Blocking.
 2. Nailers.
 3. Grounds.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 1. Mixed southern pine; No. 2 grade; SPIB.
 2. Eastern softwoods; No. 2 Common grade; NeLMA.
 3. Northern species; No. 2 Common grade; NLGA.
 4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

1.8 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners **with hot-dip zinc coating complying with ASTM A 153/A 153M**.
- B. NES NER-272 covers power-driven staples, nails, P-nails, and allied fasteners.
- C. Power-Driven Fasteners: NES NER-272.
- D. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.7 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Cleveland Steel Specialty Co.
 2. KC Metals Products, Inc.
 3. Phoenix Metal Products, Inc.
 4. Simpson Strong-Tie Co., Inc.
 5. USP Structural Connectors.
- B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- E. Galvanized steel is typical for most manufacturers and is suitable for most applications.
- F. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.

PART 2 - EXECUTION

2.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- E. Do not splice structural members between supports unless otherwise indicated.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 - 3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

2.2 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 062013 - EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior fascia wood trim, porch ceiling and wood moldings, porch roof railings, guard fence.
2. It is the intent of these specifications for total replacement of wood fascia to match the original historic profiles and sizes of outside appearance. Thickness of materials shall be no less than nominal $\frac{3}{4}$ ". Field verification shall be required. Any deviation shall be approved by Architect.
3. Porch Decking is specified herein.
4. Thresholds.

B. Related Requirements:

1. Section 061000 "Rough Carpentry".
2. Section 055213 – Pipe and Tube Railings
3. Section 076200 "Sheet Metal Flashing and Trim"
4. Section 099100 "Painting".

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.
- B. Samples: For each type of product involving selection of colors, profiles, or textures.

1.3 INFORMATIONAL SUBMITTALS

A. Compliance Certificates:

1. For lumber that is not marked with grade stamp.
2. For preservative-treated wood that is not marked with treatment-quality mark.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Lumber: DOC PS 20.

1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
 - a. For exposed lumber, mark grade stamp on end or back of each piece.

B. Softwood Plywood: DOC PS 1.

C. Hardboard: ANSI A135.4.

D. The following species or treatments shall apply to this project.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Porch floor framing and blocking – Pressure treated pine specified under Rough Carpentry.
2. Porch ceiling – Clear VG Prime FJ S4S Cedar (1 x 6 T&G, V-groove)
3. Roof fascia trim, Clear VG Prime FJ S4S Cedar, 1 x 6 & 1 x 10
4. Porch guard railing and yard fence, Clear VG Prime FJ S4S Cedar, sizes as detailed.
5. Porch roof railing components and spindles – Redwood
6. Porch decking – 1 x 4 T&G IPE
7. Door thresholds, red oak.
8. Threshold at front edge of wood decking, painted perforated steel as specified.
9. Threshold under existing two pair of double doors – oak.
9. Rear yard fencing - Clear VG Prime FJ S4S Cedar (size on drawings), fence posts to be pressure treated.
10. Refer to Rough Carpentry for Porch posts and beam species.

WOOD-PRESERVATIVE-TREATED MATERIALS

E. Preservative Treatment by Pressure Process: AWWPA U1; Use Category UC3b.

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 18 percent respectively.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction.
3. Application: All exterior lumber and plywood not otherwise indicated a species shall be Southern pine, pressure-preservative treated; C & Btr; SPIB.

2.2 PORCH CEILING

A. Lumber Trim:

1. Species and Grade: Clear VG Prime FJ S4S Cedar
2. Maximum Moisture Content: 15 percent.
3. Face Surface: Surfaced (smooth).
4. Size and Profile: (1 x 6 T&G, V-groove).

B. Moldings: WMMPA WM 4, wood moldings, with finger jointing. Made from kiln-dried stock to patterns included in WMMPA WM 12.

1. Species: Same as Lumber Trim

C. Size and Profile: All trim shall match existing in size and profile.

2.3 FASCIA AND EXTERIOR TRIM

A. Lumber Trim:

1. Species and Grade: Clear VG Prime FJ S4S Cedar
2. Maximum Moisture Content: 15 percent.
3. Face Surface: Surfaced (smooth).
4. Size and Profile: S4S 1 x 6 and 1 x 10

2.4 PORCH ROOF RAILING

1. Species and Grade: #2 Common Redwood
2. Maximum Moisture Content: 15 percent.
3. Face Surface: Smooth
4. Size and Profile: Shaped from 2 x 2 and 4 x 4 stock, Refer to Details.

2.6 PORCH GUARD FENCE AND REAR YARD FENCE

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Species and Grade: Clear VG Prime FJ S4S Cedar
2. Maximum Moisture Content: 15 percent.
3. Face Surface: Surfaced (smooth).
4. Size and Profile: S4S sizes as indicated on Drawings

2.7 IPE DECKING (Brazilian Walnut)

- A. Ipe wood, which is also known alternately as Brazilian Walnut, Ironwood or Pau lope, is extremely durable and sturdy, with a Janka hardness of 3680. Air dried moisture content 12%. Ensure the wood has been waxed on cut ends at the mill.
- B. This project will utilize nominal boards of 1 x 4 T&G (5/8" x 4") with eased edges. Lengths shall be random lengths.
- C. Secure at each joist with fasteners as recommended by supplier of material.
- D. To install Brazilian hardwood decking, you must pre-drill a pilot hole and countersink to avoid splitting, even when using self-drilling screws. The Smart-Bit drills and counter-sinks the hole for brown Headcote SS screws. Use carbide tipped saw blades.
- E. Always ensure the connection between the floor and the main structure is flashed with MCQ compatible flashing and installed with MCQ compliant fasteners when using pressure-treated (PT) joists. Copper flashing is specified under Section 076200.
- F. ALWAYS use subfloor adhesive in addition to your fasteners when installing T&G decking or when using hidden fasteners to prevent any movement in the future.
- G. Wax ends cut in the field with paraffin wax-based product. Follow instructions provided by supplier for handling, cutting, drilling and installation. Avoid waxing the surface. When ripping boards, wax is not required on the straight grain, but only cross cut ends.
- H. Apply 3 coats Flood CWF Hardwoods water based sealer:
 1. Apply only when sustained temperatures are above 50 degrees F. For best results, use Rewoodenate cleaner to remove the wood's natural oils from the surface for better sealer adhesion. Do not use cleaners with bleach.
 2. After wetting the deck, use a stiff bristle deck brush and perform a light scrub with Rewoodenate or your chosen deck cleaner. Scrub with the grain (along the length). Pressure washing is not as effective and not recommended for cleaning new decks as striping can occur in the wood from the high pressure. After scrubbing, rinse and allow the wood to dry for at least 2 hours. Allow longer drying time for covered applications.
 3. Thoroughly mix Flood CWF Hardwoods by stirring stick or shaken at a paint store before applying. The initial coat should be brushed to work-in the sealer for better adhesion. A 4" brush is recommended. Secondary and third coats can be applied with a pad applicator or roller for efficiency. These subsequent coats can be applied immediately. In other words, after 2-3 boards have been coated the entire length, the second coat can be applied by repeating the initial.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

2.8 MISCELLANEOUS MATERIALS

- A. Building door thresholds shall be replaced to conform to new decking being installed with new red wood.
- B. Metal threshold at front edge of wood decking and concrete retaining wall shall be 4" wide perforated 24 gauge steel plate secured to concrete and wood with fasteners.
- C. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
- D. For prefinished items, provide matching prefinished aluminum fasteners where face fastening is required.
- E. For applications not otherwise indicated, provide stainless-steel or hot-dip galvanized-steel fasteners.

3 EXECUTION

3.1 PREPARATION

- A. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed. Cut to required lengths and prime ends. Comply with requirements in Section 099100 "Painting."

3.2 INSTALLATION, GENERAL

- A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
- B. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.

3.3 STANDING AND RUNNING TRIM INSTALLATION

- A. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long except where necessary.
- B. Use scarf joints for end-to-end joints.
- C. Stagger end joints in adjacent and related members.
- D. Fit exterior joints to exclude water. Cope at returns and miter at corners.

END OF SECTION 062013

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 075323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered EPDM membrane roofing system.
2. Cover board
3. 20 year NDL warranty from manufacturer
4. 2 year warranty from installer for labor and materials
5. Metal flashing specified under Section 076220.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include details, and attachments to other work.
- C. Samples: 6" x 6" for each product included in the roofing system.
- D. Sample blank warranty

1.3 INFORMATIONAL SUBMITTALS

- A. Research/evaluation reports.
- B. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data in Plastic binder.
- B. Submit two (2) copies.
- C. Signed Warranty

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- B. Source Limitations: Obtain components acceptable to same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- C. Exterior Fire-Test Exposure: ASTM E 108, Class C; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- D. Pre-installation Roofing Conference: Conduct conference at Project site, in room to be determined.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1.6 PROJECT CONDITIONS

- A. **Weather Limitations:** Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.7 WARRANTY

- A. **Manufacturer's Warranty:** Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.
 - 2. Warranty shall be No Dollar Limit (NDL).
 - 3. Name on warranty shall be made to Owner of Building.
- B. **Installer's Warranty:** Installer's warranty on company letterhead, without monetary limitation, in which installer agrees to repair components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 2 years from date of Substantial Completion.
 - 2. Warranty shall be No Dollar Limit (NDL).
 - 3. Warranty shall be addressed to Division of Engineering.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE ROOFING

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, flexible EPDM sheet.
- B. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
 - 1. Carlisle SynTec Incorporated.
 - 2. Firestone Building Products.
 - 3. Johns Manville.
- C. **Materials:**
 - 1. Field of Roof Thickness, 60 mils (1.5 mm) nominal.
 - 2. Wall and edge flashing Thickness, 60 mils (1.5 mm.) nominal.
 - 3. Color: Black

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. **General:** Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
- B. **Sheet Flashing:** 60-mil- (1.5-mm-) thick EPDM, partially cured or cured, according to application.
- C. **Bonding Adhesive:** Manufacturer's standard Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch- (150-mm-) wide minimum, butyl splice tape with release film.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
- E. Miscellaneous accessories: Provide lap sealant, water cutoff mastic, metal termination bars, metal battens, pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories. Flexible Walkways or Protection Mats: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer.

2.3 COVER BOARD

- A. Cover Board: Shall be 1/2" high density fiberboard, or as required to meet Roof Manufactures warranty requirements.

2.4 ACCESSORIES

- A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
- B. Insulation Adhesive: Insulation manufacturer's recommended cold-applied adhesive formulated to attach roof insulation to substrate or to another insulation layer.

PART 3 - EXECUTION

3.1 COVER BOARD

- A. This project will not require insulation boards to be applied. Coordinate installing membrane roofing system components so structural sheathing is not exposed to precipitation or left exposed at the end of the workday.
- B. Install cover boards over structural sheathing with long joints in continuous straight lines with end joints staggered between rows. Loosely butt cover boards together and fasten to roof deck.
 - 1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.2 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
- B. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- D. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- E. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.
- F. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

3.3 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.4 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- B. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

END OF SECTION 075323

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 076220 - COPPER FLASHING, GUTTERS AND DOWNSPOUTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes shop and field formed copper roofing accessories and trim, such as:
 - 1. Installation of new copper half round gutters with new gutter supports.
 - 2. Installation of copper downspouts.
 - 3. Copper metal flashing over wood framing members
 - 4. Roof flashing as detailed.
- B. Related Requirements:
 - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this Section.
 - 2. Section 061000 – Rough Framing.
 - 3. Section 075323 – EPDM Roofing.
 - 4. Sealants are specified in Division 07 Section, "Joint Sealants."

1.2 COORDINATION

- A. Coordinate work of this section with interfacing and adjacent work for proper sequencing. Ensure weather resistance and durability of work and protection of materials and finishes.

1.3 PERFORMANCE REQUIREMENTS

- A. Installation Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association (CDA).
 - 1. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
 - 2. Make modifications only to meet field conditions and to ensure fitting of system components.
 - 3. Obtain Architect's approval of modifications.
 - 4. Provide concealed fastening wherever possible.
 - 5. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.
 - 6. Obtain Architect's approval for connections to building elements at locations other than indicated in Drawings.
 - 7. Accommodate building structure deflections in system connections to structure.
- B. Performance Requirements:
 - 1. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.
 - 2. Design system capable of withstanding building code requirements for negative wind pressure.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1.4 SUBMITTALS

- A. General: Submit product data for gutters, downspouts, and accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.

1.5 QUALITY ASSURANCE

- A. Fabricator's Qualifications: Company specializing in copper gutter and downspout work with three years experience in similar size and type of installations.

- B. Qualification of Installers:

1. Competent and skilled sheet metal applicators familiar with manufacture's products, standard details and recommendations. Applicator shall have at least fifteen (15) year experience applying these types of materials with successful completion of projects with similar scope. Applicator shall be a manufacturer approved installer with company issued documentation for review.
2. Installers shall be thoroughly trained and experienced in the necessary crafts and completely familiar with and comply with the recommendations and details of the manufacturer and the "Architectural Sheet Metal Manual" published by SMACNA.
3. Installers shall follow the manufacturers' installation details without exception unless written authorization from the manufacturer and architect are provided on an installation detail revision. Detail revision authorization shall be made in advance of product installation.

- C. Industry Standard: Except as otherwise shown or specified, comply with applicable recommendations and details of the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Conform to dimensions and profiles shown.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading: Protect finish metal faces.
- B. Acceptance at Site: Examine each component and accessory as delivered and confirm that material and finish is undamaged. Do not accept or install damaged materials.
- C. Storage and Protection:
 1. Stack pre-formed material to prevent twisting, bending, and abrasions.
 2. Provide ventilation.
 3. Prevent contact with materials which may cause discoloration or staining.

1.7 WARRANTY

- A. Warrant installed gutters, downspouts, and trim components to be free from defects in material and workmanship for period of 3 years.
- B. Include coverage against leakage and damages to finishes.

PART 2 - PRODUCTS

2.1 GUTTER MATERIALS

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- A. Copper: ASTM B370; minimum temper H00 (cold-rolled) except where temper 060 is required for forming;
 - 1. Supported Gutters and Downspouts: 16 oz. per sq. ft. (0.0216-inch thick) (0.55 mm) except as otherwise indicated. Gutters shall be 8" half round with round front and rear lip.
 - 2. Gutters to be secured by adjustable gutter hangers similar to Face Mount Hanger with Crossbar & Spring Clip spaced at 30" oc. as manufactured by Berger Brothers or equal.
- B. Bronze wire ball downspout strainer meeting the Copper Development Association Inc details.

2.2 SHEET FLASHING

- A. Custom formed sheet metal drip around perimeter of roof, porch roof railing, and termination flashing to masonry wall as detailed.
- B. Custom formed break metal flashing over tops of all floor framing and where detailed for decking.
- B. 16 oz. copper.

2.3 ACCESSORIES

- A. Solder: ASTM B32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.
- B. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.
- C. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
- D. Bituminous Coating: SSPC - Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- E. Joint Sealant: One-part, copper compatible elastomeric polyurethane, polysulfide, butyl or silicone rubber sealant as tested by sealant manufacturer for copper substrates. Refer to Division 07.
- F. Metal Accessories: Provide cleats, straps, hangers, anchoring devices, and similar accessory units as required for installation of work, noncorrosive, size and gage required for performance.
- G. Rivets:
 - 1. Pop Rivets: 1/8-inch (3 mm) to 3/16-inch (4.5 mm) diameter, with solid brass mandrels.
 - 2. Provide solid copper rivet (tinner's rivets) where structural integrity of seam is required.

2.4 FABRICATION

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of Copper Development Association (CDA) "Copper in Architecture" handbook and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed copper work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Fabricate to allow for adjustments in field for proper anchoring and joining.
 2. Form sections true to shape, accurate in size, square, free from distortion and defects.
 3. Cleats, Spacers, Straps, and Hanger Brackets: Fabricate of same material as gutters and downspouts, interlockable with sheet in accordance with CDA recommendations.
 4. Fabricate corners from one piece with minimum 18 inch (450 mm) long returns; solder corners for rigidity.
- B. Seams: Fabricate nonmoving seams with 1 inch (25 mm) lapped riveted and soldered seams. Tin edges to be seamed, lap seams, rivet seams, and solder.
- C. Expansion Provisions: Follow CDA Copper in Architecture Handbook guidance and provisions to accommodate expansion and contraction of gutter systems.
- D. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
- E. Solder
1. Solder metal joints except those indicated or required to be movement type joints in accordance with the "Copper in Architecture" handbook published by the Copper Development Association (CDA).
 2. Tin edges of copper sheets and cleats at soldered joints.
 3. After soldering, remove flux. Wipe and wash solder joints clean with fresh water and baking soda to neutralize flux.
- F. Copper Thickness: Not less than 16 oz. or more to comply with CDA recommendations for copper size and shape.
- G. Gutters:
1. Fabricate as indicated on Drawings and in accordance with the "Copper in Architecture" handbook published by the Copper Development Association (CDA).
 2. Fabricate front edge at least 1 inch (25 mm) lower than back edge.
 3. Transverse Seams in Gutter Liners: lapped, riveted and soldered for watertight gutter condition.
 4. Provide spacers, hanger brackets and straps, and fasteners as indicated and as recommended by CDA.
 5. Fabricate gutters to sizes and profiles shown on Drawings or specified herein.

2.5 FINISHES

- A. Natural weathering mill finished copper. No applied finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. General: Examine conditions and proceed with work when substrates are ready.
- B. Confirm that substrate system is even, smooth, sound, clean, dry, and free from defects.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

3.2 INSTALLATION

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
1. Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction; except install gutters with required slope.
 2. Apply asphalt mastic on copper surfaces of units in contact with cementitious materials and dissimilar metals.
 3. Fit gutters to downspouts and flashings for watertight connections. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
 4. Miter, lap seam and close corner joints with solder. Seal seams and joints watertight with solder.
 5. Install expansion joints at frequency recommended by the CDA "Copper in Architecture" handbook. Do not fasten moving seams such that movement is restricted.
 6. Coordinate with installation of roofing system and roof accessories.
- B. Gutters:
1. Flash and seal gutter to downspout.
 2. Slope gutters not less than 1/8 inch per foot (1:100).
 3. Provide expansion joints at 48'-0" (14 400 mm) maximum, not more than 24 feet (7200 mm) from corners.
 4. Hang gutter with adjustable copper or bronze support straps spaced 30 inches (750 mm) centers maximum. Similar to No. 1 Shank by Berger Brothers. Closer spacing may be required to handle system loads.
 5. Integrate gutter flashing conditions with requirements of adjacent roofing for watertight installation.
- C. Install continuous gutter guards on gutters, arranged as hinged units to swing open for cleaning gutters. Install "beehive"-type strainer-guard at downspouts in open gutters; removable for cleaning downspouts.
- D. Install counterflashing as indicated to prevent water from migrating behind gutter system.

3.3 CLEANING

- A. Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.
- B. Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.
- C. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.
- D. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

3.4 PROTECTION

- A. Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Urethane joint sealants for exterior applications

1.2 COLORS

A. Colors, provide product for the following applications:

1. Exterior sealant shall be color to match adjacent surface being caulked.
2. Match color of concrete, stone or mortar where used in masonry applications, match color of painted surfaces where adjacent to wood or metal being painted.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. URETHANE JOINT SEALANTS

F. Urethane Joint Sealant: ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Building Systems.
 - b. Bostik, Inc.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- c. Pecora Corporation.
 - d. Sika Corporation; Construction Products Division.
 - e. Tremco Incorporated.
2. Type: Single component (S).
 3. Grade: Nonsag (NS).
 4. Class: 25.
 5. Uses Related to Exposure: Nontraffic (NT).

2.2 JOINT SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, [Type C (closed-cell material with a surface skin)] [Type O (open-cell material)] [Type B (bicellular material with a surface skin)] [or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated], and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
 1. Remove laitance and form-release agents from concrete.
 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- F. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 079200

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 099100 – PAINTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following exterior surfaces:

1. All new wood associated with new porch construction with exception of:
 - a. Copper flashing, gutters and downspouts shall remain natural.
 - b. Do not paint structural wood framing or new wood decking.
2. Paint steel railings, gratings, including existing steel steps to rear yard.
3. Paint structural steel beams and steel components under the porch floor.
3. Paint existing wood siding, wood windows and doors on front of building.
4. New wood trim and ceiling boards shall be back-primed prior to installation. Coordinate with Carpentry.
5. Surface preparation is specified herein.
6. Paint steel threshold along front edge of porch.

- B. Colors:

1. All existing windows and doors to be painted White to match current color.
2. New wood to be painted White except porch ceiling to be determined.
3. Steel structural beams, grates light grey.
4. Semi-Gloss Acrylic paint shall be used for top coat for wood.
5. Semi-Gloss Oil base paint shall be used for top coat for metal being painted.
6. Paint copper gutters and downspouts ONLY if desired by Building Owner.
7. All colors shall be coordinated with the Owner of Building.

- C. Surface preparation, priming, and finish coats specified in this Section are in addition to surface treatment specified in other Sections.

- D. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- E. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- B. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
- C. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
- D. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
- E. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
- F. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. No submittals are required if using named products listed herein.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
- C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- D. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide materials from one of the following manufactures:
 - 1. PPG Industries, Inc. (PPG).
 - 2. Pratt & Lambert, Inc. (P & L).
 - 3. Sherwin-Williams Co. (S-W).
 - 4. No substitutions allowed.

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers listed. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- D. Volatile Organic Compound Requirements: Utilize coatings with low VOC ratings where there are large surface areas to be covered. Minor areas, such as access doors, or stained wood, use coatings as scheduled.
- E. Paint for Metal shall be equal to one of the following:
 - 1. One coat primer and one coat Durethane DTM, 95-3300 series as manufactured by PPD Industries.
 - 2. One coat primer and one coat DTM semi-gloss paint, as manufactured by Sherwin-Williams.
- F. Paint for exterior Wood shall be equal to one of the following:
 - 1. One coat primer and one coat Duration series as manufactured by Sherwin-Williams
- G. All exposed wood trim shall be back-primed.

PART 3 – EXECUTION

3.1 - EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

- B. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
- C. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- E. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.
- F. **Primer Note:** Due to the age of this facility, it is unknown what type of paint exists to be covered. This contractor shall verify existing type, and apply appropriate primers if required for proper substrate for new coatings specified. Follow guidelines recommended by manufacturer of paint materials.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
- D. Metal: Surfaces to be painted must be clean and dry. All surfaces must be free of chalk, dirt or debris at each stage of application. Touch up shop painted primer.
- E. Wood: (Indicated to be painted) Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - 1. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - 2. Prime or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood.
- I. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 1. Paint colors, surface treatments, and finishes are indicated.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration
 1. The number of coats and the film thickness required are the same regardless of application method.
 2. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray or other applicators according to manufacturer's written instructions.
 1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- F. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness,

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

- H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
- B. The Owner will engage the services of an independent testing agency to sample the applied paint material for sufficient thickness.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 099100

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

SECTION 329223 – LAWN SOD

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section includes all labor, materials, equipment and services necessary to complete the sod lawns as specified herein, as follows:
1. Preparing soil for new sod
 2. Incorporating additive and fertilizer
 3. Sodding
 4. Cleanup of work areas
 5. Maintenance of sodded areas until final acceptance

1.2 QUALITY ASSURANCE

- A. Work of this Section will be performed by approved Landscape Firm with good reputation, successful record over past 5 years on projects of similar size and complexity and which maintains regular force of experienced workmen skilled in work of this Section.
- B. Testing: The Architect reserves the right to test and reject any materials appearing not to meet material specifications by tests in accordance with the methods adopted by the Association of Official Agricultural Chemists. Costs for these test shall be borne by the Contractor.

1.3 SUBMITTALS

- A. Deliver submittals to Architect and obtain his approval prior to ordering materials or beginning work or as otherwise required. Time delivery to allow reasonable review period and prevent delays.
- B. Product Data:
1. Proposed Sod: Name of proposed sod and grower with address, phone number and list of seed varieties and percentage of each in sod seed mix.
- C. Ground Limestone or Aluminum Sulfate: Recently dated analysis certified by manufacturer.
- D. Commercial Fertilizer: Recently dated analysis certified by manufacturer.
- E. Sod: Certification dated and signed by grower that material being delivered to this project meets approved requirements and specifications.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Chemicals and other Bagged Materials
- B. Deliver materials to the site in original unopened packages showing weight, manufacturer's name and guaranteed analysis.
- C. Store materials so that their effectiveness will not be impaired.
- D. The Architect reserves the right to reject materials which are not uniform in composition, dry and free flowing or have become caked or otherwise damaged.

1.5 JOB CONDITIONS

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

A. Work Schedule:

1. Install sod at any time within the growing season.
2. Harvest, deliver, and transplant sod within a period of 36 hours unless a suitable storage and maintenance method is approved prior to delivery. Sod not transplanted within this time limit shall not be installed without approval of the Architect.
3. Provide adequate water supply and water distribution equipment for maintaining moisture for sodded areas except where and in event that irrigation system is operational and providing adequate coverage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Additive for pH Correction:

1. Aluminum sulfate or powdered commercial grade sulfur.
- B. Ground limestone: Dolomitic, not less than 85% total carbonates and magnesium, ground so that 50% passes 100 mesh sieve and 90% passes 20 mesh sieve. Coarser material shall be acceptable provided that specified rates of application are increased proportionately on basis of quantities passing 100 mesh sieve.
- C. Commercial Fertilizer: Having the following minimum guaranteed composition by weight: Nitrogen 5% (50% organic); available Phosphoric acid (P2O5) 10%; Soluble Potash (K2O) 5%; unless soil tests indicate need for different composition as determined by the Architect.

2.2 SOD:

- A. Turf developed from approved blend of locally adapted premium lawn seed varieties selected for sun and shade as required for site conditions, in approximate proportions as follows: 45% Improved Kentucky bluegrass; 25% Turf type perennial rye grass; 30% fine fescue.
- B. From approved grower and soil source compatible with site soils. No muck grown sod will be accepted for use.
- C. Inspected and approved as Certified Sod by proper Official State Certification Agency. Weed and undesirable grasses content, together with diseases, nematodes and insects present not exceeding maximum allowable as Certified Sod.
- D. Machine-stripped at a uniform soil thickness of 3/4" (plus or minus 1/4") exclusive of top growth and thatch.
- E. With top growth maintained at about 1-1/2" height.
- F. Standard size sections of sod strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10% of the section.
- G. Harvested and delivered in optimum moisture condition.
- H. The Architect reserves the right to inspect sod on delivery, and will reject any sod that does not meet material requirements.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas to be sodded and installation conditions and determine whether installed sod can be protected and maintained undamaged and healthy until final acceptance. If not, do not start work until conditions are satisfactory.

3.2 TOPSOIL TESTS

- A. Unless otherwise required by Architect, obtain topsoil testing service's recommendations provided under Topsoil Section, for correcting topsoil pH to required level, and make corrections accordingly during preparation of beds by addition of ground limestone to raise level or aluminum sulfate or powdered sulfur to lower level of pH.

3.3 ROOT BED PREPARATION

- A. Till undisturbed topsoil areas and areas of newly fine graded topsoil which have become crusted or compacted 6" deep to improve drainage and root penetration.
- B. Remove stones over 1" in any dimension and sticks, roots, rubbish, and other debris.
- C. Recess finish grade at edges of paving, walkways and tops of curbs 1" to accept sod and allow for growth and build up of grass.
- D. Grade areas to smooth, free draining, even surface with loose, moderately coarse texture.
- E. Remove ridges, and fill depressions as required to drain by leveling, raking and rolling.
- F. Apply additive for pH correction at rate recommended by topsoil testing service to adjust pH of topsoil to not less than 6.0 nor more than 7.0.
- G. If otherwise required by Architect, apply ground limestone at a rate of 25 pounds per 1,000 square feet, evenly distributed and work lightly into the top of the soil to a depth of 3", either by hand or machine.
- H. Apply commercial fertilizer (5-10-5) with mechanical spreader at the rate of 25lbs. per 1000 s.f. and rake in lightly.
- I. Following incorporation of additive and fertilizer, correct disturbed grades by raking and dragging.
- J. Make final root bed preparation by lightly tilling, rolling and leveling surface so that soil is smooth, friable and uniformly fine textured followed by light raking to make granular surface with furrows and crevices to receive seed.

3.4 SOD INSTALLATION

- A. Before laying sod, thoroughly moisten subgrade.
- B. Lay sod so that joints of one course do not coincide with the joints of following course. Tamp sod to true even surface at required finished grade. Fill joints with a topdressing of grass seed and screened topsoil at rate of two pounds of seed matching sod seed mix to five c.y. of screened topsoil. Brush and rake topdressing over the sodded areas.

Netti Jarvis Porch Reconstruction
Bloomfield, Kentucky
Eng. Acct. No. 625-1900
KYTC No. 4-1078 – Bloomfield

C. Lay sod on terraces and slopes across slope and stake down and secure by driving wooden pegs through sod into soil base.

D. Watering: Soak sod and root bed 4" deep immediately after laying of sod.

3.5 PROTECTION

A. Protect sodded areas from damage due to erosion, settlement of fill slumping slopes and construction activities. Promptly repair at the Contractor's expense. Use of baffle boards, netting, stakes and other protective devices will be left to the Contractor's discretion, but will be subject to approval for appearance by Architect.

B. Provide protection of sodded areas against trespassing and damage. If any areas are damaged, treat or replace as required at the expense of the Contractor. Obtain Architect's approval prior to erecting protective barriers.

3.6 CLEANING

A. On completion of work remove debris and excess materials and dispose of them legally.

B. Keep sodded areas clean, neat and orderly until acceptance.

C. Just prior to acceptance, remove protective barriers and devices, mow and clean up entire area to satisfaction of the Architect.

3.7 MAINTENANCE

A. Maintain sodded areas without additional payment until Final Acceptance. Establish a well-knit, uniform stand of grass to satisfaction of Architect, resodding and refertilizing with the materials originally specified.

B. Keep grass weed-free using methods approved by Architect.

C. Routinely water to maintain adequate moisture in the upper 4" of soil for deep root growth during the growing season.

D. Maintain grass areas at a maximum height of 2-1/2", removing no more than 40% of the grass leaf by any single mowing unless otherwise directed by the Architect. Immediately remove any accumulation of thatch due to mowing.

3.8 FINAL ACCEPTANCE

A. At time of Final Acceptance of project, when sodded areas have developed uniform stand of fully rooted, well-knitted grass, covering ground without gaps and bare spots, free from weeds and have undergone at least 2 mowings, they will be considered for acceptance by Architect.

END OF SECTION 329223

SPECIAL NOTE FOR KY 48 ROAD CLOSURE

US 62/KY 48 BRIDGE REPLACEMENT NELSON COUNTY ITEM NO. 4-1078

The Maintenance of Traffic Plan proposed for this project allows for a 90 calendar day closure of KY 48 between Riverside Dr and the US 62/KY 55 intersection. The contractor shall notify the engineer at least **14 days** prior to implementing the road closure. If the contractor is unable to open KY 48 to two way traffic within 90 calendar days then liquidated damages in the amount of \$2400.00 shall accrue for each calendar day beyond the allowable 90 days.

SPECIAL NOTE FOR REMOVE/REPLACE PORCH

NELSON COUNTY

4-1078

**ADDRESS DEFICIENCIES OF BRIDGES ON US 62 (090B00095) AND KY 48 IN BLOOMFIELD
(090B00096)**

This project includes work on the Nettie Jarvis Building, which is listed on the National Register of Historic Places. The building is located at 101 Fairfield Hill Road (Parcel 2). Work must adhere to the Secretary Of The Interior's Standards For Reconstruction of historic structures. The General Contractor or designated sub-contractor shall provide evidence he/she has past work experience with similar construction. Stone masons constructing the stone wall must be certified by Dry Stone Conservancy or provide evidence of equal skill level. Approval of contractor qualifications and oversight for this work shall be the responsibility of the Finance Cabinet.

For details on qualifications materials, construction, measurement and payment see the General and Technical Specifications included in the proposal packet. The official plan set may be obtained through Lynn Imaging at <https://www.stateofkyplanroom.com/>.

SPECIAL NOTE

Notice of Intent (NOI) to Division of Air Quality

The roadway contractor is required to file a Notice of Intent (NOI) to the Frankfort Regional Office of the Division of Air Quality ten (10) business days (M-F) prior to the start of any demolition or rehabilitation work on the bridges. Please use the attached form and also submit the attached Asbestos Containing Material Inspection Report. This form may be submitted electronically.

Division of Air Quality
Frankfort Regional Office
200 Fair Oaks Ln 3rd Floor
Frankfort, KY 40601-1134

DEP 7038

**NOTIFICATION OF ASBESTOS
ABATEMENT/DEMOLITION/RENOVATION**
(Instructions for completing form on back)

PAGE 1 OF _____
INITIAL SUBMITTAL DATE _____
REVISION DATE _____
NOTIFICATION # _____

OFFICE USE ONLY
ID # _____
LOG # _____

File this form with Regional Office where project will be performed

Kentucky Division for Air Quality
300 Sower Boulevard, 2nd Floor
Frankfort, KY 40601

Contractor _____
Address _____
City _____ State _____ Zip _____
Phone _____ Contact Person _____
Owner _____
Address _____
City _____ State _____ Zip _____
Phone _____ Contact Person _____

Description of planned renovation/demolition, including abatement methods & demo/reno methods. _____

Description of affected facility components _____

Asbestos detection technique _____
Amount of Cat. I & II nonfriable ACM involved but will not be removed: _____

Describe **physical characteristics** that make it nonfriable and **methods** to keep it nonfriable (optional): _____

Describe **contingency plan** should nonfriable ACM become friable or additional ACM be uncovered during renovation/ demolition: _____

Transporter _____
Address _____
City _____ State _____ Zip _____
Phone _____

Disposal Site _____
Address _____
City _____ State _____ Zip _____

I hereby certify that at least one person trained as required by 40 CFR 61.145(c)(8) will supervise the abatement work described herein. (optional for strictly non-friable work)

Submitted by: _____
Company Name: _____

Project Location _____
Address _____
City _____ State _____ Zip _____
Facility Age (yrs.) _____ Size of Facility or Affected Part (sq.ft.) _____
#Floors Affected _____ Present and Prior Use of Facility _____

TYPE OF PROJECT (CHECK ONLY ONE):
Renovation Demolition Ordered Demolition Emergency Long-term

PROJECT DATES:
Start Removal _____ End Removal _____
Start Renovation/Demolition _____ End Renovation/Demolition _____

Amount of ACM to be Removed:

	Regulated ACM (FACM)	Category II nonfriable ACM (optional)	Category I nonfriable ACM (optional)
Linear Feet			
Square Feet			
Cubic Feet			

INSTRUCTIONS FOR COMPLETING FORM DEP7036: NOTIFICATION OF ASBESTOS ABATEMENT/DEMOLITION/RENOVATION

Filing Deadline: This form must be completed and filed with the Kentucky Division for Air Quality at least ten (10) working days before starting any asbestos removal, demolition, or other work which will disturb asbestos-containing material (ACM) in Kentucky facilities outside Jefferson County and in schools statewide, including Jefferson County. File with appropriate Regional Office.

Renotification: If developments occur that invalidate information on a notification (e.g., changes in dates, amounts, locations), file a revised form within the time frames specified in 401 KAR 58:025. Notifications may be numbered in the top-left corner (optional). First two digits are project year; remaining digits are project number (e.g., the first project in 1999 is 99-1).

Attachments: Attachments may be included to provide additional information, propose alternative procedures, declare nonfriable removal, identify secondary transporters, etc.

Line-by-Line Instructions:

Contractor/Owner: the contractor is the asbestos remover (or, for zero-asbestos demolitions, the demolition contractor). The owner is the entity having the work done.

Project Location: The location at the address given where the work is taking place (e.g., which building/floor/room?).

Present/Prior Use: Enter the present and prior use(s) of the facility.

Type of Project: Each choice shown in this category has a specific description under 401 KAR 58:025:

Emergency renovations result from a sudden, unexpected event. If the project is an emergency renovation, attach a detailed description of the sudden, unexpected event that necessitated removal. Include the exact date and hour the event occurred and explain how the event caused an unsafe condition, or would cause equipment damage or unreasonable financial burden.

Planned renovations are renovations that do not qualify as emergency renovations.

A long-term notification is a type of planned renovation which involves a number of nonscheduled small-scale removals whose annual total exceeds the NESHAP threshold amounts and can be estimated based on past years' experience. File yearly estimate at least 10 working days before the beginning of the calendar year for which a long-term notification is being given.

Demolitions involve the wrecking or taking out of a load-supporting structural member, such as a load-bearing beam or wall. Tearing down a structure, dismantling it piecemeal, and moving it from one place to another are all considered demolitions.

Ordered demolitions must result from a demolition order issued by a government agency because the building is structurally unsound and in danger of imminent collapse. For ordered demolitions, attach to the notification a signed, dated copy of order that includes demolition deadlines and name/title/authority of the government representative issuing the order.

Project Dates: Schedules must be precise and accurate. The "start removal" date is the date the removers arrive on-site and begin physically preparing the work area for removal. "End removal" is the date the removers dismantle the work area after cleaning and clearing it. If circumstances arise that invalidate previously submitted start dates, a revised notification must be submitted showing the updated, correct start date. If the start date has been moved up, submit written renotification at least ten working days before the new start date. If the start date has been moved back, telephone the Division as soon as possible before the original date and submit written renotification no later than the original start date.

Schedules for renovation and demolition (next line after removal schedule) are handled similarly, except that renotification is required only for schedule changes involving demolitions, not renovations.

Amount of ACM: In this table, enter the amount and type (FACM, Category I, and/or Category II) of asbestos that will be removed. Although the regulation does not require you to identify the amount of nonfriable ACM that will be removed, the table provides space for nonfriable ACM to accommodate those notifiers who choose to document these removals.

Description of project: Describe the demolition or renovation work to be performed and method(s) to be used, including work practices and engineering controls to be used.

Asbestos Detection Technique: Give a general description of the asbestos survey, for example, "AHERA-style survey by accredited inspector; samples analyzed by PLM."

Amount of nonfriable ...: If all nonfriable ACM will be properly removed, enter "NA."

Contingency Plans: If Category II nonfriable ACM becomes crumbled, pulverized, or reduced to powder, or if additional RACM is discovered, describe procedures to be followed. For example, "Move demolition activity away from ACM immediately; remove the ACM using regulation-required procedures." Even "Stop work, call Division for Air Quality" is OK.

SPECIAL NOTE FOR PROJECT PHASING

NELSON COUNTY

ADDRESS DEFICIENCIES OF BRIDGES ON US 62 (090B00095) AND KY 48 IN BLOOMFIELD (090B00096)

A Maintenance of Traffic Plan is included but at the discretion of the Engineer the contractor is allowed flexibility in project phasing. KYTC is seeking to maximize flexibility in project phasing while minimizing the disruption to the public and adjacent property owners. Therefore, each phase has specific time limits but there can be some flexibility in the order of the phases. With approval of the Engineer, the contractor may choose to phase the project in any order but the length of the prescribed road closures or lane reductions are fixed within each phase, as well as the total time of each phase of work. At the discretion of the Engineer, multiple phases may be worked on at the same time. The required phases of the project are described below. All days listed below shall be understood as consecutive calendar days. The winning contractor shall submit their proposed schedule at the pre-construction meeting.

Phase A – Utility Relocation (90 days)

The utility relocation is critical to all other work for this project. The water and sewer lines must be moved and in operation prior to beginning structure work as there are pipes located within the culvert and below one of the proposed KY 48 piers. The work includes relocating approximately 1590 LF of 8" water line including 11 mainline connections, 2 creek crossing by Horizontal Directional Drilling and 2 fire hydrants. Additionally there are 760 LF of 8" gravity sewer line re-location, 6 4ft manholes and 3 connections to existing gravity sewer. Maintenance of traffic shall be performed by temporary flagging (must use certified flaggers) during working hours. All work shall be plated or backfilled during non-working hours (per the notes) in areas that traffic will utilize. Areas that are closed to traffic (due to other phases of work) or outside of the traveled way must be protected by plating/backfilling or by other suitable means approved by the Engineer.

Phase B – KY 48 Bridge/Retaining Wall (90 Days)

During this phase KY 48 may be closed for a maximum of 90 days. The contractor shall construct the bridge over Simpson Creek and the retaining wall which supports the Nettie Jarvis Porch.

Phase C –Porch Demolition (15 Days)

The Porch Contractor shall demolish and remove the Porch within 15 days after notice is given by the Prime Road Contractor. The Prime Road contractor shall notify the Engineer and Property Owner at least 14 days prior to beginning of this Phase of work. Phase C shall be performed within the 90 day window allowed for Phase B. The start date is at the Contractor's choice so as to allow for enough time for the new retaining wall to be constructed which will support the new Nettie Jarvis Porch.

Phase D – US 62 West Culvert at Intersection with KY 48 and KY 55 (28 Days)

Per the traffic control notes the Contractor may close one lane of US 62 and maintain traffic with temporary signals while constructing the culvert below US 62 at the main intersection of KY48/US

62/KY 55. The culvert shall be completed and two-lanes re-opened to traffic within 28 days of initiation of this phase.

Phase E – Culvert below Gas Station through US 62 East (60 Days)

The contractor shall have a total of 60 days to construct the remainder of the culvert. The contractor will be allowed to reduce the eastern leg of US 62 to one lane of traffic for a total of 28 days (14 days per lane). The Prime Road contractor shall notify the Engineer and Property Owner at least 14 days prior to beginning of this Phase of work.

Phase F – Porch Rebuild (30 Days)

The Porch Contractor is to rebuild the new porch within 30 days after the 90 days given for Phase C. Phase F completion date shall be the date of Substantial Completion for the architectural work. Substantial Completion is understood as the point when the porch is usable for occupancy by the property owner. The contractor shall complete all items on the punch list identified in the Substantial Completion walk thru within 15 days after completion of Phase F.

SPECIAL NOTE

For Tree Removal

NELSON COUNTY

**Address Deficiencies of Bridges on US 62 and KY 48 in
Bloomfield
Item No. 4-1078**

**NO CLEARING OF TREES 5 INCHES OR
GREATER (DIAMETER BREAST HEIGHT)
FROM APRIL 1 – OCTOBER 14**

**If there are any questions regarding this note, please contact the Division of
Environmental Analysis, 200 Mero Street, Frankfort, KY 40601, Phone: (502) 564-
7250.**

SPECIAL NOTE FOR CONCRETE SLURRY

If diamond grinding, grooving or any other process which produces slurry is required on roadways or bridges, the contractor shall ensure that all concrete slurry associated with these processes is collected, managed, and disposed of appropriately. The waste material shall be disposed of at a permitted disposal facility, in accordance with the Kentucky Standard Specifications for Road and Bridge Construction and the Environmental Performance Standards outlined in 401 KAR 47:030, or managed as a material for beneficial reuse. Any fines or remediation related to improper disposal shall be the sole responsibility of the contractor.

Disposal of concrete slurry will not be paid separately and shall be considered incidental to other bid items.

8/20/2019

Special Note for Bridge Demolition, Renovation and Asbestos Abatement

If the project includes any bridge demolition or renovation, the successful bidder is required to notify Kentucky Division for Air Quality (KDAQ) via filing of form (DEP 7036) a minimum of 10 days prior to commencement of any bridge demolition or renovation work.

Any available information regarding possible asbestos containing materials (ACM) on or within bridges to be affected by the project has been included in the bid documents. These are to be included with the Contractor's notification filed with the KDAQ. If not included in the bid documents, the Department will provide that information to the successful bidder for inclusion in the KDAQ notice as soon as possible. If there are no documents stating otherwise, the bidders should assume there are no asbestos containing materials that will in any way affect the work.



Matthew G. Bevin
Governor

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

Greg Thomas
Secretary

Asbestos Inspection Report

To: Joe Ferguson

District: 4

Date: January 29, 2019

Conducted By: O'Dail Lawson

Report Prepared By: O'Dail Lawson

Project and Structure Identification

Project Number: Nelson 04-1078

Structure ID: 090B00095N

Structure Location: Fairfield Hill Road (KY-48) over E Fork of Simpson Creek

Sample Description: The samples collected were point counted below 1% ACM.

Inspection Date: January 18, 2019

Results and Recommendations

The results of the samples collected were negative for the presence of asbestos above 1%.
No abatement is required at this time.

It is recommended that this report accompany the 10-Day Notice of Intent for Demolition ([DEP7036 Form](#)) which is to be submitted to the Kentucky Division of Air Quality prior to abatement, demolition, or renovation of any building or structure in the Commonwealth.



MRS, INC. MRS, Inc. Analytical Laboratory Division

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

Client:	<u>KY Transportation Cabinet</u>	Project No:	<u># 91267 B</u>
Address:	<u>200 Mero Street</u>	Sample ID:	<u># 95 - 2</u>
	<u>Frankfort, KY</u>	Sampled:	<u>18-Jan-19</u>
	<u>40601</u>	Received:	<u>23-Jan-19</u>
		Analyzed:	<u>26-Jan-19 - Point Count -</u>
	<u>Attention O'Dail Lawson</u>		

Bulk Sample Analysis

Sampled by: O'Dail Lawson

Facility/Location: Nelson County 04-1078 090B00095N

Field Description: Joint Compound (Railing)

Laboratory Description:

Thick Black Material With White Paint on The Surface

Asbestos Materials:

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

Non-asbestos Fibrous Materials & Matrix Materials:

<u>Cellulose</u>	<u>0.25 %</u>
<u>Binders</u>	<u>99.25 %</u>

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

Analyst: Winterford Mensah **Reviewed By:** *Winterford Mensah*
Signature


MRS, INC. MRS, Inc. Analytical Laboratory Division

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

Client:	<u>KY Transportation Cabinet</u>	Project No:	<u># 91267 B</u>
Address:	<u>200 Mero Street</u>	Sample ID:	<u># 95 - 3</u>
	<u>Frankfort, KY</u>	Sampled:	<u>18-Jan-19</u>
	<u>40601</u>	Received:	<u>23-Jan-19</u>
		Analyzed:	<u>26-Jan-19 - Point Count -</u>
	<u>Attention O'Dail Lawson</u>		

Bulk Sample Analysis

Sampled by:	<u>O'Dail Lawson</u>
Facility/Location:	<u>Nelson County 04-1078 090800095N</u>
Field Description:	<u>Joint Compound (Deck)</u>
Laboratory Description:	<u>Thick Black Material</u>
Asbestos Materials:	<u>Chrysotile = 1/400 = 0.25 % (< 1 %) Sample Is Negative</u>
Non-asbestos Fibrous Materials & Matrix Materials:	
	<u>Cellulose 0.25 %</u>
	<u>Binders 99.25 %</u>
Remarks: The sample was analyzed for asbestos content following the EPA Methodology (600/R-93/116). The test relates only to the items tested. This report does not represent endorsement by NVLAP or any agency of the U.S. Government.	
Analyst:	<u>Winterford Mensah</u>
Reviewed By:	<u></u> <small>Signature</small>



Chain of Custody Record

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

124-48 (Fairford Hill Road) Over

E. File of Simpson Creek.

Client Information: KY TRANS CABINET
 Results Code: ND = None Detected
 FTD = Filter Tampering or Damaged
 N/A = Not Applicable
 Address: 200 Metro Street, Frankfort, KY
 Phone: 502-564-7250 Fax: 502-564-5655
 PO#:
 O'Dail Lawson o'dail.lawson@ky.gov
 KYTC

Project or Subject Reference: Nelson 04-1078 OFD B 000095N
 Samplers (signature): *[Signature]*

Sample ID	Sample Description	Collected		Analysis Requested	Grab/Comp.	No. of Cont.	Cont. Type	Preservative
		Date	Time					
95-1	Concrete Coating (Paint)	11/18/19	11:55	Asbestos bulk	white			N/A
95-2	Joint Compans (Railings)				black/white			
95-3	Joint Compans (Docks)				white			

Relinquished By: _____ Date/Time: _____
 Received By: *[Signature]* Date/Time: 1/23/19
 Relinquished By: _____ Date/Time: _____
 Received at Lab By: _____ Date/Time: _____

ENVIRONMENTAL TRAINING CONCEPTS, INC
P.O. Box 99603 Louisville, KY 40269
(502)640-2951

Certification Number: ETC-AIR-060518-00303


O'Dail Lawson

has on 06-05-2018, attended and successfully completed the requirements and passed the examination with a score of 70% of better on the entitled course.

ASBESTOS INSPECTOR REFRESHER

Training was in accordance with 40 CFR Part 763 (AHERA) approved by the Commonwealth of Kentucky, the Indiana Department of Environmental Management, Tennessee Department of Environment & Conservation and the Arkansas Department of Environmental Quality. The above student received requisite training for Asbestos Accreditation under Title II of the Toxic Substance Act (TSCA).

Conducted at: 2660 Technology Drive, Louisville, KY



Name - Training Manager

Expiration Date: 06-05-2019



Name - Instructor



Matthew G. Bevin
Governor

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

Greg Thomas
Secretary

Asbestos Inspection Report

To: Joe Ferguson

District: 4

Date: January 29, 2019

Conducted By: O'Dail Lawson

Report Prepared By: O'Dail Lawson

Project and Structure Identification

Project Number: Nelson 04-1078

Structure ID: 090B00096N

Structure Location: Chaplin Road (US-62) over Hinkle Creek

Sample Description: The samples collected were point counted below 1% ACM.

Inspection Date: January 18, 2019

Results and Recommendations

The results of the samples collected were negative for the presence of asbestos above 1%.
No abatement is required at this time.

It is recommended that this report accompany the 10-Day Notice of Intent for Demolition ([DEP7036 Form](#)) which is to be submitted to the Kentucky Division of Air Quality prior to abatement, demolition, or renovation of any building or structure in the Commonwealth.



MRS, INC. MRS, Inc. Analytical Laboratory Division

332 West Broadway, Suite 613
Louisville, Kentucky 40202

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

Client:	<u>KY Transportation Cabinet</u>	Project No:	<u># 91268 B</u>
Address:	<u>200 Mero Street</u>	Sample ID:	<u># 96 - 1</u>
	<u>Frankfort, KY</u>	Sampled:	<u>18-Jan-19</u>
	<u>40601</u>	Received:	<u>23-Jan-19</u>
		Analyzed:	<u>26-Jan-19 - Point Count -</u>
	<u>Attention O'Dail Lawson</u>		

Bulk Sample Analysis

Sampled by: O'Dail Lawson

Facility/Location: Nelson County 04-1078 090B00096N

Field Description: Joint Compound

Laboratory Description:
Thick Black Material

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

Non-asbestos Fibrous Materials & Matrix Materials:

<u>Cellulose</u>	<u>0.25 %</u>
<u>Binders</u>	<u>99.25 %</u>

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

Analyst: Winterford Mensah **Reviewed By:** *Winterford Mensah*
Signature



Chain of Custody Record

Kentucky Transportation Cabinet

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

O'Dail Lawson odail.lawson@ky.gov
KYTC
Address: 200 Metro Street
Frankfort KY
Phone: 502-564-7250 Fax: 502-564-5655
PO#:

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

US-62 over Hinkle Creek,
Chaplin Road

Samplers (signature):

Project or Subject Reference Nelson 04-1078 DR0 B00096N

[Signature]

Sample ID	Sample Description	Collected		Analysis Requested	Grab/Comp.	No. of Cont.	Cont. Type	Preservative
		Date	Time					
96-1	Joints Compans	1/18/19	11:36	Asphalt bulk	black			N/A
96-2	Concrete Coating (Basalt)				white			

Relinquished By: _____ Date/Time: _____

Received By: *[Signature]* Date/Time: *1/23/19*

Relinquished By: _____ Date/Time: _____

Received at Lab By: _____ Date/Time: _____

ENVIRONMENTAL TRAINING CONCEPTS, INC
P. O. Box 99603 Louisville, KY 40269
(502)640-2951

Certification Number: ETC-AIR-060518-00303

O'Dail Lawson

has on 06-05-2018, attended and successfully completed the requirements and passed the examination with a score of 70% of better on the entitled course.

ASBESTOS INSPECTOR REFRESHER

Training was in accordance with 40 CFR Part 763 (AHERA) approved by the Commonwealth of Kentucky, the Indiana Department of Environmental Management, Tennessee Department of Environment & Conservation and the Arkansas Department of Environmental Quality. The above student received requisite training for Asbestos Accreditation under Title II of the Toxic Substance Act (TSCA).

Conducted at: 2660 Technology Drive, Louisville, KY



Name - Training Manager

Expiration Date: 06-05-2019



Name - Instructor

	KENTUCKY TRANSPORTATION CABINET Department of Highways DIVISION OF RIGHT OF WAY & UTILITIES	TC 62-226 Rev. 01/2016 Page 1 of 1
RIGHT OF WAY CERTIFICATION		

<input checked="" type="checkbox"/> Original	<input type="checkbox"/> Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #	COUNTY	PROJECT # (STATE)	PROJECT # (FEDERAL)
04-1078	Nelson	12FO FD52 090 8674601 R	BRO5038 (104)

PROJECT DESCRIPTION

REPLACE BRIDGE ON US 62 OVER HINKLE CREEK 0.012 MILE E OF KY 55(SR 34.6) 090B00096N (12CCR)

No Additional Right of Way Required

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

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

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

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


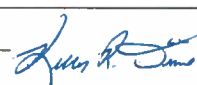
The right of way has not been fully acquired, the right to occupy and to use all rights-of-way required for the proper execution of the project has been acquired. Some parcels may be pending in court and on other parcels full legal possession has not been obtained, but right of entry has been obtained,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

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

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

Total Number of Parcels on Project	10	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION
Number of Parcels That Have Been Acquired			
Signed Deed	10		
Condemnation			
Signed ROE			

Notes/ Comments (Use Additional Sheet if necessary)

LPA RW Project Manager		Right of Way Supervisor	
Printed Name		Printed Name	Michael H. Price
Signature		Signature	 2019.09.10 10:00:43 -04'00'
Date		Date	09/10/2019
Right of Way Director		FHWA	
Printed Name		Printed Name	
Signature	 2019.09.10	Signature	No Signature Required as per FHWA-KYTC
Date	10:13:54 -05'00'	Date	Current Stewardship Agreement

UTILITIES AND RAIL CERTIFICATION NOTE

**NELSON COUNTY
FEDERAL PROJECT #00BRO5038104
UNIFIED PROJECT NUMBER #FD52 090 86746
US 62, KY 55, and KY 48/BLOOMFIELD BRIDGES
SIX YEAR PLAN ITEM #4-1078.00**

GENERAL PROJECT NOTE ON UTILITY PROTECTION

N/A

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

- The City of Bloomfield has water and sewer facilities throughout the project.
 - KU has electric facilities throughout the project.
 - AT&T has facilities throughout the project.
 - The City of Bardstown has CATV facilities throughout the project.
- *The Contractor is fully responsible for protection of all utilities listed above***

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

N/A

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

- KU has electric facilities to be relocated throughout the project.
- AT&T has facilities to be relocated throughout the project.
- The City of Bardstown has CATV facilities to be relocated throughout the project.
- These companies will have their facilities relocated by 05/01/2020.

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

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

The City of Bloomfield has water and sewer facilities to be relocated by the highway contractor as indicated in the plans.

UTILITIES AND RAIL CERTIFICATION NOTE

**NELSON COUNTY
FEDERAL PROJECT #00BRO5038104
UNIFIED PROJECT NUMBER #FD52 090 86746
US 62, KY 55, and KY 48/BLOOMFIELD BRIDGES
SIX YEAR PLAN ITEM #4-1078.00**

THE FOLLOWING RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

- No Rail Involved** **Minimal Rail Involved (See Below)** **Rail Involved (See Below)**

UNDERGROUND FACILITY DAMAGE PROTECTION – BEFORE YOU DIG

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor’s responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. The contractor is instructed to contact KY 811 for the location of existing underground utilities. Contact shall be made a minimum of two (2) and no more than ten (10) business days prior to excavation.

The contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY 811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom are to be contacted through their individual Protection Notification Center. It may be necessary for the contractor to contact the County Court Clerk to determine what utility companies have facilities in the area. Non-compliance with these directives can result in the enforcement of penalties.

UTILITIES AND RAIL CERTIFICATION NOTE

**NELSON COUNTY
FEDERAL PROJECT #00BRO5038104
UNIFIED PROJECT NUMBER #FD52 090 86746
US 62, KY 55, and KY 48/BLOOMFIELD BRIDGES
SIX YEAR PLAN ITEM #4-1078.00**

SPECIAL CAUTION NOTE – PROTECTION OF UTILITIES

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

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

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

AREA UTILITIES CONTACT LIST

<u>Utility Company/Agency</u>	<u>Contact Name</u>	<u>Contact Information</u>
AT&T	Scott Roche	502-348-4528
KU/LG&E	Caroline Justice	502-627-3708
City of Bloomfield	Scott Thompson	502-252-5746
City of Bardstown	Mike Vittitow	502-348-5947

GENERAL UTILITY NOTES AND INSTRUCTIONS APPLICABLE TO ALL UTILITY WORK MADE A PART OF THE ROAD CONSTRUCTION CONTRACT

The contractor should be aware the following utility notes and KYTC Utility Bid Item Descriptions shall supersede, replace and take precedence over any and all conflicting information that may be contained in utility owner supplied specifications contained in the contract, on plans supplied by the utility owner, or any utility owner specifications or information externally referenced in this contract.

Where information may have been omitted from these notes, bid item descriptions, utility owner supplied specifications or plans; the KYTC Standard Specifications for Road and Bridge Construction shall be referenced.

PROTECTION OF EXISTING UTILITIES

The existing utilities shown on the plans are shown as best known at the time the plans were developed and are to be used as a guide only by the Contractor. The Contractor shall use all means at his disposal to accurately locate all existing utilities, whether shown on the plans or not, prior to excavation. The contractor shall protect these utilities during construction. Any damage to existing utilities during construction that are shown or not shown on the plans shall be repaired at the Contractor's expense.

PREQUALIFIED UTILITY CONTRACTORS

Some utility owners may require contractors that perform relocation work on their respective facilities as a part of the road contract be prequalified or preapproved by the utility owner. Those utility owners with a prequalification or preapproval requirement are as follows:

None

The bidding contractor needs to review the above list and choose from the list of approved subcontractors at the end of these general notes as identified above before bidding. When the list of approved subcontractors is provided, only subcontractors shown on the following list(s) will be allowed to work on that utility as a part of this contract.

When the list of approved subcontractors for the utility work is not provided in these general notes, the utility work can be completed by the prime contractor. If the prime contractor chooses to subcontract the work, the subcontractor shall be prequalified with the KYTC Division of Construction Procurement in the work type of "Utilities" (I33). Those who would like to become prequalified may contact the Division of

Construction Procurement at (502) 564-3500. Please note: it could take up to 30 calendar days for prequalification to be approved. The prequalification does not have to be approved prior to the bid, but must be approved before the subcontract will be approved by KYTC and the work can be performed.

CONTRACT ADMINISTRATION RELATIVE TO UTILITY WORK

All utility work is being performed as a part of a contract administered by KYTC; there is not a direct contract between the utility contractor and utility owner. The KYTC Section Engineer is ultimately responsible for the administration of the road contract and any utility work included in the contract.

SUBMITTALS AND CORRESPONDENCE

All submittals and correspondence of any kind relative to utility work included in the road contract shall be directed to the KYTC Section Engineer, a copy of which may also be supplied to the utility owner by the contractor to expedite handling of items like material approvals and shop drawings. All approvals and correspondence generated by the utility owner shall be directed to the KYTC Section Engineer. The KYTC Section Engineer will relay any approvals or correspondence to the utility contractor as appropriate. At no time shall any direct communication between the utility owner and utility contractor without the communication flowing through the KYTC Section Engineer be considered official and binding under the contract.

ENGINEER

Where the word “Engineer” appears in any utility owner specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Engineer” is the Kentucky Transportation Cabinet (KYTC) Section Engineer or designated representative and the utility owner engineer or designated representative jointly. Both engineers must mutually agree upon all decisions made with regard to the utility construction. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

INSPECTOR OR RESIDENT PROJECT REPRESENTATIVE

Where the word “Inspector” or “Resident Project Representative” appears in the utility specifications included in this proposal, utility owner specifications included as a part of this contract by reference or on the utility relocation plans, it shall be understood the “Inspector” or “Resident Project Representative” is the utility owner inspector and KYTC inspector jointly. The Transportation Cabinet, Section Engineer shall make all final decisions in all disputes.

NOTICE TO UTILITY OWNERS OF THE START OF WORK

One month before construction is to start on a utility, the utility contractor shall make notice to the KYTC Section Engineer and the utility owner of when work on a utility is anticipated to start. The utility contractor shall again make confirmation notice to the KYTC Section Engineer and the utility owner one week before utility work is to actually start.

UTILITY SHUTDOWNS

The Contractor shall not shut down any active and in-service mains, utility lines or services for any reason unless specifically given permission to do so by the utility owner. The opening and closing of valves and operating of other active utility facilities for main, utility line or utility service shut downs are to be performed by the utility owner unless specific permission is given to the contractor by the owner to make shutdowns. If and when the utility owner gives the contractor permission to shutdown mains, utility lines or utility services, the contractor shall do so following the rules, procedures and regulations of the utility owner. Any permission given by the utility owner to the contractor to shutdown active and in-service mains, utility lines or services shall be communicated to the KYTC Section Engineer by the utility owner that such permission has been given.

Notice to customers of utility shut downs is sometimes required to be performed by the utility contractor. The contractor may be required; but, is not limited to, making notice to utility customers in a certain minimum amount of time in advance of the shut down and by whatever means of communication specified by the utility owner. The means of communication to the customer may be; but is not limited to, a door hanger, notice by newspaper ad, telephone contact, or any combination of communication methods deemed necessary, customary and appropriate by the utility owner. The contractor should refer to the utility owner specifications for requirements on customer notice.

Any procedure the utility owner may require the contractor to perform by specification or plan note and any expense the contractor may incur to comply with the utility owner's shut down procedure and notice to customers shall be considered an incidental expense to the utility construction.

CUSTOMER SERVICE AND LATERAL ABANDONMENTS When temporary or permanent abandonment of customer water, gas, or sewer services or laterals are necessary during relocation of utilities included in the contract, the utility contractor shall perform these abandonments as part of the contract as incidental work. No separate payment will be made for service line and lateral abandonments. The contractor shall provide all labor, equipment and materials to accomplish the temporary or permanent abandonment in accordance with the plans, specifications and/or as directed by the engineer. Abandonment may include, but is not limited to, digging down on a water or gas main at the tap to turn off the tap valve or corporation stop and/or capping or plugging the tap, digging down on a sewer tap at the main and plugging or capping the tap, digging down on a service line or lateral at a location shown on the plans or agreeable to the engineer and capping or plugging, or performing any other work necessary to abandon the service or lateral to satisfactorily accomplish the final utility relocation.

STATIONS AND DISTANCES

All stations and distances, when indicated for utility placement in utility relocation plans or specifications, are approximate; therefore, some minor adjustment may have to be made during construction to fit actual field conditions. Any changes in excess of 6 inches of plan location shall be reviewed and approved jointly by the KYTC Section Engineer or designated representative and utility owner engineer or designated representative. Changes in location without prior approval shall be remedied by the contractor at his own expense if the unauthorized change creates an unacceptable conflict or condition.

RESTORATION

Temporary and permanent restoration of paved or stone areas due to utility construction shall be considered incidental to the utility work. No separate payment will be made for this work. Temporary restoration shall be as directed by the KYTC Section Engineer. Permanent restoration shall be "in-kind" as existing.

Restoration of seed and sod areas will be measured and paid under the appropriate seeding and sodding bid items established in the contract for roadway work.

BELOW ARE NOTES FOR WHEN "INST" ITEMS ARE IN THE CONTRACT MEANING THE UTILITY COMPANY IS PROVIDING CERTAIN MATERIALS FOR UTILITY RELOCATION

MATERIAL

Contrary to Utility Bid Item Descriptions, those bid items that have the text "**Inst**" at the end of the bid item will have the major components of the bid item provided by the utility owner. No direct payment will be made for the major material component(s) supplied by the utility company. All remaining materials required to construct the bid item as detailed in utility bid item descriptions, in utility specifications and utility plans that are made a part of this contract will be supplied by the contractor. The contractor's bid price should reflect the difference in cost due to the provided materials.

The following utility owners have elected to provide the following materials for work under this contract:

No materials are being supplied by the utility owner(s). All materials are to be supplied by the contractor per bid item descriptions, utility specifications and utility plans.

SECURITY OF SUPPLIED MATERIALS

If any utility materials are to be supplied by the utility owner, it will be the responsibility of the utility contractor to secure all utility owner supplied materials after delivery to the project site. The utility contractor shall coordinate directly with the utility owner and their suppliers for delivery and security of the supplied materials. Any materials supplied by the utility owner and delivered to the construction site that are subsequently stolen, damaged or vandalized and deemed unusable shall be replaced with like materials at the contractor's expense.

Standard Water Bid Item Descriptions

W AIR RELEASE VALVE This bid item description shall apply to all air release valve installations of every size except those defined as “Special”. This item shall include the air release valve, main to valve connecting line or piping, manhole, vault, structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release valve would a separate bid item be established. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

BOLLARDS This item is for payment for furnishing and installing protective guard posts at above ground utility installations. A bollard may consist of, but not limited to, a steel post set in concrete or any other substantial post material. This item shall include all labor, equipment, and materials needed for complete installation of the bollard as specified by the utility owner specifications and plans. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

NOTE: A bid code for this item has been established in standard roadway bid items and shall be used for payment of this item. The bid code is 21341ND

W CAP EXISTING MAIN This item shall include the specified cap, concrete blocking and/or mechanical anchoring, labor, equipment, excavation, backfill, and restoration required to install the cap at the location shown on the plans or as directed in accordance with the specifications. This item is not to be paid on new main installations. This pay item is only to be paid to cap existing mains. Caps on new mains are incidental to the new main. Any and all caps on existing mains shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of water main under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASUREMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing steel, backfill, restoration, and etc., to construct the concrete encasement of the water main as shown on the plans, and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasement shall be paid under one bid item included in the contract regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASUREMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W ENCASUREMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open cut and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W FIRE HYDRANT ADJUST Includes all labor, equipment, excavation, materials, and backfill to adjust the existing fire hydrant using the fire hydrant manufacturer's extension kit for adjustments of 18" or less. Adjustments greater than 18" require anchoring couplings and vertical bends to adjust to grade. The Contractor will supply and install all anchor couplings, bends, fire hydrant extension, concrete blocking, restoration, granular drainage material, etc, needed to adjust the fire hydrant complete and ready for use as shown on the plans, and in accordance with the specifications and standard drawings. This also includes allowing for the utility owner inspector to inspect the existing fire hydrant prior to adjusting, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W FIRE HYDRANT ASSEMBLY Includes all labor, equipment, new fire hydrant, isolating valve and valve box, concrete pad around valve box (when specified in specifications or plans), piping, anchoring tee, anchoring couplings, fire hydrant extension, excavation, concrete blocking, granular drainage material, backfill, and restoration, to install a new fire hydrant assembly as indicated on plans and on standard drawings complete and ready for use. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT RELOCATE This item includes all labor and equipment to remove the existing fire hydrant from its existing location and reinstalling at a new location. This item shall include a new isolating valve and valve box, concrete pad around valve box (when required in specifications or plans), new piping, new anchoring tee, anchoring couplings, fire hydrant extensions, concrete blocking, restoration, granular drainage material, excavation, and backfill as indicated on plans, specifications, and on standard drawings complete and ready for use. This item shall also include allowing for utility owner inspector to inspect the existing fire hydrant prior to reuse, contractor returning unusable fire hydrants to the utility owner warehouse and picking up a replacement hydrant for use, if the existing fire hydrant is determined unfit for reuse. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FIRE HYDRANT REMOVE This bid item includes removal of an abandoned fire hydrant, isolating valve, and valve box to the satisfaction of the engineer. The removed fire hydrant, isolating valve and valve box shall become the property of the contractor for his disposal as salvage or scrap. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSH HYDRANT ASSEMBLY This item shall include the flushing hydrant assembly, service line, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the flush hydrant at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W FLUSHING ASSEMBLY This item shall include the flushing device assembly, service line, meter box and lid, tapping the main, labor, equipment, excavation, backfill, and restoration required to install the

flushing device at the location shown on the plans and in accordance with the specifications and standard drawings, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W LEAK DETECTION METER This item is for payment for installation of a water meter at main valve locations where shown on the plans for detection of water main leaks. The meter shall be of the size and type specified in the plans or specifications. This item shall include all labor, equipment, meter, meter box or vault, connecting pipes between main and meter, main taps, tapping saddles, casting, yoke, and any other associated material needed for installation of a functioning water meter in accordance with the plans and specifications, complete and ready for use. No separate payment will be made under any other contract item for connecting pipe or main taps. Any and all leak detection meters shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete and ready for use.

W LINE MARKER This item is for payment for furnishing and installing a water utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

W MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the locations shown on the plans. This bid item is to be used to relocate an existing water main at point locations such as to clear a conflict at a proposed drainage structure, pipe or any other similar short relocation situation, and where the existing pipe material is to be reused. The contractor shall provide any additional pipe or fitting material needed to complete the work as shown on the plans and specifications. The materials provided shall be of the same type and specification as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case by case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Water Main Relocate shall not be paid on a linear feet basis; but, shall be Paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER This item is for payment for installation of all standard water meters of all sizes 2 inches ID or less as specified on the plans. This item shall include all labor, equipment, meter, meter box, casting, yoke, and any other associated material needed for installation of a functioning water meter in accordance with the plans and specifications, complete and ready for use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER ADJUST This item includes all labor, equipment, excavation, materials, backfill, restoration, and etc., to adjust the meter casting to finished grade (whatever size exists) at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER RELOCATE This item includes all labor, equipment, excavation, additional fittings, disinfection, testing, restoration, and etc., to relocate the existing water meter (whatever size exists), meter yoke, meter box, casting, and etc., from its old location to the location shown on the plans or as directed, in accordance with the specifications and standard drawings complete and ready for use. The new service pipe (if required) will be paid under short side or long side service bid items. Any and all meter relocations of 2 inches or less shall be paid under one bid item included in the contract regardless of size. Each individual relocation shall be paid individually under this item; however, no separate bid items will be established for meter size variations of 2 inches ID or less. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER VAULT SIZE RANGE 1 OR 2 This item is for payment for installation of an underground structure for housing of a larger water meter, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s) valve(s), all piping, and fitting materials associated with installing a functioning meter and vault in accordance with the plans, standard drawings, and specifications, complete and ready for use. The size shall be the measured internal diameter of the meter and piping to be installed. The size meter vault to be paid under size 1 or 2 shall be as follows:

- Size Range 1 = All meter and piping sizes greater than 2 inches up to and including 6 inches
- Size Range 2 = All meter and piping sizes greater than 6 inches

This item shall be paid EACH (EA) when complete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

W METER/FIRE SERVICE COMBO VAULT This item is for payment for installation of an underground structure for housing of a water meter and fire service piping, fittings, and valves as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or access doors, the specified meter(s), valve(s), all piping, and fitting materials associated with installing a functioning meter and fire service vault in accordance with the plans and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W METER WITH PRESSURE REDUCING VALVE (PRV) This item is for payment for installation of all standard water meters with pressure reducing valves (PRV) of all sizes 2 inches ID or less as specified on the plans. This item shall include all labor, equipment, meter, PRV, meter box, casting, yoke, and any other associated material needed for installation of a functioning water meter with PRV in accordance with the plans and specifications, complete and ready for use. This item shall include connections to the new or existing water service line. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

This item shall be paid EACH (EA) when complete.

W PIPE This description shall apply to all PVC, ductile iron, and polyethylene/plastic pipe bid items of every size and type to be used as water main, except those bid items defined as “Special”. This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, sanitizing, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. **This item shall include all temporary and permanent materials and equipment required to pressure test and sanitize mains including, but not limited to, pressurization pumps, hoses, tubing, gauges, main taps, saddles, temporary main end caps or plugs and blocking, main end taps for flushing, chlorine liquids or tablets for sanitizing, water for testing/sanitizing and flushing (when not supplied by the utility), chlorine neutralization equipment and materials, and any other items needed to accomplish pressure testing and sanitizing the main installation.** This item shall also include pipe anchors, at each end of polyethylene pipe runs when specified to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W PLUG EXISTING MAIN This item shall include the specified plug, concrete blocking and/or anchoring, labor, equipment, excavation, backfill, and restoration required to install the plug in an existing in-service main that is to remain at the location shown on the plans or as directed in accordance with the specifications. Any and all plugs on all existing in-service mains shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

NOTE: This utility bid item is not to be paid on new main installations or abandoned mains. This pay item is to plug existing in-service mains only. Plugs on new mains are incidental to the new main just like all other fittings.

NOTE: Plugging of existing abandon mains shall be performed and paid in accordance with Section 708.03.05 of KYTC Standard Specifications For Road And Bridge Construction and paid using Bid Code 01314 Plug Pipe.

W PRESSURE REDUCING VALVE This description shall apply to all pressure reducing valves (PRV) of every size required in the plans and specifications except those bid items defined as “Special”. Payment under this description is to be for PRVs being installed with new main. This item includes the PRV as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), pit or vault, backfill, restoration, testing, disinfection, and etc., required to install the specified PRV at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, PRVs shall be restrained. PRV restraint shall be considered incidental to the

PRV and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W PUMP STATION This item is for payment for installation of pumps and an above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LUMP SUM (LS) when complete.

W REMOVE TRANSITE (AC) PIPE This item shall include all labor, equipment, and materials needed for removal and disposal of the pipe as hazardous material. All work shall be performed by trained and certified personnel in accordance with all environmental laws and regulations. Any and all transite AC pipe removed shall be paid under one bid item included in the contract regardless of size. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

W SERVICE LONG SIDE This bid item description shall apply to all service line installations of every size bid up to and including 2 inch inside diameter, except those service bid items defined as "Special". This item includes the specified piping material, main tap, tapping saddle (if required), and corporation stop materials, coupling for connecting the new piping to the surviving existing piping, encasement of 2 inches or less internal diameter (if required by plan or specification), labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for service installations where the ends of the service connection are on opposite sides of the public roadway and the service line crosses the centerline of the public roadway as shown on the plans. The length of the service line is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for special bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE SHORT SIDE This bid item description shall apply to all service line installations of every size up to and including 2 inch internal diameter, except those service bid items defined as "Special". This item includes installation of the specified piping material of the size specified on plans, encasement of 2 inches or less internal diameter (if required by plan or specification), main tap, tapping saddle (if required), corporation stop, coupling for connecting the new piping to the surviving existing piping, labor, equipment, excavation, backfill, testing, disinfection, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and

ready for use. This bid item is to pay for service installations where both ends of the service connection are on the same side of the public roadway, or when an existing service crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service line is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the service crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. This pay item does not include installation or relocation of meters. Meters will be paid separately. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W SERVICE RELOCATE This item is for the relocation of an existing water service line where a meter is not involved, and where an existing service line can easily be adjusted by excavating alongside and moving the line horizontally and/or vertically a short distance without cutting the service line to avoid conflicts with road construction. This item shall include excavation, labor, equipment, bedding, and backfill to relocate the line in accordance with the plans and specifications complete and ready for use. Payment under this item shall be for each location requiring relocation. Payment shall be made under this item regardless of service size or relocation length. No separate pay items will be established for size or length variation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE ABANDONMENT This item is to be used to pay for abandonment of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, and etc. Payment under this item shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to water construction, (i.e., abandonment of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in place and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground water structures such as meter vaults, fire pits, pump stations, tanks, and etc. Payment under this item shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to water construction, (i.e., removal of standard water meters up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TAPPING SLEVE AND VALVE SIZE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready for use in accordance with

the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Size 1 = All live tapped main sizes up to and including 8 inches

Size 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W TIE-IN This bid description shall be used for all main tie-in bid items of every size except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, disinfection, testing and backfill required to make the water main tie-in as shown on the plans, and in accordance with the specifications complete and ready for use. Pipe for tie-ins shall be paid under separate bid items. This item shall be paid EACH (EA) when complete.

W VALVE This description shall apply to all valves of every size required in the plans and specifications except those bid items defined as "Special". Payment under this description is to be for gate or butterfly valves being installed with new main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specification), restoration, testing, disinfection, and etc., required to install the specified valve at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, valves shall be restrained. Valve restraint shall be considered incidental to the valve and adjoining pipe. This description does not apply to cut-in valves. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE ANCHOR EXISTING This bid item is intended to pay for installation of restraint hardware on an existing valve where no restraint exists to hold the valve in place to facilitate tie-ins and other procedures where restraint is prudent. This work shall be performed in accordance with water specifications and plans. This bid item shall include all labor equipment, excavation, materials and backfill to complete restraint of the designated valve, regardless of size, at the location shown on the plans, complete and ready for use. Materials to be provided may include, but is not limited to, retainer glands, lugs, threaded rod, concrete, reinforcing steel or any other material needed to complete the restraint. Should the associated valve box require removal to complete the restraint, the contractor shall reinstall the existing valve box, the cost of which shall be considered incidental to this bid item. No separate bid items are being provided for size variations. All sizes shall be paid under one bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE BOX ADJUST Includes all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, and etc., to adjust the top of the box to finished grade complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE CUT-IN This bid description is for new cut-in valve installations of all sizes where installation is accomplished by cutting out a section of existing main. This item shall include cutting the existing pipe, supplying the specified valve, couplings or sleeves, valve box, concrete pad around valve box (when required in specifications or plans), labor, equipment, and materials to install the valve at the locations shown on the plans, or as directed by the engineer, complete and ready for use. Any pipe required for installation shall be cut from that pipe removed or supplied new by the contractor. No separate payment will be made for pipe required for cut-in valve installation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

W VALVE VAULT This item is for payment for installation of an underground structure for housing of specific valve(s) as required by the plans and specifications. This item shall include all labor, equipment, excavation, concrete, manhole castings or doors, the specified valve(s), all piping, and fitting materials associated with installing a functioning valve vault in accordance with the plans, standard drawing, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

Standard Sanitary Sewer Bid Item Descriptions

S BYPASS PUMPING This item shall include all labor, equipment, and materials needed to complete a bypass pumping and/or hauling operation for diversion of sewage during sanitary sewer construction. Examples of such operations when bypass pumping and/or hauling may be necessary is during force main tie-ins, manhole invert reconstruction, insertion of new manholes into existing mains, or other similar construction. There may be more than one bypass pumping/hauling operation on a project. This item shall be paid for each separate bypass pumping/hauling operation occurrence as called out on the plans or directed by the engineer and actually performed. There will be no separate bid items defined for length, duration, or volume of sewage pumped or hauled in each occurrence. If a bypass pumping/hauling operation is called out on the plans; but, conditions are such that the bypass pumping/hauling operation is not needed or utilized, no payment will be made under this item. The contractor shall draw his own conclusions as to what labor, equipment, and materials may be needed for each bypass pumping/hauling occurrence. The contractor should be prepared to handle the maximum volume of the sewer being bypassed, even during a storm event. This item shall not be paid separately, but shall be considered incidental, when bypass pumping and/or hauling is needed during cast-in-place-pipe (CIPP) and/or point repair operations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S CIPP LATERAL SERVICE INVESTIGATION This item shall include all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements and perform the identification, assessment and pre-measurement of all existing and abandoned laterals for the placement of Cured-In-Place-Pipe lining. This item shall be in payment for all lateral service investigation for all sewer segments to be lined as a part of this contract. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be LUMP SUM (LS).

S CIPP LATERAL REINSTATEMENT This item is to pay for installing a Cured-In-Place-Pipe liner in service laterals and service/mainline connections to stabilize structural defects and construction inadequacies. This bid item shall include all labor, equipment, materials and incidentals necessary to perform the service lateral reinstatement in accordance with the plans and specifications. Work under this item shall include bypass pumping, sewer flow control, pre-installation cleaning, sealing connections to existing sewer main, pre- and post- construction CCTV inspection and final testing of the CIPP system. This item shall also include the "top hat" required by the specifications. All CIPP lateral reinstatements shall be paid under this item regardless of the size or length of reinstatement. No separate bid items of varying sizes or length of CIPP lateral reinstatement will be provided in the contract. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each CIPP lateral reinstatement complete and ready for use.

S CIPP LINER This bid Item is to pay for rehabilitation of existing sanitary sewers using the Cured-In-Place-Pipe method. This bid item description applies to all CIPP sizes included in the contract.

All CIPP Liner items of all varying sizes shall include all labor, materials, customer notification, testing, necessary permits, ingress and egress procedures, bypass pumping, pre-construction video, sediment and root removal, dewatering, traffic control, erosion and sediment control, excavation pits, removal and replacement of manhole frames and covers as necessary to facilitate the lining work, sealing at manholes and service connections, clearing and grubbing, pipeline cleaning, re-cleaning and video inspection as many times as necessary, debris collection and disposal, root removal, pre- and post-construction video inspection, all digital inspection footage, final report preparation and approval, the cost of potable water from the Owner, required compliance tests, site restoration, site cleanup, sealing of liner at manholes, acceptance testing and all other rehabilitation work and incidentals not included under other pay items necessary to complete the rehabilitation per the plans and specifications. There will be no separate payment for acceptance testing of the lined pipe; but shall be considered incidental to this item. Pay under this item shall be by each size bid in the contract. Pay measurement shall be from center of manhole to center of manhole. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S CIPP PROTRUDING LATERAL REMOVAL This item includes all equipment, materials, labor and incidentals necessary to enter the sewer in compliance with all safety/confined space requirements, remove a sufficient amount of the protruding tap to insure a proper and safe Cured-In-Place-Pipe lining insertion and perform pre-installation CCTV. This bid item shall include bypass pumping when required. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. Payment for this item shall be EACH (EA) for each protruding lateral removed.

S CONCRETE PIPE ANCHOR This item shall be constructed on the sewer pipe at the locations shown on the plans in accordance with sanitary sewer specifications and standard drawings. Payment for concrete anchors will be made at the contract unit price each in place complete and ready for use. Each concrete anchor of sewer pipe or force main shall be paid under one bid item per contract regardless of the sizes of carrier pipe being anchored in the contract. No separate bid items will be established for size variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of force main or gravity sewer under streets, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT CONCRETE Includes all labor, equipment, excavation, concrete, reinforcing

steel, backfill, restoration, and etc., to construct the concrete encasement of the sewer or force main as shown on the plans, and in accordance with the specifications and standard drawings. Payment under this item shall be in addition to the carrier pipe as paid under separate bid items. Carrier pipe is not included in this bid item. Any and all concrete encasement shall be paid under one bid item included in the contract regardless of the size of the carrier pipe or the volume of concrete or steel reinforcement as specified in the plans and specifications. No separate bid items will be established for size variations. Measurement of pay quantity shall be from end of concrete to end of concrete. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF) when complete.

S ENCASEMENT STEEL BORED This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to bore and install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The sizes of encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S ENCASEMENT STEEL OPEN CUT This item shall include the steel encasement pipe size as specified on the plans and in the specifications, casing spacers, end seals, labor, and equipment to open cut install the encasement in accordance with the plans and specifications, complete and ready for use. The size shall be the measured internal diameter of the encasement pipe. The size encasement to be paid under the size ranges specified in the bid items shall be as follows:

- Range 1 = All encasement sizes greater than 2 inches to and including 6 inches
- Range 2 = All encasement sizes greater than 6 inches to and including 10 inches
- Range 3 = All encasement sizes greater than 10 inches to and including 14 inches
- Range 4 = All encasement sizes greater than 14 inches to and including 18 inches
- Range 5 = All encasement sizes greater than 18 inches to and including 24 inches
- Range 6 = All encasement sizes greater than 24 inches

(Encasement sizes of 2 inches internal diameter or less shall not be paid separately; but, shall be considered incidental to the carrier pipe.) Payment under this bid item shall not include the carrier pipe. Carrier pipe shall be paid under a separate bid item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN This description shall apply to all PVC and ductile iron and polyethylene/plastic pipe bid items of every size and type, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, bends, tees, reducers, plugs, and caps), tracing wire with test boxes (if required by specification), polyethylene wrap (when specified), labor, equipment, excavation, bedding, restoration, testing, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. No additional payment will be made for rock excavation. This bid item includes material and placement of flowable fill under existing and proposed pavement, and wherever else specified on the plans or in the specifications. This item shall also include pipe anchors on polyethylene pipe runs as shown on the plans or required by the specifications to prevent the creep or contraction of the pipe. Measurement of quantities under this item shall be through fittings, encasements, and directional bores (only when a separate carrier pipe is specified within the directional bore pipe). No separate payment will be made under pipe items when the directional bore pipe is the carrier pipe. Measurements shall be further defined to be to the center of tie-in where new pipe contacts existing pipe at the center of connecting fittings, to the outside face of vault or structure walls, or to the point of main termination at dead ends. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN AIR RLS/VAC VLV This bid item description shall apply to all force main air release/vacuum valve installations of every size except those defined as "Special". This item shall include the air release/vacuum valve, main to valve connecting line or piping, manhole/vault/structure, access casting or doors, tapping the main, labor, equipment, excavation, proper backfill and restoration required to install the air release/vacuum valve at the location shown on the plans or as directed in accordance with the specifications and standard drawings complete and ready for use. All air release/vacuum valves on a project shall be paid under one bid item regardless of size. No separate pay items will be established for size variations. Only in the case of the uniqueness of a particular air release/vacuum valve would a separate bid item be established. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN DIRECTIONAL BORE Payment under this item is made whenever the plans or specifications specifically show directional boring is to be utilized in order to minimize the impact of open cut for the installation of sewer or force main under streets, buildings, creeks, and etc. Payment under this item shall include the specified bore pipe, labor, and equipment. No separate payment shall be made for bore pipe installed in the bore whether used as a carrier pipe or an encasement of a separate carrier pipe. This item shall also include pipe anchors at each end of the bore when specified to prevent the creep or contraction of the bore pipe. Carrier pipe installed within a bore pipe shall be paid separately under pipe items. Payment under this item shall not be size specific and no separate bid items will be established for size variations. The bore pipe sizes to be included under this item shall be as shown on the plans and/or in the specifications. Any and all directional bores in each contract shall be paid under one directional bore bid item included in the contract regardless of size. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S FORCE MAIN POINT RELOCATE This item is intended for payment for horizontal and/or vertical relocation of a short length of an existing main at the locations shown on the plans. This bid item is to be used to relocate an existing force main at point locations such as to clear a conflict at a

proposed drainage structure, pipe or any other similar short relocation situation, and where the existing pipe material is to be reused. The contractor shall provide any additional pipe or fitting material needed to complete the work as shown on the plans and specifications. The materials provided shall be of the same type and specification as those that exist. Substitution of alternative materials shall be approved by the engineer in advance on a case by case basis. New polyethylene wrap is to be provided (if wrap exists or is specified in the specifications to be used). If it is necessary that the pipe be disassembled for relay, payment under this item shall also include replacement of joint gaskets as needed. Bedding and backfill shall be provided and performed the same as with any other pipe installation as detailed in the plans and specifications. Payment under this item shall be for each location requiring an existing main to be relocated horizontally or vertically regardless of pipe size or relocation length. No separate pay items will be established for pipe size variations or relocation segment length variations. Force Main Relocate shall not be paid on a linear feet basis; but shall be paid EACH (EA) at each location when complete and placed in service. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced.

S FORCE MAIN TAP SLEVE/VALVE RANGE 1 OR 2 This item shall include the specified tapping sleeve, valve, valve box, concrete pad around valve box (when required in specifications or plans), labor, and equipment to install the specified tapping sleeve and valve, complete and ready for use in accordance with the plans and specifications. The size shall be the measured internal diameter of the live pipe to be tapped. The size tapping sleeve and valve to be paid under sizes 1 or 2 shall be as follows:

Range 1 = All live tapped main sizes up to and including 8 inches

Range 2 = All live tapped main sizes greater than 8 inches

Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN TIE-IN This bid description shall be used for all force main tie-in bid items of every size except those defined as "Special". This item includes all labor, equipment, excavation, fittings, sleeves, reducers, couplings, blocking, anchoring, restoration, testing and backfill required to make the force main tie-in as shown on the plans and in accordance with the specifications complete and ready for use. This bid item shall include purge and sanitary disposal of any sewage from any abandoned segments of force main. Pipe for tie-ins shall be paid under separate bid items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN VALVE This description shall apply to all force main valves of every size required in the plans and specifications, except those bid items defined as "Special". Payment under this description is to be for gate or butterfly force main valves being installed with new force main. This item includes the valve as specified in the plans and specifications, polyethylene wrap (if required by specification), labor, equipment, excavation, anchoring (if any), valve box and valve stem extensions, backfill, concrete pad around valve box (if required by specification), restoration, testing, and etc., required to install the specified valve at the location shown on the plans in accordance with the specifications and standard drawings complete and ready for use. If required on plans and/or proposed adjoining DIP is restrained, force main valves shall be restrained. Force main valve restraint shall be considered incidental to the force main valve and adjoining pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be

referenced. This item shall be paid EACH (EA) when complete.

S FORCE MAIN VALVE BOX ADJUST Includes all labor, equipment, valve box and valve stem extensions (if required), excavation, backfill, concrete pad around valve box (when specified in specifications or plans), restoration, and etc., to adjust the top of the force main valve box to finished grade complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL CLEANOUT This item shall be for payment for installation of a cleanout in a service lateral line. This item shall include furnishing and installation of a tee, vertical pipe of whatever length required, and threaded cap. The cleanout shall extend from the lateral to final grade elevation. The size of the cleanout shall be equivalent to the size of the lateral. The cleanout materials shall meet the same specification as those for the lateral. The cleanout shall be installed at the locations shown on the plans or as directed by the engineer. Only one pay item shall be established for cleanout installation. No separate pay items shall be established for size or height variances. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL LOCATE This bid item is to pay for all labor, equipment, and materials needed in locating an existing sanitary sewer service lateral for tie-in of the lateral to new mainline sewers and/or for the relocation of a lateral. This bid item shall be inclusive of any and all methods and efforts required to locate the lateral for tie-in or relocation of the lateral. Locating methods to be included under this items shall include, but are not limited to, those efforts employing the use of video cameras from within an existing sanitary sewer main or lateral, electronic locating beacons and/or tracers inserted into the sanitary sewer main or lateral, careful excavation as a separate operation from mainline sewer or lateral excavation, the use of dyes to trace the flow of a lateral, or any combination of methods required to accurately locate the lateral. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA).

S LATERAL LONG SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch internal diameter, except those lateral bid items defined as "Special". This item includes the specified piping material, main tap, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for service lateral installations where the ends of the lateral connection are on opposite sides of the public roadway. The new lateral must cross the centerline of the public roadway to qualify for payment as a long side lateral. The length of the service lateral is not to be specified. Payment under this item shall not be restricted by a minimum or maximum length. The contractor shall draw his own conclusions as to the length of piping that may be needed. Payment under this item shall include boring, jacking, or excavating across the public roadway for placement. Placement of a service lateral across a private residential or commercial entrance alone shall not be reason to make payment under this item. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LATERAL SHORT SIDE This bid item description shall apply to all service lateral installations of every size up to and including 6 inch, except those lateral bid items defined as “Special”. This item includes the specified piping material, main tap tee, bends, clean outs, labor, equipment, excavation, backfill, testing, and restoration, at the locations shown on the plans or as directed, in accordance with the specifications and standard drawings, complete and ready for use. This bid item is to pay for lateral installations where both ends of the lateral connection are on the same side of the public roadway, or when an existing lateral crossing a public roadway will remain and is being extended, reconnected, or relocated with all work on one side of the public roadway centerline as shown on the plans. The length of the service lateral is not to be specified and shall not be restricted to any minimum or maximum length. Payment shall be made under this item even if the lateral crosses a private residential or commercial entrance; but, not a public roadway. Private or commercial entrances shall not be considered a public roadway in defining payment under this item. The contractor shall draw his own conclusions as to the length of piping that may be needed. No additional payment will be made for rock excavation or for bedding required in rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S LINE MARKER This item is for payment for furnishing and installing a sewer utility line marker as specified by the utility owner specifications and plans. A line marker may consist of a post or monument of whatever materials specified and shall include markings and/or signage on same as specified by plans or specifications. This item shall include all labor, equipment, and materials needed for complete installation of the marker. This item shall be paid EACH (EA) when complete.

S MANHOLE Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup in accordance with the specifications and standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company’s Specifications. If the Company does not have specifications, KYTC’s Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ABANDON/REMOVE Payment under this item is for the partial removal and/or filling of any sanitary sewer manhole regardless of size or depth that no longer serves any purpose. Payment shall be made regardless of whether the manhole is or is not in conflict with other work. Any manhole requiring partial removal, but not total removal, in order to clear a conflict with other work shall be paid under this item. All manholes partially removed shall be removed to a point at least one foot below final grade, one foot below roadway subgrade, or one foot clear of any other underground infrastructure, whichever is lowest. If partial removal of an abandoned manhole is elected by the contractor, the remaining manhole structure shall be refilled with flowable fill. Payment for disposal of a sanitary sewer manhole will be made under this item only. Please refer to the Utility Company’s

Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE ADJUST TO GRADE Payment under this item is for the adjustment of sanitary sewer casting elevation on all sizes of existing sanitary manholes. This work shall be performed in accordance with the sanitary sewer specifications. Payment shall be made under this bid item regardless of the amount of adjustment necessary to a sanitary sewer manhole casting or diameter of the manhole. Work under this pay item may be as simple as placing a bed of mortar under a casting; but, shall also be inclusive of installation of adjusting rings, and /or addition, removal, or replacement of barrel sections. The existing casting is to be reused unless a new casting is specified on the plans. New casting, when specified, shall be paid as a separate bid item. Anchoring of the casting shall be incidental to this item. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE CASTING STANDARD Payment under this bid items is for furnishing of a new standard traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE CASTING WATERTIGHT Payment under this bid item is for furnishing of a new watertight traffic baring casting for sanitary manholes meeting the requirements of the sanitary sewer specifications and standard drawings. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when installed.

S MANHOLE RECONSTRUCT INVERT This bid item is to pay for all labor, equipment, and material for rework of the manhole bench to redirect or eliminate flow, such as when the flow of a pipe or pipes are being removed or redirected. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in elimination or redirect of flow. This item shall also include providing and placement of a rubber seal or boot as required by utility specification, standard drawing or plan. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. No payment shall be made under this bid when MANHOLE TAP EXISTING, or MANHOLE TAP EXISTING ADD DROP are being paid at the same location, as this type of work is included in those items. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each core opening added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the

specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE TAP EXISTING ADD DROP This bid item is to pay for all labor, equipment, and material for coring one opening in an existing manhole base, addition of a rubber seal as specified, addition of a vertical drop pipe to the outside of the manhole, placement of reinforcing steel and concrete to encase vertical pipe, and rework of the manhole bench to direct the additional pipe flow. The bid item shall be paid for each drop added to a single manhole. This bid item shall also include any rework of the existing manhole bench due to the elimination of other existing pipes and flow. This work will be as specified in the plans, specifications, or directed by the engineer. This work may consist of, but is not limited to, removal of concrete and/or placement of concrete in the addition, elimination, or redirect of flow. The contractor shall draw his own conclusions as to the effort and scope of work needed to comply with the specifications, standard drawings, and plans. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH DROP Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with drop. Payment for drop manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Drop manholes shall include concrete base, barrel sections, drop materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH LINING Payment under this item is for the installation of new 4 foot interior diameter sanitary sewer manhole with corrosion resistant lining. Payment for manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Manholes shall include concrete base, barrel sections, cone section or slab top, steps, lining, excavation, backfilling, air testing, restoration, and cleanup in accordance with the standard drawings. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). All materials, except casting, shall be new and unused. An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S MANHOLE WITH TRAP Payment under this item is for the installation of a new manhole with

trap. Payment for trap manholes will be made at the contract unit price each in place complete and ready for use at the locations shown on plans in accordance with specifications and standard drawings. Trap manholes shall include concrete base, manhole structure and trap materials, cone section or slab top, steps, excavation, backfilling, air testing, restoration, and cleanup. All materials, except casting, shall be new and unused. Payment shall be made under this item regardless of whether the base is to be precast or cast-in-place (doghouse). An existing casting from an existing abandoned or removed manhole is to be reused and shall be considered incidental to this item. When a new casting is specified, or an existing casting is unavailable, it shall be paid as a separate bid item. Anchoring of casting, new or used, shall be considered incidental to this bid item. No additional compensation will be paid for manhole height variations. No additional payment will be made for rock excavation. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S PIPE This description shall apply to all PVC and ductile iron gravity sewer pipe bid items of every size and type 8 inches internal diameter and larger, except those bid items defined as "Special". This item includes the pipe specified by the plans and specifications, all fittings (including, but not limited to, tap tees and couplings for joining to existing similar or dissimilar pipes), polyethylene wrap (if required by specification), labor, equipment, excavation, bedding, restoration, pressure or vacuum testing, temporary testing materials, video inspection, backfill, and etc., required to install the specified new pipe and new fittings at the locations shown on the plans, or as directed, in accordance with the specifications and standard drawings complete and ready for use. This bid item shall include material and placement of flowable fill under existing and proposed pavement, and wherever specified on the plans or in the specifications. No additional payment will be made for rock excavation. Measurement of quantities under this item shall be through fittings and encasements to a point at the outside face of manhole barrels, or to the point of main termination at dead ends or lamp holes. Carrier pipe placed within an encasement shall be paid under this item and shall include casing spacers and end seals. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PIPE POINT REPAIR This item is to be used to pay for repair of short lengths of existing sanitary sewer pipe that, through prior video inspection or other means, are known to have pre-existing failure. Pipe Point Repair may be needed in preparation for installation of cured-in-place-pipe (CIPP) lining or other instances where failure is known and repair is prudent. The size of pipe shall not be defined in separate bid items. All diameter sizes of point repair shall be paid under this one item. The materials to be used to make the repair shall be as defined on the plans or in the specifications. This bid item shall include all excavation, pipe materials, joining materials to connect old and new pipe, bedding, and backfill to complete the repair at the locations shown on the plans or as directed by the engineer, complete and ready for use. This bid item shall include bypass pumping when required. Measurement shall be from contact point to contact point of old and new pipe. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid LINEAR FEET (LF).

S PUMP STATION This item is for payment for installation of sanitary pump stations including above or below ground structure for housing of the pumps. This item shall include all pumps, piping, fittings, valves, electrical components, building materials, concrete, any other appurtenances, labor, equipment, excavation, and backfill, to complete the pump station installation as required by the plans, standard drawings, and specifications, complete and ready for use. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall

be referenced. This item shall be paid LUMP SUM (LS) for each when complete.

S STRUCTURE ABANDON This item is to be used to pay for abandonment of larger above or below ground sewer structures such as air release/vacuum valve vaults, pump stations, tanks, etc. Payment under this time shall not be limited to size or scope; however structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to sewer construction, (i.e., abandonment of standard air release/vacuum valves up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted fill or flowable fill for abandonment of the structure in place and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

S STRUCTURE REMOVAL This item is to be used to pay for removal of larger above or below ground sewer structures such as air release/vacuum valve vaults, pump stations, tanks, and etc. Payment under this time shall not be limited to size or scope; however, structures with connecting pipes of 2 inches or less shall not be paid under this item; but, shall be considered incidental to sewer construction, (i.e., removal of standard air release/vacuum valves and their structure up to and including 2 inches would not be paid under this item). Payment under this item shall include all labor, equipment, and compacted backfill for removal of the structure and restoration complete. No separate bid items will be established for size or structure variations. Please refer to the Utility Company's Specifications. If the Company does not have specifications, KYTC's Specifications shall be referenced. This item shall be paid EACH (EA) when complete.

SPECIAL CONDITIONS

1. PROJECT CONSTRUCTION OBSERVATION

The construction observation services shall be provided by the ENGINEER. The Observer shall be on the project as much as possible; however, due to meetings, etc. there may be times when he is not with the crew. Therefore, the CONTRACTOR shall not backfill any main lines and/or appurtenances or other installed infrastructure until the Observer has seen and accepted the work for payment.

Any work backfilled without the Observer's knowledge and consent shall not be allowed for payment to the CONTRACTOR and shall be uncovered for inspection at no additional cost to the OWNER.

2. UNCLASSIFIED EXCAVATION

All excavation is unclassified. No extra payment will be allowed for rock excavation of any kind. It is the CONTRACTOR's responsibility to make any additional investigations to determine depth, location or competency of rock within the project area.

3. CONFLICTING SECTIONS/STATEMENTS IN CONTRACT DOCUMENTS

a. General

It shall be noted that if any provisions in these Contract Documents is in conflict and/or is inconsistent with any other section or provisions, then the most stringent shall apply per the interpretation of the ENGINEER and/or OWNER.

b. Hold Period on Bids

All bids shall remain valid for a period of 90 days. Any reference to a lesser period of time is incorrect.

4. CONTRACTOR'S INSURANCE CERTIFICATE

The following wording for the cancellation clause on the insurance certificate is required:

"Should any of the above described policies be canceled before the expiration date thereof, the issuing company will mail 15 days written notice to the certificate holder named to the left."

5. FEDERAL/STATE/LOCAL REGULATIONS

The CONTRACTOR shall abide by all local and state laws or ordinances to the extent that such requirements do not conflict with federal laws or regulations. Compliance with any and all applicable laws and/or regulations is strictly the CONTRACTOR's responsibility.

6. SILTATION AND SOIL EROSION

The CONTRACTOR shall make every effort during construction to minimize siltation and soil erosion and comply with all local and state codes that pertain to this project. Any applicable permits shall be the CONTRACTOR's responsibility to obtain, at no additional cost to the OWNER.

7. PRIORITY OF CONSTRUCTION

The CONTRACTOR shall proceed from the beginning point of a line and start installing main and appurtenances and placing sections of line in service, where possible, and continuing to the end of that line.

Jumping or skipping around laying scattered sections of main shall not be permitted. When a road is completed, cleanup must commence immediately. The OWNER will hold payment on sections due to skipping; the intent is to proceed toward the end of the line.

8. ROUGH CLEAN UP

- a. Rough clean up shall be performed on a daily basis concurring with the daily rate of production for pay items, amounts and/or quantities listed in the schedule of values and/or Bid Schedule.
- b. The CONTRACTOR is to provide sufficient labor and equipment for clean up as to not impede production schedules.
- c. Rough clean up shall be defined as follows:
 1. All open ditches shall be backfilled on a daily basis.
 2. Debris (rocks, roots, timber, etc.) shall be removed from the job site on a daily basis. This material may be stockpiled with the consent of the OWNER and the ENGINEER in designated locations. Any such locations shall be arranged by the CONTRACTOR with the written consent of the property owner.

3. Remaining backfill material (soil) shall be windrowed back on top of the ditch line, compacted and leveled giving consideration for settlement.
- d. At the direction of the OWNER, or their appointed representatives, the CONTRACTOR shall readdress areas if identified as not being adequate in the initial rough clean up process.

9. QUANTITIES OF MATERIALS

The quantities of materials listed on the Bid Schedule are estimates only and are subject to changes in the field. The CONTRACTOR shall verify these quantities before ordering materials. In the event of an under run or over run of materials, the CONTRACTOR shall be responsible for any shipping and/or restocking fees.

10. SHOP DRAWING REVIEW

Throughout these Specifications, all reference to Shop Drawing review by the ENGINEER, should read fourteen (14) days, not 30 days or any other number of days more or less than 14.

11. CONSTRUCTION PERIOD – ADVERSE WEATHER DAYS

The CONTRACTOR is to note that there are adverse weather days included within the allotted construction time. The number of days per month already included in the Construction Period is listed below. Adverse weather conditions should be expected to be equal to or less than those listed below per month, as these would be considered normal conditions and not subject to additional time for construction due to adverse weather. Any documented adverse weather conditions beyond the amount listed below may be considered, at the request of the CONTRACTOR, for additional construction time. Adverse weather for the purposes of this Contract shall be defined as days in which precipitation exceeds 0.1” and/or the average temperature is below 32 degrees F during normal working (daylight) hours. Days not meeting these criteria during daylight hours shall not be considered as adverse weather days.

If the CONTRACTOR’s normal operations for the project do not include weekend and holiday work, then those days may not be counted as adverse weather days, regardless of actual recorded weather conditions. Adverse weather conditions on weekends and holidays may be considered by the OWNER for a contract time adjustment provided that the CONTRACTOR has provided a minimum of four (4) working days’ notice to the RO, ENGINEER and OWNER of his intention to work on a weekend and/or holiday.

Any day that the CONTRACTOR mobilizes forces to the project site and the RO is required by his normal duties to be on site for two (2) hours or longer shall not be considered for a claim of adverse weather. Any day that the CONTRACTOR chooses not to work due to weather or site conditions, but fails to notify the RO in a timely manner, shall not be considered for a claim of adverse weather.

The CONTRACTOR is required to report any days missed due to adverse weather conditions in the previous month at the monthly Progress Meetings. No days other than those reported by the CONTRACTOR at monthly Progress Meetings shall be considered for adverse weather time extensions.

The contract documents establish the documentation requirements for adverse weather days claims by the CONTRACTOR. Any claims not in accordance with those requirements shall not be considered.

The CONTRACTOR and the RPO shall both record weather conditions at the project site on a daily basis and shall reconcile their notes and records at least weekly.

The normal adverse weather days are calculated using data from the National Oceanic and Atmospheric Administration and are as follows:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
15	12	9	8	8	7	8	7	6	5	7	11

Days in which the CONTRACTOR does not attempt to work, and which are not satisfactorily documented as an adverse weather day, will not be considered in any request for construction time extension by the CONTRACTOR.

12. EXISTING & PROPOSED ROADWAY/DRIVEWAY CROSSINGS

Asphalt or concrete driveways shall be open cut.

Under no circumstances shall any State roads be disturbed, crossed or cut without prior written approval from the Kentucky Transportation Cabinet.

Any gravel driveway or roadway crossed shall be backfilled entirely with crushed stone and compacted accordingly to prevent future settlement. The CONTRACTOR will be responsible for making any requested repairs to any driveway or roadway crossed on the Project throughout the one-year warranty period, to the satisfaction of the property owner and the OWNER.

The CONTRACTOR shall backfill with flowable fill, to the proposed grade, when installing steel casing pipe by open cut that will be within the proposed construction limits. Flowable fill shall be incidental to steel casing by open cut and shall be included in the unit price bid for steel encasement pipe by open cut installation.

13. ITEMS DELETED, REDUCED AND/OR INCREASED

The OWNER reserves the right to delete any bid item or, in the case of unit price items, delete, reduce or increase the quantities involved. Bidders shall be aware of this possibility and shall base their bids accordingly.

14. PROPERTY OWNER RELEASE

The OWNER reserves the right to require the CONTRACTOR to obtain a written, signed Release from any or all property owners impacted by the Work prior to final payment to the CONTRACTOR. The Release form is included in Appendix 1 and may be required from all property owners impacted by the project, regardless of whether work was performed on right-of-way or on easements.

15. VIDEOTAPING

The CONTRACTOR shall not mobilize any equipment to the site prior to presenting the ENGINEER and OWNER with fully functional DVD copies of the project area conditions prior to construction activities, per the technical specifications. Failure of the CONTRACTOR to provide a satisfactory video shall not prevent the construction time to start and shall not be cause for a time extension to the CONTRACTOR.

Any construction work prior to receipt and verification of the functionality of the video by the OWNER and/or ENGINEER shall not be eligible for payment to the CONTRACTOR.

Any work added to the Project via Change Order, or other means, shall also be videotaped per the specifications prior to mobilization by the CONTRACTOR to that area. Fully functional DVD copies of the pre-construction video of added areas shall be provided to the ENGINEER and OWNER prior to mobilization.

16. BUILDER'S RISK INSURANCE

The CONTRACTOR shall secure "All Risk" type Builder's Risk Insurance for Work to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the Contract Price totaled in the awarded Bid. The policy shall cover not less than the losses due to fire, flood, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the

Contract Time, and until the Work is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER and the OWNER. If the Builder's Risk Insurance secured by the CONTRACTOR excludes coverage for flood damage, the CONTRACTOR shall secure the maximum amount of Federal Flood Insurance available for the Contract.

Builder's Risk Insurance shall include coverage of any stored materials for which the CONTRACTOR intends to request payment. Documentation of Builder's Risk Insurance shall be provided by the CONTRACTOR along with the Certificate of Insurance required prior to Award.

17. APPROVED EQUAL CLAUSE

- a. Any reference to a specific equipment brand name within the Specifications or Drawings shall be deemed to include "or approved equal".
- b. Delete any statement such as "No other manufacturers are acceptable" within the Specifications.

18. DISPOSAL OF TRENCH WATER

The CONTRACTOR shall not dispose of any trench water by allowing it to enter any sanitary sewer system without first obtaining written permission to do so from the owner of said system. Documentation of written permission must be provided to the ENGINEER and OWNER.

19. PERMIT COMPLIANCE

Compliance with any and all permits related to the Project is strictly the responsibility of the CONTRACTOR. This includes, but is not limited to, Transportation Cabinet Encroachment Permits, Railroad Permits, Division of Water Permits and/or NPDES Permits that may apply to the Work. Copies of Permits previously obtained for the Project are either included in applicable Appendices of the Contract Documents, or are available from the OWNER and/or ENGINEER for review upon request.

20. PREVAILING WAGE RATES

Prevailing wage rates may apply to this Project and are included in the Contract Documents, if so. It is strictly the CONTRACTOR's responsibility to comply with Wage Rates requirements and to provide written documentation of compliance upon request. The ENGINEER is not responsible for monitoring compliance by the CONTRACTOR.

21. GENERAL

- a. Reasonable care shall be taken by the CONTRACTOR during construction to avoid damage to existing vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees that receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing. Property owners shall be notified by the CONTRACTOR prior to any alteration to existing trees and/or landscaping on their property.
- b. CONTRACTOR shall implement Best Management Practices as described in the Kentucky Best Management Practices for Construction Activities prepared by Division of Conservation and Division of Water, Natural Resources and Environmental Protection Cabinet.

22. RECORD DRAWINGS

The CONTRACTOR shall maintain a set of plans with current mark ups showing any changes made in the field to the location, orientation, etc. of any element of the project during construction. This set of plans shall be provided to the ENGINEER at the conclusion of the project and shall be used by the ENGINEER in developing the most accurate set of construction Record Drawings possible for the OWNER. Upon request by the CONTRACTOR, the set of plans shall be returned.

23. CASING PIPE SURVEY REQUIREMENTS

The CONTRACTOR shall provide a licensed land surveyor in the State of Kentucky to determine the horizontal and vertical location of all casing pipes under State and Federal highways on projects involving Kentucky Transportation Cabinet Utility Relocations. This information shall be provided to the ENGINEER along with the CONTRACTOR's field mark ups of the drawings to assist in the development of accurate Record Drawings.

24. PIPELINE TESTING

CONTRACTOR shall pressure test sections of water line or force main no greater than 3,500 feet in length. Gravity sewers shall be tested in sections between manholes.

Water main shall be tested in accordance with the pressures listed in the table below and the contents of the technical specifications.

<u>Pipe Classification</u>	<u>Test Pressure</u>
PVC SDR-21, Cl. 200	185 psi
PVC SDR-17, Cl. 250	215 psi
PVC C-900 DR14, Cl. 200	250 psi
Ductile Iron, Cl. 350	350 psi

25. FIELD STAKING

The ENGINEER will be responsible for the initial staking of the water line location as shown on the plans. Any restaking will be the responsibility of the CONTRACTOR.

26. CCTV

In order to ensure that all Sanitary Sewer Laterals are relocated, the CONTRACTOR shall video all sanitary sewer lines in order to ascertain the locations of all lateral connections prior to performing any other sanitary sewer work. Videos will be submitted to both the ENGINEER and OWNER for review. CONTRACTOR shall take measures to ensure good video quality. Any line that needs to be CCTV'd again due to low visibility, high flows, or any other obstruction will be at the CONTRACTOR's cost.

SECTION 01010
Summary of Work

PART 1 GENERAL

1.1 DESCRIPTION

- A. The Work to be performed under this Contract shall consist of furnishing all labor, materials, tools, equipment and incidentals and performing all Work required to construct complete in place and ready to operate:

Water Line Relocation:

1. Relocate approximately 1,590 L.F. of 8" water line
2. 11 – Mainline Connections
3. 2 – Creek Crossings utilizing Horizontal Directional Drilling
4. 2 – Fire Hydrants

Gravity Sewer Relocation:

1. Relocate 760 L.F. of 8" gravity sewer line
2. 7 – 4' Dia. Manholes
3. 1 – Abandon Existing Manholes
4. 3 – Connections to existing gravity sewer

1.2 PROJECT LOCATION

The equipment and materials to be furnished will be installed at the locations shown on the Drawings.

1.3 QUANTITIES

The OWNER reserves the right to alter the quantities of work to be performed or to extend or shorten the improvements at any time when and as found necessary, and the CONTRACTOR shall perform the work as altered, increased or decreased. Payment for such increased or decreased quantity will be made in accordance with the Instructions to Bidders. No allowance will be made for any change in anticipated profits nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

END OF SECTION

SECTION 01016
Occupancy

PART 1 GENERAL

1.1 PARTIAL OCCUPANCY BY OWNER

Whenever, in the opinion of the ENGINEER, any section or portion of the Work or any structure is in suitable condition, it may be put into use upon the written order of the ENGINEER and such usage will not be held in any way as an acceptance of said Work or structure, or any part thereof, or as a waiver of any of the provisions of these Specifications and the Contract. Pending final completion and acceptance of the Work, all necessary repairs and replacements, due to defective materials or workmanship or operations of the CONTRACTOR, for any section of the Work so put into use shall be performed by the CONTRACTOR at CONTRACTOR'S own expense.

END OF SECTION

SECTION 01020

Videotaping

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

This Section covers the provision for the CONTRACTOR to provide all labor, materials, equipment, services and perform all operations necessary to furnish to the OWNER and ENGINEER a complete, color audio-video record of the surface features within the proposed construction's zone of influence. This record shall include, but not be limited to, all audio-video tape storage cases, tape logs and indexes. The purpose of this coverage shall be to accurately document the pre-construction condition of these features within the project area.

PART 2 MATERIALS

2.1 GENERAL

The total audio-video recording system and the procedures employed in its use shall be such as to produce a finished product that will fulfill the technical requirements of the project, as well as those more subjective requirements of high quality audio and video production. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls, or any other form of picture imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion. Recording speed shall be compatible for playback in SP mode.

The recording system shall utilize EIA standard video and NTSC compatible color (American TV Standard), and shall utilize digital technology.

2.2 VIDEO TAPE

The video tape furnished to the OWNER and ENGINEER shall be high energy extended still frame capable, color, DVD. The video shall be new and thus shall not have been used for any previous recording. The CONTRACTOR shall provide the ENGINEER a copy of the DVD.

2.3 VIDEO TAPE PLAYBACK COMPATIBILITY

The recorded video tapes shall be compatible for playback with any American TV Standard DVD player, or VHS player if approved.

01020 - 2
Videotaping

PART 3 EXECUTION

3.1 VIDEO CONTENT

A. General

The recording shall contain coverage of all surface features located within the construction's zone of influence. The construction's zone of influence shall be defined (1) as the area within the permanent and temporary easements, and areas adjacent to these easements which may be affected by routine construction operations; and (2) by the direction of the ENGINEER and/or OWNER. The surface features within the construction's zone of influence shall include, but not be limited to, all roadways, pavements, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, buildings, landscaping, trees, shrubbery and fences. Of particular concern shall be the existence or non-existence of any faults, fractures or defects prior to construction.

B. Streets

Where construction will extend in or adjacent to a street, the full width of the construction's zone of influence including the street right-of-way shall be recorded, unless otherwise authorized by the ENGINEER. The term street shall be understood to mean a highway, road, street, avenue, boulevard, lane, circle, alley, etc.

C. Easements

Where construction will extend through easement areas, the permanent and temporary easements and all other adjacent areas lying within the construction's zone of influence shall be recorded. The term easement shall be understood to mean all areas not defined as streets.

3.2 ALPHA-NUMERIC DISPLAYS

All video recordings must, by electronic means, display continuously and simultaneously generated, transparent, alpha-numeric information to include the following:

A. Video Tape Index, Number, Project Title and General Project Location

Each video tape shall begin with a single, multi-line, alpha-numeric display indicating the video tape index number, project title and general location of the project.

B. Time and Date

During the entire duration of the recordings, the time (in hours, minutes and seconds separated by colons) and date (consisting of month, day and year separated by slashes) of recording must appear in the upper left-hand corner of the picture.

C. Name and Side of Street or Easement

During the entire duration of the recordings, the name and side of the street or easement being recorded must appear across the bottom of the picture.

D. Camera Position

During the entire duration of the recordings, the position of the camera, accurately referenced and displayed in terms of the construction's engineering stationing, shall be displayed (in standard stationing format) in the lower left-hand corner of the picture. Where no stationing appears on the engineering plans, an appropriate stationing system, acceptable to the ENGINEER and OWNER, shall be established and utilized.

3.3 AUDIO CONTENT

Accompanying the video recording of each video tape shall be corresponding and simultaneously recorded audio. This audio recording, exclusively containing the commentary of the camera operator, shall assist in the maintenance of viewer orientation and in any needed identification, differentiation, clarification or objective description of the structures being shown in the video portion of the recording. The audio recording also shall be free from any conversations between the camera operator and the other production technicians.

3.4 VIDEO TAPE INDEXING

A. Video Tape Identification

All video tapes and their vinyl storage cases shall be properly identified by video tape index number, project title, and general project location.

B. Video Tape Logs

Displayed on the storage case of each video tape shall be a log of that video tape's contents. That log shall describe the various segments of coverage contained on that video tape in terms of the names and sides of the streets or easements, coverage beginning and endpoints, directions of coverage and video tape player counter numbers.

01020 - 4
Videotaping

C. Cumulative Index

A cumulative alphabetical index correlating the various segments of coverage to their corresponding video tapes shall be supplied to the OWNER and ENGINEER.

3.5 PROCEDURAL REQUIREMENTS

A. General

The following procedures shall be implemented in the production of pre-construction color audio-video tape documentation. Above all, the documentation shall be executed in a conscientious and professional manner to assure the end product's maximum usefulness to the OWNER and ENGINEER.

B. Time of Execution

- a. Recording Schedule - The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site.
- b. Visibility - All recording shall be performed during times of good visibility. No recording shall be done during periods of significant precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recordings, and to produce bright, sharp video recordings of those subjects.

C. Coverage Continuity

The recording shall commence at Station 0+00 of each line, and run continuously uninterrupted to its end. If hand held walking is necessary, it shall be done to insure a complete uninterrupted record.

D. Coverage Rates

The average rate of travel during a particular segment of coverage (e.g. coverage of one side of a street) shall be indirectly proportional to the number, size and value of the surface features within that construction area's zone of influence. The following table, which characterizes typical areas and sets the maximum average rates of travel in those areas, shall be used to establish approximate limits on actual average rates of travel:

	<u>Area</u>	<u>Typically Characterized By</u>	<u>Avg. Rate Max.</u>
a.	High Density (e.g. developed subdivisions)	Hard Surface Streets, Curbs, Drives & Sidewalks; 50 Ft. Lots; Very Few Empty Lots	30 Ft./Min.
b.	Med. Density (e.g. partially developed)	Gravel Roads, Hard & Soft Surface Drives, No sidewalks, Culverts & Headwalls, 100 Ft. Lots; Few Empty Lots	60 Ft./Min.
c.	Low Density (e.g. suburban or woods, occasional houses, fringe)	Gravel Roads, Small Fields	90 Ft./Min.
d.	Extra Low Density (e.g. rural)	Gravel Roads, Large Fields, Sparse Number of Houses	120 Ft./Min.

3.6 CAMERA POSITIONING AND STABILITY

- a. Camera Height and Stability - When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall not be more than 12 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause an unsteady picture.
- b. Camera Control - Camera pan, tilt, zoom-in and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during video tape playback. In addition, all other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chroma, white balance and electrical focus, shall be properly controlled or adjusted to maximize recorded picture quality.
- c. Viewer Orientation Techniques - The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of all visible house and building addresses shall be utilized. In easements where the proposed construction location will not be readily apparent to the video tape viewer, highly visible yellow flags shall be placed in such fashion as to clearly indicate the proposed center line of construction.

3.7 ENTERING PRIVATE PROPERTY

When planning on entering private property, the CONTRACTOR shall notify the

01020 - 6

Videotaping

owner of such property to obtain his/her permission to do so. Should the owner of the property refuse to give his permission for said entry, the CONTRACTOR shall immediately notify the OWNER and ENGINEER, who will obtain the right to enter the property through the legal powers vested in the OWNER as a public entity. The CONTRACTOR is advised that he shall not enter any private property before permission is granted to do so, or the OWNER has notified the CONTRACTOR that he has gained the legal right to do so. The CONTRACTOR shall be liable for entry made other than as stated above.

PART 4 OWNER'S OPTIONS

4.1 Documentation Additions and Omission

The OWNER and/or ENGINEER shall have the authority to designate what areas may be added to or omitted from the video tape documentation.

4.2 Specification Deviations

Any deviation from the above specifications must have the written approval of the OWNER.

PART 5 QUALIFICATIONS

5.1 The video tape documentation shall be performed by a responsible firm known to be skilled and regularly engaged in the business of pre-construction color audio-video tape documentation. The firm shall furnish such information as the OWNER and ENGINEER deem necessary to determine the ability of that firm to perform the work in accordance with the contract specifications, including a list of former clients served in the last five (5) years.

PART 6 COORDINATION

6.1 The CONTRACTOR shall coordinate the video tape recording with the construction schedule so that those portions of the construction that will be completed first will be recorded first. Construction shall not begin in an area until acceptable video tapes have been delivered to the OWNER and ENGINEER.

PART 7 VIDEO TAPE DELIVERY

7.1 The CONTRACTOR shall deliver the video tape recordings to the OWNER and ENGINEER upon their completion as a whole, or upon request by the OWNER or ENGINEER, deliver specific video tape recordings to the OWNER and ENGINEER upon their completion. Upon delivery and acceptance of the video tapes, transfer of ownership of those video tapes shall be made to the OWNER.

PART 8 UNACCEPTABLE DOCUMENTATION

- 8.1** The OWNER or ENGINEER shall have the authority to reject all or any portion of the video tape documentation not conforming to specifications. Those rejected portions shall be redone by the CONTRACTOR at no additional cost to the OWNER.

END OF SECTION

SECTION 01041
Project Coordination

PART 1 GENERAL

1.1 SCOPE

- A. Management of the Project shall be through the use of a logical method of construction planning, inspection, scheduling and cost value documentation.
- B. The work under this Section includes all surface and subsurface condition inspections and coordination by the CONTRACTOR necessary for the proper and complete performance of the Work.
- C. This Section applies to the work of every division and every section of these Specifications.

1.2 SITE CONDITIONS

- A. Inspection
 - 1. Prior to performing any work under a section, the CONTRACTOR shall carefully inspect the installed work of other trades and verify that all such work is complete to the point where the work under that section may properly commence.
 - 2. The CONTRACTOR shall verify that all materials, equipment and products to be installed under a section may be installed in strict accordance with the original design and pertinent reviewed shop drawings.
- B. Discrepancies
 - 1. In the event of discrepancy, immediately notify the ENGINEER.
 - 2. Do not proceed with construction in areas of discrepancy until all such discrepancies have been fully resolved.

1.3 COORDINATION

- A. Carefully coordinate work with all other trades and subcontractors to insure proper and adequate interface of the work of other trades and subcontractors with the work of every section of these Specifications.

01041-2

Project Coordination

- B. The CONTRACTOR shall coordinate operations with all utility companies in or adjacent to the area of CONTRACTOR'S work. The CONTRACTOR shall require said utilities to identify in the field their property and provide drawings as necessary to locate them.

END OF SECTION

SECTION 01055
Construction Staking

PART 1 GENERAL

1.1 SCOPE

- A. Construction staking shall include all the surveying work required to layout the Work and control the location of the finished construction. The full responsibility for holding to alignment and grade shall rest upon the CONTRACTOR. All work under this Contract shall be constructed in accordance with the lines and grades on the Drawings or as given by the ENGINEER or OWNER.
- B. The OWNER will provide one bench mark and a baseline adjacent to the work site. The CONTRACTOR shall be responsible for setting offsets from these points and all other layout, staking and all other surveying required for the Work.
- C. The CONTRACTOR shall safeguard all points, stakes, grade marks, bench marks and monuments established on the Work, shall bear the cost of re-establishing same if disturbed and shall assume the entire expense of rectifying work improperly constructed due to failure to maintain and protect such established points, stakes and marks.
- D. Measurement of quantities for payment purposes which are different from Drawing dimensions is included in the Work.

1.2 QUALITY ASSURANCE

- A. The CONTRACTOR shall furnish documentation prepared by a surveyor currently registered in the State of Kentucky confirming that staking is being done to the lines and grades shown in the Contract Documents. This requires that the CONTRACTOR hire, at the CONTRACTOR's own expense, a currently registered surveyor, acceptable to the OWNER, to provide ongoing confirmation of construction staking.
- B. Any deviations from the Drawings shall be confirmed by the ENGINEER prior to construction.
- C. Written certification of parking lot sub-base grades by a licensed surveyor, is required prior to paving installation.
- D. Written certification of structure base grade and structure corner locations is required prior to beginning construction of the structure.
- E. Quantities for payments measured under this Contract shall be certified by the approved currently registered surveyor.

01055-2
Construction Staking

PART 2 PRODUCTS

2.1 EQUIPMENT

The CONTRACTOR shall furnish and use surveying equipment and supplies maintained in good working order.

PART 3 EXECUTION

3.1 FINAL GRADES

"Blue Tops" shall be installed to control final paving subgrade. Any variance with plan grades shall be identified by the surveyor and confirmed by the ENGINEER prior to paving base installation.

3.2 UTILITIES

- A. Staking of utilities shall be done in accordance with generally accepted practice for the type of utility involved and as specified elsewhere in these Specifications.
- B. Storm drain lines and drainage structure bases shall be correctly located to yield the drainage structure top locations and orientations shown on the Drawings.

END OF SECTION

SECTION 01340

Shop Drawings, Product Data and Samples

PART 1 GENERAL

1.1 SCOPE

- A. The work under this Section includes submittal to the ENGINEER of shop drawings, product data and samples required by the various sections of these Specifications.
- B. Submittal Contents: The submittal contents required are specified in each section.
- C. The following forms shall be used for all major components of the work:
 - 1. Typical Maintenance Summary Form
 - 2. Notice of Start of Manufacturing
 - 3. Notice of Shipment of Equipment
 - 4. Notice of Schedule Impact

The forms are included at the back of this section.

- D. Definitions: Submittals are categorized as follows:
 - 1. Shop Drawings
 - a. Shop drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.
 - b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawing copies without appropriate final "Action" markings by the

01340-2

Shop Drawings, Product Data and Samples

ENGINEER to be used in connection with the Work.

- c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, specification section, schedule or room numbers shown on the Contract Drawings.
- d. Minimum assembly drawings sheet size shall be 24 x 36-inches.
- e. Minimum detail sheet size shall be 8-1/2 x 11-inches.
- f. Minimum Scale:
 - (1) Assembly Drawings Sheet, Scale: 1-inch = 30 feet.
 - (2) Detail Sheet, Scale: 1/4-inch = 1 foot.

2. Product Data

- a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.
- b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked and special coordination requirements.

3. Samples

- a. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.
- b. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the ENGINEER'S selection is required. Prepare samples to match the ENGINEER'S sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and

01340-3

Shop Drawings, Product Data and Samples

"kind" by the ENGINEER. ENGINEER will note "test" samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the CONTRACTOR.

4. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.2 SPECIFIC CATEGORY REQUIREMENTS

- A. General: Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal. Submittals shall contain:
 1. The date of submittal and the dates of any previous submittals.
 2. The Project title.
 3. Numerical submittal numbers, starting with 1.0, 2.0, etc. Revisions to be numbered 1.1, 1.2, etc.
 4. The Names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 5. Identification of the product, with the Specification section number, permanent equipment tag numbers and applicable Drawing No.
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the Work or materials.
 8. Applicable standards, such as ASTM or Federal Specification numbers.
 9. Notification to the ENGINEER in writing, at time of submissions, of any deviations on the submittals from requirements of the Contract Documents.

01340-4

Shop Drawings, Product Data and Samples

10. Identification of revisions on resubmittals.
11. An 8 x 3-inch blank space for CONTRACTOR and ENGINEER stamps.
12. CONTRACTOR'S stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.
13. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which review is requested crossed out.

1.3 ROUTING OF SUBMITTALS

- A. Submittals and routine correspondence shall be routed as follows:
 1. Supplier to CONTRACTOR (through representative if applicable)
 2. CONTRACTOR to ENGINEER
 3. ENGINEER to CONTRACTOR and OWNER
 4. CONTRACTOR to Supplier

1.4 ADDRESS FOR COMMUNICATIONS

Engineer: Brandon G. Baxter, P.E.
 HMB Professional Engineers, Inc.
 3 HMB Circle
 Frankfort, KY 40601
 OFFICE (502) 695-9800
 FAX (502) 695-9810

PART 2 PRODUCTS

2.1 SHOP DRAWINGS

- A. Unless otherwise specifically directed by the ENGINEER, make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.
- B. Submit all shop assembly drawings, larger than 11 x 17-inches, in the form of one

01340-5

Shop Drawings, Product Data and Samples

reproducible transparency with two opaque prints or bluelines.

- C. Submit all shop drawings, 11 x 17-inches and smaller, in the form of six opaque prints or bluelines.
- D. One reproducible for all submittals larger than 11 x 17-inches and no more than three prints of other submittals will be returned to the CONTRACTOR.

2.2 MANUFACTURER'S LITERATURE

- A. Where content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the ENGINEER'S review.
- B. Submit the number of copies which are required to be returned (not to exceed three) plus three copies which will be retained by the ENGINEER.

2.3 SAMPLES

- A. Samples shall illustrate materials, equipment or workmanship and established standards by which completed work is judged.
- B. Unless otherwise specifically directed by the ENGINEER, all samples shall be of the precise article proposed to be furnished.
- C. Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the ENGINEER.

2.4 COLORS

- A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the ENGINEER for review and selection.
- B. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

PART 3 EXECUTION

01340-6

Shop Drawings, Product Data and Samples

3.1 CONTRACTOR'S COORDINATION OF SUBMITTALS

- A. Prior to submittal for the ENGINEER'S review, the CONTRACTOR shall use all means necessary to fully coordinate all material, including the following procedures:
1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.
 2. Coordinate as required with all trades and all public agencies involved.
 3. Submit a written statement of review and compliance with the requirements of all applicable technical Specifications as well as the requirements of this Section.
 4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, **all deviations** from the Contract Documents.
- B. Each and every copy of the shop drawings and data shall bear the CONTRACTOR'S stamp showing that they have been so checked. Shop drawings submitted to the ENGINEER without the CONTRACTOR'S stamp will be returned to the CONTRACTOR for conformance with this requirement.
- C. The Owner may backcharge the CONTRACTOR for costs associated with having to review a particular shop drawing, product data or sample more than two times to receive a "No Exceptions Taken" mark.
- D. Grouping of Submittals
1. Unless otherwise specifically permitted by the ENGINEER, make all submittals in groups containing all associated items.
 2. No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the CONTRACTOR'S responsibility to assemble the shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to the ENGINEER along with CONTRACTOR'S comments as to compliance, non-compliance or features requiring special attention.
- E. Schedule of Submittals: Within 30 days of Contract award and prior to any shop drawing submittal, the CONTRACTOR shall submit a schedule showing the estimated date of submittal and the desired approval date for each shop drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the CONTRACTOR'S responsibility and some time allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted

01340-7

Shop Drawings, Product Data and Samples

concurrently.

3.2 TIMING OF SUBMITTALS

- A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.
- B. In scheduling, allow sufficient time for the ENGINEER'S review following the receipt of the submittal.

3.3 REVIEWED SHOP DRAWINGS

A. ENGINEER Review

- 1. Allow a minimum of 14 days for the ENGINEER'S initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The ENGINEER will advise the CONTRACTOR promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of two weeks for reprocessing each submittal. Advise the ENGINEER on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be foreshortened.
- 2. Acceptable submittals will be marked "No Exceptions Taken". A minimum of three copies will be retained by the ENGINEER for ENGINEER'S and the OWNER'S use and the remaining copies will be returned to the CONTRACTOR.
- 3. Submittals requiring minor corrections before the product is acceptable will be marked "Make Corrections Noted". The CONTRACTOR may order, fabricate and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked "No Exceptions Taken" prior to installation or use of products.
- 4. Submittals marked "Amend and Resubmit" must be revised to reflect required changes and the initial review procedure repeated.
- 5. The "Rejected - See Remarks" notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the CONTRACTOR shall repeat the initial review procedure utilizing acceptable products.
- 6. Only two copies of items marked "Amend and Resubmit" and "Rejected - See Remarks" will be reviewed and marked. One copy will be retained by the ENGINEER and the other copy with all remaining unmarked copies will be

01340-8

Shop Drawings, Product Data and Samples

returned to the CONTRACTOR for resubmittal.

- B. No work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" notation. The CONTRACTOR shall maintain at the job site a complete set of shop drawings bearing the ENGINEER'S stamp.
- C. Substitutions: In the event the CONTRACTOR obtains the ENGINEER'S approval for the use of products other than those which are listed first in the Contract Documents, the CONTRACTOR shall, at the CONTRACTOR'S own expense and using methods approved by the ENGINEER, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.
- D. Use of the "No Exceptions Taken" notation on shop drawings or other submittals is general and shall not relieve the CONTRACTOR of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The ENGINEER'S review shall not relieve the CONTRACTOR of responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The CONTRACTOR is responsible for dimensions to be confirmed and correlated at the job site. The CONTRACTOR is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.4 RESUBMISSION REQUIREMENTS

- A. Shop Drawings
 - 1. Revise initial drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.
 - 2. Indicate on drawings all changes which have been made other than those requested by the ENGINEER.
- B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

END OF SECTION TEXT

FORMS FOLLOW

01340-9

Shop Drawings, Product Data and Samples

TYPICAL MAINTENANCE SUMMARY FORM

1. EQUIPMENT ITEM
2. MANUFACTURER
3. EQUIPMENT IDENTIFICATION NUMBER(S)
4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS)
5. NAMEPLATE DATA (hp, voltage, speed, etc.)
6. MANUFACTURER'S LOCAL REPRESENTATIVE

Name _____ Telephone No.
Address _____

7. MAINTENANCE REQUIREMENTS

Maintenance Operation	Frequency	Lubricant (If Applicable)	Comments
List briefly each maintenance operation req'd and refer to specific information in mfr's std. maintenance manual, if applicable.	List req'd frequency of each maintenance operation.	Refer by symbol to lubricant req'd.	

8. LUBRICANT LIST

Reference Symbol	Shell	Std. Oil	Gulf	Arco	Or Equal
List symbols used in Item 7. above.	List equivalent lubricants, as distributed by each Manufacturer for the specific use recommended.				

9. SPARE PARTS. Include your recommendations regarding what spare part, if any, should be kept on the job.

01340-10

Shop Drawings, Product Data and Samples

NOTICE OF START OF MANUFACTURING

DATE:

TO:

ATTENTION:

RE: Equipment Contract No.

Name of Contract:

Type of Equipment:

Quantity:

Scheduled Completion of Assembly:

Scheduled Date of Shipment:

NOTE: Delay to the above schedule which will affect shipment date by 5 days or more must be reported on the Schedule Impact form.

By: _____ Date:

Title:

ACTUAL MANUFACTURING AGENT:

Name:

Address:

City: _____ State: _____ Zip: _____ Telephone:

01340-11

Shop Drawings, Product Data and Samples

NOTICE OF SHIPMENT OF EQUIPMENT

DATE:

TO:

ATTENTION:

RE: Equipment Contract No.

Name of Contract:

Type of Equipment Being Shipped:

QTY. DESCRIPTION (Include Equipment Numbers) SERIALS (If Applicable):

ATTACH BILL(S) OF LADING FOR ALL SHIPMENTS TO THIS FORM

Date of Shipment:

By:

Title:

ACTUAL MANUFACTURING AGENT:

Name:

Address:

City: _____ State: _____ Zip: _____ Telephone:

01340-12

Shop Drawings, Product Data and Samples

NOTICE OF SCHEDULE IMPACT

(Send this form to the Owner and Engineer if delay is over 5 days)

DATE:

TO:

ATTENTION:

RE: Equipment Contract No.

Name of Contract:

Type of Equipment Affected:

Nature of Delay:

New Estimated Date for Final Shop Drawings:

New Estimated Date for Start of Manufacture:

New Estimated Date for Finish Manufacture:

New Estimated Date for Shipment:

New Estimated Date for Arrival at Jobsite:

By:

Title:

ACTUAL MANUFACTURING AGENT:

Name:

Address:

City: _____ State: _____ Zip: _____ Telephone:

SECTION 01562

Dust Control

PART 1 GENERAL

1.1 SCOPE

Limit blowing dust caused by construction operations by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the OWNER. As a minimum, this may require the use of a water wagon twice a day to suppress dusty conditions.

1.2 PROTECTION OF ADJACENT PROPERTY

- A. The Bidders shall visit the site and note the buildings, landscaping, roads, parking areas and other facilities near the Work site that may be damaged by their operations. The CONTRACTOR shall make adequate provision to fully protect the surrounding area and will be held fully responsible for all damages resulting from CONTRACTOR'S operations.
- B. Protect all existing facilities (indoors or out) from damage by dust, fumes, spray or spills (indoors or out). Protect motors, bearings, electrical gear, instrumentation and building or other surfaces from dirt, dust, welding fumes, paint spray, spills or droppings causing wear, corrosion, malfunction, failure or defacement by enclosure, sprinkling or other dust palliatives, masking and covering, exhausting or containment.

END OF SECTION

SECTION 02010
Subsurface Conditions

PART 1 GENERAL

1.1 DESCRIPTION

- A. Investigation: The CONTRACTOR shall visit the site and become acquainted with site conditions. Prior to bidding, prospective CONTRACTORS may make their own site and subsurface investigations to satisfy themselves with site and subsurface conditions. The CONTRACTOR shall be responsible for obtaining rights of ingress and egress to private property for site and subsurface investigation and shall assume all responsibility for any damage to property caused as a result of the CONTRACTOR's investigation.

- B. No geotechnical investigation has been performed on this site. The CONTRACTOR is responsible for making their own determination of subsurface conditions.

END OF SECTION

SECTION 02140
Dewatering

PART 1 GENERAL

1.1 SCOPE

- A. This Section shall apply to all excavation, except trench excavation.
- B. Construct all permanent work in areas free from water. Design, construct and maintain all dikes, levees, cofferdams and diversion and drainage channels as necessary to maintain the areas free from water and to protect the areas to be occupied by permanent work from water damage. Remove temporary works after they have served their purpose.
- C. The CONTRACTOR shall be responsible for the stability of all temporary and permanent slopes, grades, foundations, materials and structures during the course of the Contract. Repair and replace all slopes, grades, foundations, materials and structures damaged by water, both surface and subsurface, to the lines, grades and conditions existing prior to the damage, at no additional cost to the OWNER.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CARE OF WATER

- A. Except where the excavated materials are designated as materials for permanent work, material from required excavation may be used for dikes, levees, cofferdams and other temporary backfill.
- B. CONTRACTOR shall furnish, install, maintain and operate necessary pumping and other equipment for dewatering the various parts of the Work and for maintaining the foundation and other parts free from water as required for constructing each part of the work.
- C. CONTRACTOR shall install all drainage ditches, sumps and pumps to control excessive seepage on excavated slopes, to drain isolated zones with perched water tables and to drain impervious surfaces at final excavation elevation.

02140-2

Dewatering

- D. CONTRACTOR shall dewater by means which will insure dry excavations, preserve final lines and grades, and not disturb or displace adjacent soil.
- E. All pumping and drainage shall be done with no damage to property or structures and without interference with the rights of the public, owners of private property, pedestrians, vehicular traffic or the work of other contractors, and in accordance with all pertinent laws, ordinances and regulations.
- F. Do not overload or obstruct existing drainage facilities.
- G. After they have served their purpose, CONTRACTOR shall remove all temporary protective work at a satisfactory time and in a satisfactory manner. All diversion channels and other temporary excavations in areas where the compacted fill or other structures will be constructed shall be cleaned out, backfilled and processed under the same Specifications as those governing the compacted fill.
- H. When the temporary works will not adversely affect any item of permanent work or the planned usage of the Project, the CONTRACTOR may be permitted to leave such temporary works in place. In such instances, breaching of dikes, levees and cofferdams may be required. CONTRACTOR shall obtain written permission from OWNER/ENGINEER and property owner (if applicable) to abandon temporary works in place.

3.2 DEWATERING

- A. By the use of well points, pumps, tile drains or other approved methods, the CONTRACTOR shall prevent the accumulation of water in excavated areas. Should water accumulate, it shall be promptly removed.
- B. Excavations shall be continuously dewatered to maintain a ground water level no higher than three to four feet below the lowest point in the excavation. Dewatering shall be accomplished well enough in advance of excavation to ensure that groundwater is already lowered prior to completing the final excavation to finish subgrade.
- C. All destabilized subgrade conditions caused by inadequate or untimely dewatering operations shall be undercut and backfilled with suitable backfill material at no additional cost to the OWNER.
- D. Piezometric observation wells are required to monitor the ground water level to insure proper dewatering prior to excavation below the static water table. The

02140-3

Dewatering

number of wells required will vary depending on the size and depth of structures.
Wells shall be the responsibility and cost of the CONTRACTOR.

END OF SECTION

SECTION 02200

Earthwork

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of earthwork is indicated on the Drawings.
 - 1. Backfilling of trenches is included as part of this work.
- B. Definition: "Excavation" consists of removal of all material encountered to subgrade elevations indicated or required and subsequent disposal of materials removed.

1.2 QUALITY ASSURANCE

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of any governing authorities having jurisdiction.
- B. Testing and Inspection Services: Employ, at CONTRACTOR'S expense, testing laboratory acceptable to the OWNER to perform soil testing and inspection service for quality control testing during earthwork operations.

1.3 SUBMITTALS

- A. Test Reports-Excavating

Submit following reports directly to the ENGINEER from the testing services, with copy to CONTRACTOR and OWNER:

- 1. Test reports on borrow material.

1.4 JOB CONDITIONS

- A. Site Information

- 1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that OWNER will not be responsible for interpretation or conclusions drawn therefrom by CONTRACTOR. Data are made available for convenience of CONTRACTOR.

02200-2
Earthwork

2. Additional test borings and other exploratory operations may be made by CONTRACTOR at no cost to OWNER. Any additional testing or verification of site/subsurface conditions shall be by the CONTRACTOR and at no additional cost to the OWNER or ENGINEER.

- B. Existing Utilities: Prior to commencement of work, the CONTRACTOR shall locate existing underground utilities in areas of the work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

- C. Use of Explosives: The CONTRACTOR (or any of his subcontractors) shall not bring explosives onto site or use in work without prior written permission from the OWNER. All activities involving explosives shall be in compliance with the rules and regulations of the Kentucky Department of Mines and Minerals, Division of Explosives and Blasting and any other Governing Authorities having Jurisdiction. CONTRACTOR is solely responsible for handling, storage, and use of explosive materials when their use is permitted.

- D. Protection of Persons and Property
 1. Barricade open excavations occurring as part of this work and post with warning lights.
 - a. Operate warning lights as recommended by authorities having jurisdiction.
 - b. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
 - c. There shall be no pipeline ditches left open overnight. The CONTRACTOR is solely responsible for project site safety.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Definitions
 1. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, GC, SC, ML and CL.
 2. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups MH, CH, OL, OH and PT.

3. Subbase Material: Naturally and artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.
4. Drainage fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
5. Backfill and fill materials: Satisfactory soil materials free of debris, waste, frozen materials, vegetable, and other deleterious matter.
6. Engineered fill: (Refer to this Section, paragraph 3.7 A.1.)

PART 3 EXECUTION

3.1 STRIPPING AND TOPSOILING

- A. Before excavation and grading is commenced for buildings, structures or other work described hereinafter (except pipelines and manholes), the material meeting the topsoil specification of these Specifications shall be removed from the areas affected and stock-piled. When final grading is accomplished, particularly around buildings and other structures, the topsoil shall be spread evenly over the excavated area. Rough grading above excavated areas shall have been carried approximately 6 inches below finished grade (except solid rock, where it shall be carried 12 inches below finished grade) and brought back up to grade with topsoil as set out herein.

3.2 EXCAVATION

- A. Excavation includes excavation to subgrade elevations indicated including excavation of earth, rock, bricks, wood, cinders, and other debris. All excavation of materials in the lump sum portion of the work will be unclassified and no additional payment will be made regardless of type material encountered.
- B. Excavation Classifications (Not Used)
- C. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of ENGINEER. Unauthorized excavation, as well as remedial work directed by ENGINEER, shall be at CONTRACTOR'S expense.
- D. Additional Excavation

02200-4
Earthwork

1. When excavation has reached required subgrade elevations, notify the ENGINEER who will make an inspection of conditions.
 - a. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed in writing by the ENGINEER.
 - b. Removal of unsuitable material and its replacement as directed will be paid on basis of Contract conditions relative to changes in work.

- E. Stability of Excavations
 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
 2. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

- F. Shoring and Bracing
 1. The CONTRACTOR shall provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.
 - a. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
 - b. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
 - c. Provide permanent steel sheet piling or pressure creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops as required and leave permanently in place. In the event the OWNER directs the CONTRACTOR to leave shoring materials in place, the OWNER will reimburse the CONTRACTOR for the reasonable cost of leaving such materials in place.

- G. Dewatering: Refer to this Division, Section 02140 for dewatering requirements.

- H. Material Storage

02200-5
Earthwork

1. Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.
 - a. Dispose of excess soil material and waste materials as herein specified.

- I. Excavation for Structures
 1. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
 2. In excavating for footings and foundations, take care not to disturb bottom of excavation. All loose material shall be removed from the excavation just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

- J. Excavation for Pavements
 1. Cut surface under pavements to comply with cross-sections, elevations, and grades as shown.

- K. Trench Excavation
 1. The CONTRACTOR shall include in his unit price bid all trenching and backfill necessary for installation of all pipelines as planned and specified. Trenching shall include clearing and grubbing of all trash, weeds, briars, trees, stumps encountered in trenching. The CONTRACTOR shall dispose of such material at no extra cost to the OWNER. Shrubs shall be removed, maintained and replanted in the same or adjacent location as the ENGINEER or owner may direct. Trenching also includes such items as railroad, street, road, sidewalk, pipe, and small creek crossings; cutting, moving or repairing damage to fences, posts, gates, and other surface structures regardless of whether shown on the Drawings.
 2. All existing facilities shall be protected from danger or damage while pipelines are being constructed and backfilled, and from damage due to settlement of the backfill.
 3. In the event any existing structure is damaged, repair and restoration shall be made at once and backfill shall not be replaced until this is done. Restoration and repair shall be such that the damaged structure is equal to or better than its original condition and can serve its purpose as

02200-6
Earthwork

completely as before. All such restoration and repair shall be done without extra cost to the OWNER.

4. Trenches must be dug to lines and grades shown on the Drawings. Hand trenching may be required in areas where machine trenching would result in undue damage to existing structures and facilities.
5. Excavation shall be open trenches, except where otherwise shown on the Drawings, for tunneling, boring, or jacking under structures, railroad, sidewalks and roads.
6. Sheeting and shoring of trenches shall be provided at the expense of the CONTRACTOR where necessary to protect life, property and the new or existing structures from damage or to maintain maximum permissible trench widths at top of pipe. All necessary materials, including, but not limited to, sheeting, sheet piling, trench jacks, braces, shores and stringers, shall be used to hold trench walls. Sheeting and shoring may be withdrawn as the trenches are being backfilled, after backfill has been tamped over top of the pipe at least 18 inches. If removal before backfill is completed to surface endangers adjacent structures, such as buildings, pipelines, street paving, and sidewalks, then the sheeting and shoring shall be left in place until such danger has passed, and then pulled if practical. Voids caused by sheeting withdrawal shall be backfilled and tamped. If not withdrawn, sheeting shall be cut off at least 18 inches below final surface grade, so there is no obstruction at the ground level. In the event the OWNER directs the CONTRACTOR to leave shoring materials in place, the OWNER will reimburse the CONTRACTOR for the reasonable cost of leaving such materials in place.
7. Where subgrade of trench has insufficient stability to support the pipeline and hold it to its original grade, the ENGINEER may order stabilization by various means. Exclusive of dewatering normally required for construction, and instability caused by neglect of the CONTRACTOR, the necessary stabilization shall be paid for at unit prices established in the Contract. In the event no particular bid price is applicable, then the payment for stabilization will be negotiated.
8. The location of the pipelines and their appurtenances as shown are those intended for the final construction. However, conditions may present themselves before construction on any line is started that would indicate desirable changes in location. The OWNER reserves the right to make reasonable changes in line and structure locations without extra cost, except as may be determined by extra units of materials and construction actually involved. The OWNER is under no obligation to locate pipelines, so they may be excavated by machine.

9. Tunneling may be used at the CONTRACTOR'S option as an alternate to open-cut trenching, at no extra cost to the OWNER. The annular space between plates and excavation shall be either permanently placed pea gravel or sand, pumped grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the ENGINEER. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in linear plates at various levels and in sufficient number of effectively grout to void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void. In tunneling under buildings, the CONTRACTOR will be responsible for all damage resulting from his operations and methods of excavation and backfilling. Boring may also be used at the CONTRACTOR'S option as an alternate to tunneling or open-cut trenching, at no extra cost to the OWNER.

10. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.
 - a. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.
 - b. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of crushed stone or gravel prior to installation of pipe.
 - c. For pipes or conduit 3 inches or less in nominal size and for flat-bottomed, multiple-duct conduit units, excavate to subbase depth indicated or, if not indicated, then to 4 inches below bottom of work to be supported.
 - d. For pipes or conduit 6 inches or larger in nominal size, tanks, and other mechanical/electrical work indicated to receive subbase, excavate to subbase depth indicated or, if not otherwise indicated, to 6 inches below bottom of work to be supported.
 - e. Except as otherwise indicated, excavation for exterior water-bearing piping (water, steam, condensate, drainage) so top of piping is no less than 3 feet 0 inches below finish grade.

02200-8
Earthwork

- f. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- g. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.
- h. Concrete is specified in Division 3.
- i. Do not backfill trenches until tests and inspections have been made and backfilling authorized by the ENGINEER or OWNER. Use care in backfilling to avoid damage or displacement of pipe systems.
- j. For piping or conduit less than 3 feet 0 inches below surface of roadways, furnish and install steel casing pipe, minimum wall thickness of 1/4", of sufficient diameter to carry the pipe or conduit and spacers to at least two feet beyond outside edge of pavement or as required by Governing Authorities (typically not less than Ditchline to Ditchline).

L. Cold Weather Protection

- 1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F (1°C).

3.3 COMPACTION

A. General

- 1. Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.
 - a. Percentage of maximum density requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698 and not less than the following percentages of relative density, determined in accordance ASTM D4253 and D4254, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).

- b. Structures, building slabs and steps, pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.
- c. Lawn or unpaved areas: Compact top 6 inches of subgrade and each layer of backfill or fill material at 90 percent standard proctor density.
- d. Walkways: Compact top 6 inches of subgrade and each layer of backfill or fill material at 95 percent standard proctor density.

B. Moisture Control

- 1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface or subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.
- 2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
- 3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

3.4 BACKFILL AND FILL

A. General

- 1. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below. Backfill material shall be no larger than the specified depth of the layer to be placed and/or compacted.
 - a. In excavations, use satisfactory excavated or borrow material.
 - b. Under grassed areas, use satisfactory excavated or borrow material.
 - c. Under walks and pavements, use subbase material, or satisfactory excavated or borrow material, or combination of both.
 - d. Under steps, use subbase material.

02200-10
Earthwork

- e. Under building slabs, use subbase material for a minimum depth of 6 inches.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
1. Acceptance of construction below finish grade including, where applicable, damproofing, waterproofing, and perimeter insulation.
 2. Inspection, testing, approval, and recording locations of underground utilities.
 3. Removal of concrete formwork.
 4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
 5. Removal of trash and debris.
 6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- C. Ground Surface Preparation
1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
 2. When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture condition to optimum moisture content, and compact to required depth and percentage of maximum density.
- D. Placement and Compaction
1. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Crushed stone shall be installed in accordance with Section 02255.

- a. Before compaction, add moisture or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- b. Place backfill and fill materials evenly adjacent to structures, piping, or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

E. Backfilling Trenches

1. Backfilling shall be accomplished as soon as practical after pipe has been laid and jointing and alignment approved and after the OWNER or ENGINEER has observed the work. Packing of crushed rock between joints shall be the usual procedure as the laying progresses. This is in order to avoid danger of misalignment from slides, flooding or other causes. Any work backfilled prior to acceptance by the OWNER or ENGINEER is at the CONTRACTOR'S risk. Upon Request, the CONTRACTOR shall uncover any such work for inspection at no cost to the OWNER or ENGINEER.
2. Any special requirements of the Railroad Company or Highway Department in regard to backfilling will take precedence over the following general Specifications.
3. The backfill over the pipe shall be in accordance with the standard details shown on the Drawings for bedding and backfilling pipe and any other applicable sections of the Contract Documents.
4. In case maximum permissible trench widths (as designated by the pipe manufacturer) are exceeded, the CONTRACTOR shall furnish crushed rock backfill to a minimum of 12 inches over the top of pipe at no extra cost to the OWNER.
5. After the foregoing cover requirements over top of the pipe have been met, rock may be used in the backfill in pieces no larger than 4 inches in any dimension. If additional earth is required for backfilling, it must be obtained and placed by the CONTRACTOR at no cost to the OWNER. Filling with rock and earth shall proceed simultaneously, such that no voids are left in the backfill. After cover requirements over top of pipe have been met, backfilling may be employed without tamping, provided

02200-12
Earthwork

caution is used in quantity per dump and uniformity of level of backfilling. Surplus material shall be uniformly ridged over trench and excess rock hauled away, with no rock over 1-1/2 inch diameter in the top 6 inches. Ridged backfill shall be confined to the width of the trench and no higher than needed for replacement of settlement of backfill.

6. In the case of street, highway, railroad, sidewalk and driveway crossings; or within any roadway paving; or about manholes, valve and meter boxes; the backfill must be mechanically tamped in not over 6 inch layers, measured loose. Alternate method of compacting backfill shall be used, if refill material is in large hard lumps (crushed rock excepted) which cannot be consolidated without leaving voids.
7. In the case of tunnels, the annular space between plates and excavation shall be either permanently placed pea gravel or sand, pump grout (3 parts sand and 1 part Portland cement by volume) or other suitably installed material approved by the ENGINEER. Backfilling shall be kept close to the heading and completed after each day's work. Where grout is used for backfill, injection holes with threaded plugs shall be provided in liner plates at various levels and in sufficient number to effectively grout the void around the tunnel. A minimum of 3 grout holes shall be provided in each 8 feet of tunnel length. Grout shall be injected in the lower holes first, proceeding upward as the void is filled. Plugs shall be installed after each hole is filled and grout stops shall be provided behind plates as necessary to ensure complete filling of the void.
8. Where traffic on streets, driveways, railroads, sidewalks and highways requires temporary surfacing, backfilling shall be terminated 4 inches below original ground level and 4 inches to 6 inches of dense graded aggregate shall be placed on the trench. Backfills shall be maintained easily passible to traffic at original ground level, until acceptance of project or replacement of paving or sidewalks.
9. The CONTRACTOR shall protect all sewer, gas, electric, telephone, water and drain pipes or conduits from damage while pipelines are being constructed and backfilled, and from danger due to settlement of trench backfill. Any repairs required as a result of Project Construction Activities by the CONTRACTOR shall be accomplished by the CONTRACTOR at no cost to the OWNER or ENGINEER.
10. No extra payment shall be made for backfilling of any kind, except as specified hereinbefore. Backfilling shall be included as a part of the lump sum bid. No extra payment will be made to the CONTRACTOR for supplying outside materials for backfill.

02200-13

Earthwork

11. On completion of the project, all backfills shall be dressed; holes filled; and surplus material hauled away. All permanent walks, street paving, roadway, etc., shall be restored and seeding and sodding performed as required. The CONTRACTOR shall return to the Project Site at any time within the Warranty Period to address any deficiencies in the above work at no cost to the OWNER.

3.5 GRADING

A. General

1. Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines

1. All materials used for backfill around structures shall be of a quality acceptable to the ENGINEER and shall be free from large or frozen lumps, wood and other extraneous material. All spaces excavated and not occupied by footings, foundation walls or other permanent work shall be refilled with earth up to the surface of the surrounding ground, unless otherwise specified, with sufficient allowance for settlement. In making the fills and terraces around the structures, the fill shall be placed in layers not exceeding 12 inches in depth and shall be kept smooth as the work progresses. Each layer of the fill shall be rolled with an approved type roller and/or be compacted. When it is not practicable to compact sections of the fill immediately adjacent to buildings or structures by rolling, then such section shall be thoroughly compacted by means of mechanical tamping or hand tamping as may be required by the conditions encountered. All fills shall be placed so as to load structures symmetrically.
2. As set out hereinbefore, rough grading shall be held below finished grade and then the topsoil which has been stockpiled shall be evenly spread over the surface. The grading shall be brought to the levels shown on the Drawings or to the elevations established by the ENGINEER. Final dressing shall be accomplished by hand work or machine work, or a combination of these methods as may be necessary to produce a uniform and smooth finish to all parts of the regrade. The surface shall be free from clods greater than 2 inches in diameter. Excavated rock may be

02200-14
Earthwork

placed in the fills, but it shall be thoroughly covered. Rock placed in fills shall not be closer than 12 inches from finished grade.

3. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

a. Finish surfaces free from irregular surface changes, and as follows:

(1) Lawn or unpaved areas: Finish areas to receive topsoil to within not more than 0.10 ft. above or below required subgrade elevations.

(2) Walks: Shape surface of areas under walks to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1.0 inch below required subgrade elevation.

(3) Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than 0.0 inch above or 1 inch below required subgrade elevation.

C. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.0 inch above or 1 inch below required subgrade elevation when tested with a 10 ft. straightedge.

D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or standard proctor density for each area classification.

3.6 PAVEMENT SUBBASE COURSE

A. General

1. Subbase course consists of placing subbase material, in layers of specified thickness, over subgrade surface to support a pavement base course.

2. See other Division 2 sections for paving specifications. In ALL cases requirements of Applicable Governing Authorities shall be met by the CONTRACTOR.

- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Shoulders
 - 1. Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.
- D. Placing
 - 1. Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.
 - 2. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.7 BUILDING SLAB ENGINEERED FILL COURSE

- A. General
 - 1. Engineered fill course consists of placement of crushed stone, size and type shown on drawings, in layers of indicated thickness, over subgrade surface to support concrete building slabs.
- B. Placing
 - 1. Place fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.
 - 2. When a compacted course is shown to be 6 inches or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

02200-16
Earthwork

3.8 FIELD QUALITY CONTROL

- A. Quality Control Testing During Construction
 - 1. Allow testing service to inspect and report to the ENGINEER on findings and approve subgrades and fill layers before further construction work is performed.
 - a. Perform field density tests in accordance with ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2992 (nuclear density method), as applicable.
 - b. Footing subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to ENGINEER.
 - c. Paved areas and building slab subgrade: Make at least one field density test of subgrade for every 2,000 square feet of paved area or building slab, but in no case less than three tests. In each compacted fill layer, make one field density test for every 2,000 square feet of overlaying building slab or paved area, but in no case less than three tests.
 - d. Foundation wall backfill: Take at least two field density tests, at locations and elevations as directed.
- B. If in opinion of the ENGINEER, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

3.9 MAINTENANCE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

02200-17
Earthwork

- C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION

SECTION 02255

Crushed Stone and Dense Graded Aggregate

PART 1 GENERAL

1.1 SCOPE

- A. Furnish and install crushed stone for miscellaneous uses as shown on the Drawings, as called for in the Specifications.
- B. Sizes, types, and quality of crushed stone are specified in this Section, but its use for replacement of unsuitable material, pavement base, and similar uses is specified in detail elsewhere in the Specifications. The ENGINEER may order the use of crushed stone for purposes other than those specified in other sections, if, in his opinion, such use is advisable. Payment for same will be subject to negotiation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. When referred to in these Specifications, crushed stone shall be Number 57 graded in accordance with the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, unless otherwise noted.
- B. When referred to in these Specifications, dense graded aggregate (DGA) shall be crushed stone classified by the Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Latest Edition, and conforming to the following requirements:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	70-100
3/8 inch	50-80
#4	35-65
#10	25-50

#40
#200

15-30
5-12

PART 3 EXECUTION

3.1 INSTALLATION

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

END OF SECTION

SECTION 02400

Casing Pipe

1.01 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required to furnish and install all carrier pipes in encasement pipes under railroad, highway, and creek crossings as shown on the Drawings and/or specified herein.

1.02 SUBMITTALS

- A. Descriptive literature, catalog cuts, or dimensional prints clearly indicating all dimensions and materials of construction, shall be submitted on all items specified herein to the Engineer for review before ordering. The submitted documents shall provide information indicating that the materials are in conformance with the Contract Documents.
- B. At the time of submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the submittals may have from the requirements of the Contract Drawings and Specifications.

PART 2 - PRODUCTS

2.01 CARRIER PIPE

- A. Carrier pipe shall be as specified in Section 02665 – Water Mains & Accessories.

2.02 CASING PIPE

- A. Casing pipe shall be steel, plain end, have a minimum yield point strength of 35,000 psi and conform to ASTM A 252 Grade 2 or ASTM A 139 Grade B without hydrostatic tests. The steel pipe shall have welded joints and be in at least 18 foot lengths.

02400-2
Casing Pipe

B. The diameter of the casing pipe shall be as follows:

Carrier Pipe Nominal Diameter (Inches)															
4	6	8	10	12	14	15	16	18	20	21	24	27	30	33	36
Casing Pipe Nominal Diameter (Inches)															
8	12	16	18	20	24	24	30	30	30	36	36	38	42	46	48

For carrier pipe sizes greater than 36-inches nominal diameter, the casing pipe diameter size shall be determined by the Engineer or as shown on the Contract Drawings.

C. The wall thickness of the casing pipe shall be as follows:

Carrier Pipe Nominal Diameter (Inches)							
Under 20	20 & 22	24	30	36	38	42	48
Casing Pipe Nominal Thickness (Inches)							
0.250	0.281	0.312	0.406	0.469	0.500	0.562	0.625

However, should casing pipe thickness be specified or required on Highway or Railroad permit approval sheets, said permit thickness requirement shall govern. Permit approval sheets will be made available to the Contractor.

2.03 CASING SPACERS

A. **Stainless Steel Casing Spacers:** Stainless steel casing spacers shall be bolt-on style with a shell made in two (2) sections of heavy T-304 stainless steel. Connecting flanges shall be ribbed for extra strength. The shell shall be lined with a PVC liner .090" thick with 85-90 durometer. All nuts and bolts are to be 18-8 stainless steel. Runners shall be made of ultra high molecular weight polymer with inherent high abrasion resistance and a low coefficient of friction. Runners shall be supported by risers made of heavy T-304 stainless steel. The supports shall be mig welded to the shell and all welds shall be fully passivated. Stainless steel casing spacers shall be made by Cascade Waterworks Mfg. Co., or equal.

- B. Solid Polyethylene Casing Spacers (to be used with PVC pipe only): Solid polyethylene casing spacers shall be bolt-on style with a shell made in two (2) sections. Carrier pipe shall be wrapped with rubber strap inside casing space to prevent slippage. All nuts and bolts are to be 18-8 stainless steel. Solid polyethylene casing spacers shall be made by Calpico Inc., Advance Products & Systems, Inc., or equal.

2.04 CASING END SEALS

- A. Wrap-around end seals - Wrap-around end seals shall be made of a waterproof flexible coal tar membrane reinforced with fiberglass, or synthetic rubber. The two exposed edges of the wrap-around seal shall be adhesively bonded forming a watertight seal. The ends of the wrap shall be sealed on the casing and carrier pipe by stainless steel bands. Wrap-around end seals shall be made by Calpico Inc., Advance Products & Systems, Inc., or equal.

PART 3 - EXECUTION

3.01 CROSSINGS - GENERAL

- A. Steel casing pipe for crossings shall be bored and/or jacked (or open cut installed where indicated on the Drawings) into place to the elevations shown on the drawings. All joints between lengths shall be solidly butt-welded with a smooth non-obstructing joint inside. The casing pipe shall be installed without bends. The carrier pipe shall be installed after the casing pipe is in place, and shall extend a minimum of two (2) feet beyond each end of the casing to facilitate making joint connections. The carrier shall be braced and centered with casing spacers within the casing pipe to preclude possible flotation. Casing spacers shall be installed a maximum of eight (8) feet apart along the length of the carrier pipe within the casing pipe, within two (2) feet of each side of a pipe joint, and the rest evenly spaced. The height of the supports and runners combined shall be sufficient to keep the carrier pipe at least 0.75" from the casing pipe wall at all times. Manufacturer's recommendations may govern these requirements.
- B. At each end of the casing pipe, the carrier pipe shall be sealed with casing end seals. The end seals shall extend a minimum of 12 inches in each direction from the end of the casing pipe.
- C. Wood skids are not an acceptable method of supporting the carrier pipe.

02400-4
Casing Pipe

3.02 BORING AND JACKING

- A. The Contractor shall excavate his own pits, as he may deem necessary, and will set his grade which shall be checked by the Engineer. Permits, as required, will be furnished or obtained by the Owner, but shall be in the Contractor's hands before any excavating is commenced.

- B. The boring method shall consist of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.
 - 1. The boring operation shall be progressed until the leading edge of the pipe has reached the receiving pit.
 - 2. The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that there will be no unsupported excavation ahead of the pipe.
 - 3. The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered. If the obstruction cannot be removed without excavation in advance of the pipe, the pipe shall be abandoned in place and immediately filled with grout or flowable fill concrete.
 - 4. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than 2 inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe by more than approximately 1 inch, grouting or other approved methods must be used to fill such voids.
 - 5. The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.
 - 6. Any method which does not have this boring arrangement will not be permitted. Contractor's boring arrangement plans and methods must be submitted to, and approved by, the Engineer.

- C. In the event an obstruction is encountered in boring which cannot be removed and it becomes necessary to withdraw the casing and commence elsewhere, the hole from which the casing is withdrawn shall be completely backfilled with flowable fill concrete.

- D. Insurance to be furnished by the Contractor to cover this type of work shall be adequate to meet the requirements of the Railroad and/or State or County Highway Departments.

3.03 CONTRACTOR'S RESPONSIBILITIES

- A. Obtain a copy of the highway or railroad encroachment permit from Owner before beginning construction.
- B. Attend a preconstruction meeting, if requested by the Owner, at the construction site with the Owner, Highway Inspector Engineer, and Contractor being present.

END OF SECTION

SECTION 02607

Manholes

PART 1 GENERAL

1.1 SCOPE

- A. The work covered by this Section includes furnishing all labor, equipment and materials required to install brick, cast-in-place, and/or precast concrete manholes and concrete junction chambers as described herein and/or shown on the Drawings.

1.2 DESIGN REQUIREMENTS

- A. Manholes shall be constructed of specified materials to the sizes, shapes and dimensions and at the locations shown on the Drawings or as otherwise directed by the ENGINEER. The height or depth of the manhole will vary with the location, but unless shown otherwise on the Drawings, shall be such that the top of the manhole frame will be at the finished grade of the pavement or ground surface and the invert will be at the designed elevations.
- B. Where the difference in the invert elevation of a sewer 18-inches in diameter or smaller and any other sewer intersecting in one manhole is two feet or more, a drop manhole shall be constructed as shown on the Drawings. They shall be similar in construction to the standard manhole except that a drop connection of pipe and fittings of the proper size and material shall be constructed outside the manhole and supported by Class "A" concrete.

1.3 SUBMITTALS

- A. Complete shop drawings and engineering data on frames, covers, steps and precast manhole sections shall be submitted to the ENGINEER in accordance with the requirements of Section 01340 of these Specifications.

1.4 QUALITY ASSURANCE

- A. Prior to delivery, all basic materials specified herein shall be tested and inspected by an approved independent commercial testing laboratory or, if approved by the ENGINEER, certified copies of test reports prepared by the

02607-2
Manholes

manufacturer's testing laboratory will be acceptable. All materials which fail to conform to these Specifications shall be rejected.

- B. After delivery to the site, any materials which have been damaged in transit or are otherwise unsuitable for use in the Work shall be rejected and removed from the site.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS (or Approved Equal)

- A. Standard manhole frame and cover shall be Vulcan Foundry No. VM-3MOD, Neenah Foundry No. R-1708 U.S. Foundry No. 365, or approved equal.
- B. Watertight manhole frames and covers shall be Vulcan Foundry No. VM-80WT, U.S. Foundry No. 385, Neenah Foundry No. R-1915-H2, or approved equal.
- C. Manhole adjusting rings shall be R1979-H as manufactured by Neenah Foundry Company of Neenah, Wisconsin, or approved equal.
- D. Manhole steps shall be polypropylene plastic-coated steel bar with treads having anti-skid properties for hand and foot grips. Manhole steps shall be cast, grouted or attached by mechanical means into the walls of the manholes in such a manner as to conform with ASTM C478, spaced on 12 inch centers.

2.2 MATERIALS AND CONSTRUCTION

- A. Concrete and Reinforcement
 - 1. Concrete used in manhole and junction chamber construction shall be Class "A" concrete conforming to the requirements of Section 03300 of these Specifications.
 - 2. Steel reinforcement shall conform to the requirements of Section 03200 of these Specifications.
- B. Brick: Brick used in manhole construction shall be unacceptable.
- C. Precast Concrete Manholes

1. Precast concrete manholes shall consist of precast reinforced concrete sections, a conical or flat slab top section, and a base section conforming with the typical manhole details as shown on the Drawings.
 2. Precast manhole section shall be manufactured, tested and marked in accordance with the latest provisions of ASTM C 478.
 3. The minimum compressive strength of the concrete for all sections shall be 4,000 psi.
 4. The maximum allowable absorption of the concrete shall not exceed eight percent of the dry weight.
 5. The circumferential reinforcement in the riser sections, conical top sections and base wall sections shall consists of one line of steel and shall be not less than 0.17 square inch per lineal foot.
 6. The ends of each reinforced concrete manhole riser section and the bottom end of the manhole top section shall be so formed that when the manhole risers and the top are assembled, they will make a continuous and uniform manhole.
 7. Joints of the manhole sections shall be of the tongue and groove type. Sections shall be joined using O-ring rubber gaskets conforming to the applicable provisions of ASTM C 443, latest revision, or filled with an approved preformed plastic gasket meeting the requirements of Federal Specifications SS-S-00210, "Sealing Compound, Preformed Plastic for Pipe Joints", Type 1, Rope Form.
 8. Each section of the precast manhole shall have not more than two holes for the purpose of handling and laying. These holes shall be tapered and shall be plugged with rubber stoppers or mortar after installation.
 9. Manhole steps shall be installed in each section of the manhole in accordance with the details on the Drawings.
- D. Frames, Covers and Steps
1. Toe pockets, frames and covers shall be cast iron conforming to the minimum requirements of Federal Specifications WW01-652 or to ASTM A 48 for Class 30 Gray Iron Castings. All castings shall be made accurately to the required dimensions, fully interchangeable, sound, smooth, clean, and free from blisters and/or other defects.

02607-4
Manholes

Defective castings which have been plugged or otherwise treated shall not be used. All castings shall be thoroughly cleaned and painted or coated with a bituminous paint. Each casting shall have its actual weight in pounds stenciled or painted on it in white paint.

2. Manhole castings shall consist of cast iron frames, 22 3/4 inch diameter covers, weighing not less than 460 pounds per cover and lid and in special conditions, 510 pounds per cover and lid with 28 inch diameter cover will be used. Manhole casting shall be 310 pounds, J.R. Hoe MF-310 or approved equal. Manhole lid shall be 150 pounds, J.R. Hoe ML-150 or approved equal.
3. Watertight manhole covers shall be furnished with a rubber gasket, stainless steel bolts, machined bearing surfaces, and concealed watertight pickhole, shall weigh not less than 345 pounds, shall have minimum of 22-inches clear inside diameter and shall be a minimum of 7-inches high.
4. The contact surfaces of all manhole covers and the corresponding supporting rings in the frames shall be machined to provide full perimeter contact.
5. All sanitary sewer manhole covers shall have the word "SEWER" cast on the top in letters 2-inches high.
6. An adjusting ring shall be provided for each manhole in a street.
7. Manhole steps shall conform to the applicable provisions of ASTM Standard Specification Serial Designation C 478.

PART 3 EXECUTION

3.1 CONSTRUCTION OF CAST-IN-PLACE CONCRETE MANHOLES

- A. Cast-in-place manholes, excluding curved manhole bases, shall be constructed in place with the base, barrel, and conical section all monolithically cast using removable forms of a material and design approved by the ENGINEER.
- B. The vertical forms, vertical and horizontal wall spacers, steps and placing cone must be carefully positioned and firmly clamped in place before any placement is made. The wall spacers must be located 90 degrees from each other. The forms shall be firmly supported with bottom of forms at

the proper elevation to permit the base to be deposited through the vertical forms.

- C. The manhole base shall be deposited down through the wall forms onto undisturbed earth or rock bearing. It shall be evenly distributed around the walls and vibrated both inside and outside the forms until there is a minimum slope of 60 degrees from the bottom of the forms to the bearing surface both inside and outside of the manhole. When this is complete and before additional concrete is added, the concrete must be carefully vibrated on each side of each sewer pipe.
- D. The base shall be concentric with the manhole and have a minimum diameter of 16-inches greater than the outside diameter of the manhole, and 10-inch minimum thickness under the lowest pipe. Minimum wall thickness shall be 6-inches.
- E. Additional concrete must be deposited in evenly distributed layers of approximately 18-inches with each layer vibrated to bond it to the preceding layer. The wall spacers must be raised as the placements are made. The concrete in the area from which the spacer is withdrawn shall be carefully vibrated. Excessive vibration shall be avoided.
- F. Adjustment rings shall be provided between the conical section and the manhole frame. The rings shall be cast-in-place using building felt between pours to create a weakened joint or as directed by the ENGINEER. If adjustment of the lid elevation is called for, concrete "do-nut" sections or brick shall be used.
- G. The invert and flow channel shall be constructed in accordance with the applicable requirements of 3.01 of this Section and shall be formed during or immediately after the placing of the concrete and brush-finished as soon as the concrete has sufficiently set.
- H. Form marks and offsets shall not exceed 1-inch on the outside surface of the manhole. Form marks and offsets shall not exceed 1/2-inch inside of the manhole. All offsets on the inside surface of the manhole shall be smoothed and rubbed so there is no projection or irregularity capable of scratching a worker or catching and holding water or solid materials. Honeycombed areas shall be completely removed immediately upon removal of the forms and replaced with a Class "A" concrete as directed by the ENGINEER.
- I. Should circumstances make a joint necessary, a formed groove or reinforcing dowels shall be required in the top of the first placement for

02607-6
Manholes

shear protection. Immediately before the second placement is made, the surface of the cold joint shall be thoroughly cleaned and wetted with a layer of mortar being deposited on the surface.

- J. Concrete setting time, backfilling, brickwork setting frame and cover, temporary paving, etc., shall be in accordance with the applicable requirements of Article 3.01 of this Section.

3.2 CONSTRUCTION OF PRECAST CONCRETE MANHOLES

- A. After placing manhole base, inverts shall be constructed using Class "B" concrete in accordance with details on the Drawings and inverts shall have the same cross section as the invert of the sewers which they connect. The manhole invert shall be carefully formed to the required size and grade by gradual and even changes in sections. Changes in directions of flow through the sewer shall be made to a true curve with as large a radius as the size of the manhole will permit.
- B. After the base section has been set, and inverts formed, the precast manhole sections shall be placed thereon, care being exercised to form the incoming and outgoing sewer pipes into the wall of the manhole at the required elevations.
- C. The cast iron frame for the manhole cover shall be set at the required elevation and properly anchored to the masonry. Where manholes are constructed in paved areas, the top surface of the frame and cover shall be tilted to conform to the exact slope, crown and grade of the existing adjacent pavement.
- D. Masonry work shall be allowed to set for a period of not less than 24 hours. Outside forms, if any, then shall be removed and the manhole backfilled and compacted. All loose or waste material shall be removed from the interior of the manhole. The manhole cover then shall be placed and the surface in the vicinity of the work cleaned off and left in a neat and orderly condition.
- E. After backfilling has been completed, the excavated area, if located in a street, alley or sidewalk, shall be provided with a temporary surface.

3.3 CONSTRUCTION OF PRECAST CONCRETE TEE MANHOLE BASES

- A. Precast concrete tee manhole bases and elbows shall conform to the requirements of Section 02610 of these Specifications. Class of pipe used shall be the same as that used in the line adjacent to the manhole and elbow. The tee section shall be carefully formed to the required size. The inside of

the base shall be left smooth with no rough projections where the tee is connected to the pipe.

- B. Elbows where required shall be fabricated to a true angle as shown on the Drawings. Elbows shall be made smooth by hand troweling and the finish surface shall be equal to that in the rest of the pipe.
- C. All fabrication work on the manhole base and elbows shall be performed by the manhole or pipe manufacturer at the plant. No field fabrication will be permitted without specific authorization of the ENGINEER.
- D. After the base section has been installed, the precast manhole sections shall be placed thereon.
- E. Concrete, setting time, backfill, brickwork, setting frame and cover, temporary paving, etc., shall be in accordance with the applicable requirements of Article 3.01 of this Section.

3.4 SURFACE PREPARATION AND SHOP PAINTING

Frames, covers and steps shall be cleaned, shop primed and shop painted with a bituminous paint in accordance with the requirements of Section 01640 of these Specifications.

3.5 INSPECTION AND TESTING

After completion, all manholes will be inspected. The CONTRACTOR shall make, at CONTRACTOR's expense, all necessary changes, modifications, and/or adjustments required to assure satisfactory operation.

END OF SECTION

SECTION 02665
Water Mains and Accessories

PART 1 GENERAL

1.01 SCOPE

- A. This Section describes products to be incorporated into the water mains and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.
- B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the ENGINEER, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

Complete shop drawings and engineering data for all products shall be submitted to the ENGINEER in accordance with the requirements of Section 01340 of these Specifications.

1.04 TRANSPORTATION AND HANDLING

- A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handled on skids shall not be rolled or skidded against the pipe on the ground.
- B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front end loader. Do not

02665-2

Water Mains and Accessories

use material damaged in handling. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe.

1.05 OWNER FURNISHED MATERIALS

- A. Submit with construction progress schedule, a schedule for required deliveries of Owner furnished Material.
- B. The Contractor shall coordinate material shipments with the Owner and the materials suppliers.
- C. Materials furnished by the Owner will be delivered by truck. Pipe, fittings, valves and other material to be furnished by the Owner shall be delivered to the Owner's storage yard or another site agreed upon by the Contractor and the Owner. This other site, if selected, is to be provided by the Contractor at no additional cost to the Owner.
- D. The Contractor shall maintain communication with the material suppliers, and the Owner as necessary, to keep informed as to scheduled shipment, and upon notice to the Contractor of the delivery of materials, the Contractor shall proceed without delay to unload such materials.
- E. Upon receipt of materials from the manufacturer, the Contractor shall make an inspection of such materials, checking and certifying the bill of lading, noting any discrepancies and obtaining a proper memorandum signed by the agent of the carrier for any shortage in the shipment, or for any damaged materials received. All bills of lading and any memorandum for shortage or damage of material in the shipment shall be promptly submitted to the Engineer. The Contractor shall be responsible for distribution of all materials as required to complete the Work. Materials furnished to the Contractor shall be in the custody of the Contractor from the time of receipt by the Contractor of such materials from the carrier until final acceptance of the completed Work. The Contractor shall be responsible for any loss of damage to materials furnished by the Owner.

1.06 STORAGE AND PROTECTION

- A. Store all pipe which cannot be distributed along the route. CONTRACTOR shall make arrangements for the use of suitable storage areas.
- B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all

02665-3

Water Mains and Accessories

- times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.
 - D. Stored mechanical and push-on joint gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.
 - E. Mechanical-joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

1.07 QUALITY ASSURANCE

The manufacturer shall provide written certification to the ENGINEER that all products furnished comply with all applicable requirements of these Specifications.

PART 2 PRODUCTS

2.01 PIPING MATERIALS AND ACCESSORIES

- A. Ductile Iron Pipe (DIP)
 - 1. Ductile iron pipe shall be manufactured in accordance with AWWA C151 (latest edition). All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 18	250
20	250
24	200

02665-4

Water Mains and Accessories

30 - 54	250
60 - 64	200

2. Flanged pipe minimum wall thickness shall be equal to Special Class 53. Flanges shall be furnished by the pipe manufacturer.
3. Pipe and fittings shall be cement lined in accordance with AWWA C104 (latest edition). Pipe and fittings shall be furnished with a bituminous outside coating.
4. Fittings shall be ductile iron and shall conform to AWWA C110 or AWWA C153 (latest edition) with a minimum rated working pressure of 250 psi or as indicated on plans.
5. Joints
 - a. Unless shown or specified otherwise, joints shall be push-on or restrained joint type for pipe and standard mechanical, push-on or restrained joints for fittings. Push-on and mechanical joints shall conform to AWWA C111 (latest edition). Restrained joints for pipe and fittings shall be American "FLEX-RING" or "LOK-RING", Clow "SUPER-LOCK", or U.S. Pipe "TR FLEX". No field welding of restrained joint pipe will be permitted. No mega lug type restraints are allowed on 24" and 30" water line.
 - b. Restrained joint pipe (RJP) on supports shall have bolted joints and shall be specifically designed for clear spans of at least 36 feet.
 - c. Flanged joints shall meet the requirements of ANSI B16.1, Class 125.
6. Provide the appropriate gaskets for mechanical and flange joints. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full face type.
7. Provide the necessary bolts for mechanical, restrained and flange connections. Bolts for flange connections shall be steel with American Regular unfinished square or hexagon heads. Nuts shall be steel with American Standard Regular hexagonal dimensions, all as specified in ANSI B17.2. All bolts and all nuts shall be threaded in accordance with ANSI B1.1,

02665-5

Water Mains and Accessories

Coarse Thread Series, Class 2A and 2B fit. Mechanical joint glands shall be ductile iron.

8. Acceptance will be on the basis of the ENGINEER'S inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

B. Polyvinyl Chloride Pipe (PVC)

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to ASTM D 2241. The pipe shall have a Standard Dimension Ratio as indicated on the plans. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 (latest edition) with a minimum rated working pressure of 250 psi. Fittings shall be cement lined in accordance with AWWA C104. Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided as recommended by the manufacturer to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings, or valves.
3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the ENGINEER'S or OWNER'S inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

C. Polyvinyl Chloride Pipe (PVC) - **(C-900)**

1. All PVC pipe shall have belled ends for push-on type jointing and shall conform to AWWA C900, ductile iron pipe equivalent outside diameters. The pipe shall have a Dimension Ratio (DR) of **14** and shall be capable of withstanding a working pressure of **200** psi. Pipe shall be supplied in minimum lengths of 20 feet.
2. All fittings shall be of cast or ductile iron meeting the requirements of AWWA C110 or AWWA C153 with a minimum rated working pressure of **250** psi. Fittings shall be cement lined in accordance with AWWA C104.

02665-6

Water Mains and Accessories

Fittings shall be furnished with a bituminous outside coating. Special adapters shall be provided, as recommended by the manufacturer, to adapt the PVC pipe to mechanical jointing with cast or ductile iron pipe, fittings or valves.

3. Detection tape shall be provided over all PVC water mains.
4. Acceptance will be on the basis of the ENGINEER'S inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards, including the National Sanitation Foundation. Additionally, each piece of pipe shall be stamped "NSF Approved".

D. Polyethylene Pipe and Fittings

1. 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.
 - a. 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 designation ASTM D-3350 "Polyethylene Plastic Pipe and Fittings Materials".
 - b. High density Polyethylene pipe shall have a grade designation of PE 3406 and a cell classification designation of P 355434C.
 - c. High density polyethylene pipe shall be joined by means of butt fusion.
 - d. 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.

2.02 VALVES

A. Gate Valves (GV)

1. 3-Inches in Diameter and Smaller: Gate valves shall be bronze, heavy duty, rising stem, wedge type with screwed or union bonnet. Valve ends shall be threaded or solder type as appropriate. Valves shall have a minimum 200 psi working pressure for water (125 psi working pressure for steam). Valves

02665-7

Water Mains and Accessories

shall be made in the U.S.A. Gate valves shall be equal to Crane No. 428 (threaded) or Crane No. 1334 (solder end).

2. 4-Inches Through 12-Inches in Diameter: Gate valves 4-inches through 12-inches shall be resilient wedge type conforming to the requirements of AWWA C509 rated for 200 psi working pressure.
 - a. Valves shall be provided with two O-ring stem seals with one O-ring located above and one O-ring below the stem collar. The area between the O-rings shall be filled with lubricant to provide lubrication to the thrust collar bearing surfaces each time the valve is operated. At least one anti-friction washer shall be utilized to further minimize operating torque. All seals between valve parts, such as body and bonnet, bonnet and bonnet cover, shall be flat gaskets or O-rings.
 - b. The valve gate shall be made of cast iron having a vulcanized, synthetic rubber coating, or a seat ring attached to the disc with retaining screws. Sliding of the rubber on the seating surfaces to compress the rubber will not be allowed. The design shall be such that compression-set of the rubber shall not affect the ability of the valve to seal when pressure is applied to either side of the gate. The sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.
 - c. All internal ferrous surfaces shall be coated with epoxy to a minimum thickness of 4 mils. The epoxy shall be non-toxic, impart no taste to the water and shall conform to AWWA C550, latest revision.
 - d. Gate valves 4 through 12-inches shall be manufactured by American-Darling, Mueller or M & H Valve.

2.03 FIRE HYDRANTS (FH)

- A. All fire hydrants shall conform to the requirements of AWWA C502 for 250 psi working pressure. Hydrants shall be the compression type, closing with line pressure. The valve opening shall not be less than [5-1/4-inches].
- B. In the event of a traffic accident, the hydrant barrel shall break away from the standpipe at a point above grade and in a manner which will prevent damage to

02665-8

Water Mains and Accessories

- the barrel and stem, preclude opening of the valve, and permit rapid and inexpensive restoration without digging or cutting off the water.
- C. The means for attaching the barrel to the standpipe shall permit facing the hydrant a minimum of eight different directions.
 - D. Hydrants shall be fully bronze mounted with all working parts of bronze. Valve seat ring shall be bronze and shall screw into a bronze retainer.
 - E. All working parts, including the seat ring shall be removable through the top without disturbing the barrel of the hydrant.
 - F. The operating nut shall match those on the existing hydrants. The operating threads shall be totally enclosed in an operating chamber, separated from the hydrant barrel by a rubber O-ring stem seal and lubricated by a grease or an oil reservoir.
 - G. Hydrant shall be a non-freezing design and be provided with a simple, positive, and automatic drain which shall be fully closed whenever the main valve is opened.
 - H. Hose and pumper connections shall be breech-locked, pinned, or threaded and pinned to seal them into the hydrant barrel. Each hydrant shall have two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection, all with National Standard threads and each equipped with cap and non-kinking chain.
 - I. Hydrants shall be furnished with a mechanical joint connection to the spigot of the 6-inch hydrant lead.
 - J. Minimum depth of bury shall be 4.5 feet. Provide extension section where necessary for proper vertical installation and in accordance with manufacturer's recommendations.
 - K. All outside surfaces of the barrel above grade shall be painted with enamel equal to Koppers Glamortex 501 in a color to be selected by the Owner.
 - L. Hydrants shall be traffic model and shall be Mueller Super Centurion or approved equal.

02665-9

Water Mains and Accessories

2.04 VALVE BOXES (VB) AND EXTENSION STEMS

- A. All valves shall be equipped with valve boxes. The valve boxes shall be cast iron two-piece screw type with drop covers. Valve boxes shall have a 5.25-inch inside diameter. Valve box covers shall weigh a minimum of 13 pounds. The valve boxes shall be adjustable to 6-inches up or down from the nominal required cover over the pipe. Valve boxes shall be of sufficient length that bottom flange of the lower belled portion of the box is below the valve operating nut. Ductile or cast iron extensions shall be provided as necessary. Covers shall have "WATER VALVE" or "WATER" cast into them. Valve boxes shall be manufactured in the United States.
- B. All valves shall be furnished with extension stems, as necessary, to bring the operating nut to within 30-inches of the top of the valve box. Connection to the valve shall be with a wrench nut coupling and a set screw to secure the coupling to the valve's operating nut. The coupling and square wrench nut shall be welded to the extension stem. Extension stems shall be equal to Mueller A-26441 or M & H Valve Style 3801.
- C. All Valve Boxes shall be installed with Concrete Collars as Indicated on the Detail Sheet.

2.05 VALVE MARKERS (VM)

The CONTRACTOR shall provide a concrete valve marker as detailed on the Drawings for each valve installed. Valve markers shall be stamped "Water".

2.06 TAPPING SLEEVES AND VALVES (TS&V)

Tapping sleeves shall be stainless steel of the split-sleeve, mechanical joint type. The CONTRACTOR shall be responsible for determining the outside diameter of the pipe to be connected to prior to ordering the sleeve. Valves shall be gate valves furnished in accordance with the specifications shown above, with flanged connection to the tapping sleeve and mechanical joint connection to the branch pipe. The tapping sleeve and valve shall be supplied by the valve manufacturer. Tapping sleeves shall be equal to American-Darling, Mueller or M & H Valve.

02665-10

Water Mains and Accessories

2.07 TAPPING SADDLES

Tapping saddles shall be brass body type with O-ring gasket. Tapping saddles shall be equal to Mueller Series H-134 Service Clamp.

2.08 CORPORATION COCKS AND CURB STOPS

Corporation cocks and curb stops shall be ground key type, shall be made of bronze conforming to ASTM B 61 or B 62, and shall be suitable for the working pressure of the system. Ends shall be suitable for flared tube compression type joint. Threaded ends for inlet and outlet of corporation cocks shall conform to AWWA C800; coupling nut for connection to flared copper tubing shall conform to ANSI B16.26. Corporation cocks and curb stops shall be manufactured by Mueller or Ford or approved equal.

2.10 METER SETTERS

The meter setter shall be a tandem coppersetter as shown on the standard detail drawings with 3/4" double purpose ends and be 15" high with padlock wing. It shall be all purpose, designed for 5/8" x 3/4" meter and be of sufficient height to raise meters above the bottom of the meter box. The meter setter shall be Ford, or equal. Meter setters shall have an inverted key inlet valve.

Setters shall be installed so that the meters are centered in the meter box.

The water service line shall be extended a minimum of 18" beyond the meter box on the customer end. The end of the extension shall be capped or plugged to prevent entry of foreign material until the connection is made.

2.11 WATER METERS

Water meter shall be cold water displacement type meeting all requirement of AWWA C700-77. The meter sizes shall be 5/8-inch x 3/4-inch meters for 3/4" service rated at a flow of 20 gpm and 1" meters for 1" service rated at a flow of 50 gpm. Meters shall be of frost-proof design and be rotating disk type. The meters shall be equipped with a straight-reading register recording in U.S. Gallons hermetically sealed to prevent fogging and with a removable corrosion resistant strainer screen between the outer case and measuring chamber. Register shall be equipped with a device to afford capability for accurately testing each meter according to AWWA Standards. The body case shall have the manufacturer's serial number imprinted thereon and have raised markings to indicate the direction of flow.

02665-11

Water Mains and Accessories

2.12 CONCRETE

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the Engineer. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

PART 3 EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

- A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the OWNER. The CONTRACTOR shall call the agencies or departments that own and/or operate utilities in the vicinity of the construction work site at least 72 hours (three business days) prior to construction to verify the location of the existing utilities.
- B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.
 - 1. Provide the required notice to the utility owners and allow them to locate their facilities. Field utility locations are valid for only 10 days after original notice. The CONTRACTOR shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.
 - 2. Expose the facility, for a distance of at least 200 feet in advance of pipeline construction, to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.
 - 3. Avoid utility damage and interruption by protection with means or methods recommended by the utility owner.
 - 4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The CONTRACTOR shall provide the ENGINEER an updated copy of the log bi-weekly, or more frequently if required.

02665-12

Water Mains and Accessories

C. Conflict with Existing Utilities

1. Horizontal Conflict: Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed water main does not permit safe installation of the water main by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The CONTRACTOR may change the proposed alignment of the water main to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement, complies with regulatory agency requirements and after a written request to and subsequent approval by the ENGINEER or OWNER. Where such relocation of the water main is denied by the ENGINEER or OWNER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.
2. Vertical Conflict: Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed water main does not permit the crossing without immediate or potential future damage to the utility, main, service, or the water main. The CONTRACTOR may change the proposed grade of the water main to avoid vertical conflicts if the changed grade maintains adequate cover and complies with regulatory agencies requirements after written request to and subsequent approval by the ENGINEER or OWNER. Where such relocation of the water main is denied by the ENGINEER or OWNER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.

D. Electronic Locator: Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation

1. Water mains should maintain a minimum 10 foot edge-to-edge separation from sewer lines, whether gravity or pressure. If the main cannot be installed in the prescribed easement or right-of-way and provide the 10 foot separation, the separation may be reduced, provided the bottom of the water main is a minimum of 18-inches above the top of the sewer. Should neither of these two separation criteria be possible, the water main shall be installed below the sewer with a minimum vertical separation of 18-inches.
2. The water main, when installed below the sewer, shall be encased in concrete with a minimum 6-inch concrete depth to the first joint in each

02665-13

Water Mains and Accessories

direction. Where water mains cross the sewer, the pipe joint adjacent to the pipe crossing the sewer shall be cut to provide maximum separation of the pipe joints from the sewer.

3. No water main shall pass through, or come in contact with, any part of a sanitary sewer manhole.

3.02 CONSTRUCTION ALONG HIGHWAYS, STREETS AND ROADWAYS

- A. Install pipe lines and appurtenances along highways, streets and roadways in accordance with the applicable regulations of, and permits issued by, the Department of Transportation, Nelson County and the City of Bloomfield with reference to construction operations, safety, traffic control, road maintenance and repair.
- B. Traffic Control
 1. The CONTRACTOR shall provide, erect and maintain all necessary barricades, suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public.
 2. Construction traffic control devices and their installation shall be in accordance with the current Manual On Uniform Traffic Control Devices for Streets and Highways and the Department of Highways Specifications, latest edition.
 3. Placement and removal of construction traffic control devices shall be coordinated with the Department of Transportation, Nelson County, and the City of Bloomfield a minimum of 48 hours in advance of the activity.
 4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead", shall be removed and replaced when needed.
 5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary

02665-14

Water Mains and Accessories

relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.

6. Construction traffic control devices shall be maintained in good repair and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.
7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Department of Transportation, Nelson County, and the City of Bloomfield. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.
8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual On Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.
2. Stripping: Where the pipe line is laid along road right-of-way, strip and stockpile all sod, topsoil and other material suitable for right-of-way restoration.
3. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.
4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.

02665-15

Water Mains and Accessories

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5. Construction operations shall be limited to 400 feet along areas within KYDOT jurisdiction, including clean-up and utility exploration.
- D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off of the pavement in a timely manner.
 - E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
 1. The CONTRACTOR shall make provisions for handling all flows in existing creeks, ditches, sewers and trenches by pipes, flumes or other approved methods at all times when his operations would, in any way, interfere with the natural functioning of said creeks, ditches, sewers and drains. The CONTRACTOR shall at all times during construction provide and maintain sufficient equipment for the disposal of all water which enters the excavation, both in open cut trenches and in tunnels, to render such excavation firm and dry, until the structures to be built thereon are completed.
 - F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right-of-way and easement. The CONTRACTOR shall take extreme care in moving landscape features and promptly re-establishing these features.
 - G. Maintaining Highways, Streets, Roadways and Driveways
 1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the Work. All excavation shall be conducted in a manner to the last interruption to traffic.
 2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. Running plate edges shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.

02665-16

Water Mains and Accessories

3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. The grader or front-end loader shall be available at all times.
4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the Work. 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.
5. Maintenance of all traffic shall be in accordance with any requirements of the local road department(s) and/or the Kentucky Department of Transportation. It is the responsibility of the CONTRACTOR to coordinate all work with and notify the above-named agencies, and to provide all necessary signs, barricades, lights, flagmen, and other items for maintenance of traffic.

Public travel shall be maintained, unrestricted, wherever and whenever possible. Detours shall be provided when so directed by the appropriate agency. Adequate precautions shall be taken to provide for the safety of both vehicular and pedestrian traffic. Emergency vehicles shall be provided access to construction area at all times.

Unless specifically directed otherwise by the ENGINEER, not more than five hundred (500') feet of trench shall be opened ahead of the pipe laying, and not more than five hundred (500') feet of open ditch shall be left behind the pipe laying. All barricades, lanterns, watchmen, and other such signs and signals as may be necessary to warn the public of the dangers in connection with open trenches, excavations and other obstructions, shall be provided by and at the expense of the CONTRACTOR.

When so required, or when directed by the ENGINEER, only one-half (1/2) of the street crossing and road crossings shall be excavated before placing temporary bridges over the side excavated for the convenience of the traveling public.

All backfilled ditches shall be maintained in such manner that they will offer no hazard to the traveling public and the property owners abutting the improvements shall be taken into consideration. All public or private drives shall be promptly backfilled or bridges at the direction of the ENGINEER. Excavated materials shall be disposed of so as to cause the least interference,

02665-17

Water Mains and Accessories

and in every case the deposition of excavated materials shall be satisfactory to the ENGINEER.

H. Property Protection

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 good or better than original condition and shall meet with the approval of the ENGINEER and OWNER.
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.
3. Beyond the limits of the easement the CONTRACTOR shall be responsible for any damage caused by his operations and/or his personnel.

3.03 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.
- B. No pipe shall be strung further along the route than 1000 feet beyond the area in which the CONTRACTOR is actually working without written permission from the OWNER.
- C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The CONTRACTOR shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.
- D. No distributed pipe shall be placed inside drainage ditches.
- E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.04 LOCATION AND GRADE

02665-18

Water Mains and Accessories

- A. The Drawings show the alignment of the water main and the location of valves, hydrants and other appurtenances.

- B. Construction Staking
 - 1. The base lines for locating the principal components of the work and a bench marks adjacent to the work are shown on the Drawings if Available. Base lines shall be defined as the line to which the location of the water main is referenced, i.e., edge of pavement, road centerline, property line, right-of-way or survey line. The CONTRACTOR shall be responsible for performing all survey work required for constructing the water main, including the establishment of base lines and any detail surveys needed for construction. This work shall include the staking out of permanent and temporary easements to insure that the CONTRACTOR is not deviating from the designated easements.

 - 2. The level of detail of survey required shall be that which the correct location of the water main can be established for construction and verified by the ENGINEER or OWNER. Where the location of components of the water main, e.g. tunnels and fittings, are not dimensioned, the establishment on the location of these components shall be based upon scaling these locations from the Drawings with relation to readily identifiable land marks, e.g., survey reference points, power poles, manholes, etc.

- C. Reference Points
 - 1. The CONTRACTOR shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the ENGINEER.

 - 2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the ENGINEER and OWNER for use, prior to verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to 0.01 foot.

 - 3. The CONTRACTOR shall give the ENGINEER reasonable notice that reference points are set. The reference point locations must be verified by the ENGINEER prior to commencing clearing and grubbing operations.

02665-19

Water Mains and Accessories

- D. After the CONTRACTOR locates and marks the water main centerline or baseline, the CONTRACTOR shall perform clearing and grubbing.
- E. Construction shall begin at a connection location and proceed without interruption. Multiple construction sites shall not be permitted without written authorization from the ENGINEER for each site.
- F. The CONTRACTOR shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.05 LAYING AND JOINTING PIPE AND ACCESSORIES

- A. Lay all pipe and fittings to accurately conform to the lines and grades established by the ENGINEER.
- B. Pipe Installation
 - 1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings, valves and hydrants shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.
 - 2. 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. 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 free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe containing dirt shall be laid.
 - 4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.

02665-20

Water Mains and Accessories

5. 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.
 6. It is not mandatory to lay pipe with the bells facing the direction in which work is progressing.
 7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade, shall not be permitted.
 8. Detection tape shall be buried 4 to 10-inches deep. Should detection tape need to be installed deeper, the CONTRACTOR shall provide 3-inch wide tape. In no case shall detection tape be buried greater than 20-inches from the finish grade surface.
- C. Alignment and Gradient
1. Lay pipe straight in alignment and gradient or follow true curves as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.
 2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.
- D. Expediting of Work: Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the ENGINEER.
- E. Joint Assembly
1. Push-on, mechanical, flange and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.

02665-21

Water Mains and Accessories

2. The CONTRACTOR shall inspect each pipe joint within 200 feet on either side of main line valves to insure 100 percent seating of the pipe spigot, except as noted otherwise.
 3. Each restrained joint shall be inspected by the CONTRACTOR to ensure that it has been "homed" 100 percent.
 4. The CONTRACTOR shall internally inspect each pipe joint to insure proper assembly for pipe 24-inches in diameter and larger after the pipe has been brought to final alignment.
- F. Cutting Pipe: Cut ductile iron pipe using an abrasive wheel saw. Cut PVC pipe using a suitable saw; remove all burrs and smooth the end before jointing. The CONTRACTOR shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.
- G. Polyethylene Encasement: Installation shall be in accordance with AWWA C105 and the manufacturer's instructions. All ends shall be securely closed with tape and all damaged areas shall be completely repaired to the satisfaction of the Engineer.
- H. Valve and Fitting Installation
1. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of pressure-containing bolting and test plugs, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Defective valves shall be corrected or held for inspection by the ENGINEER. Valves shall be closed before being installed.
 2. Valves, fittings, plugs and caps shall be set and joined to the pipe in the manner specified in this Section for cleaning, laying and joining pipe, except that 12-inch and larger valves shall be provided with special support, such as treated timbers, crushed stone, concrete pads or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve. Valves shall be installed in the closed position.
 3. A valve box shall be provided on each underground valve. They shall be carefully set, centered exactly over the operating nut and truly plumbed.

02665-22

Water Mains and Accessories

The valve box shall not transmit shock or stress to the valve. The bottom flange of the lower belled portion of the box shall be placed below the valve operating nut. This flange shall be set on brick, so arranged that the weight of the valve box and superimposed loads will bear on the base and not on the valve or pipe. Extension stems shall be installed where depth of bury places the operating nut in excess of 30-inches beneath finished grade so as to set the top of the operating nut 30-inches below finished grade. The valve box cover shall be flush with the surface of the finished area or such other level as directed by the ENGINEER.

4. 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.
5. A valve marker shall be provided for each underground valve. Unless otherwise detailed on the Drawings or directed by the ENGINEER, valve markers shall be installed 6-inches inside the right-of-way or easement.

I. Hydrant Installation

1. 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. All hydrants shall stand plumb and shall have their nozzles parallel with or at right angles to the roadway, with pumper nozzle facing the roadway, except that hydrants having two-hose nozzles 90 degrees apart shall be set with each nozzle facing the roadway at an angle of 45 degrees.
3. Hydrants shall be set to the established grade, with the centerline of the lowest nozzle at least 12-inches above the ground or as directed by the ENGINEER.
4. Each hydrant shall be connected to the main with a 6-inch branch controlled by an independent 6-inch valve. When a hydrant is set in soil that is pervious, 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 6-inches above the drain port opening in the hydrant to a distance of 12-inches around the elbow.

02665-23

Water Mains and Accessories

5. When a hydrant is set in clay or other impervious soil, a drainage pit 2 x 2 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 6-inches above the drain port.
6. Hydrants shall be located as shown on the Drawings or as directed by the ENGINEER. In the case of hydrants that are intended to fail at the ground-line joint upon vehicle impact, 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 6-inches thick to a diameter of 24-inches at or near the ground line around the hydrant barrel.

3.06 CONNECTIONS TO WATER MAINS

- A. Make connections to existing pipe lines with tapping sleeves and valves, unless specifically shown otherwise on the Drawings.
- B. Location: Before laying pipe, locate the points of connection to existing water mains and uncover as necessary for the ENGINEER or OWNER to confirm the nature of the connection to be made.
- C. Interruption of Services: Make connections to existing water mains only when system operations permit. Operate existing valves only with the specific authorization and direct supervision of the Owner.
- D. Tapping Saddles and Tapping Sleeves
 1. Holes in the new pipe shall be machine cut, either in the field or at the factory. No torch cutting of holes shall be permitted.
 2. Prior to attaching the saddle or sleeve, the pipe shall be thoroughly cleaned, utilizing a brush and rag, as required.
 3. Before performing field machine cut, the watertightness of the saddle or sleeve assembly shall be pressure tested. The interior of the assembly shall be filled with water. An air compressor shall be attached, which will induce a test pressure as specified in this Section. No leakage shall be permitted for a period of five minutes.

02665-24

Water Mains and Accessories

4. After attaching the saddle or sleeve to an existing main, but prior to making the tap, the interior of the assembly shall be disinfected. All surfaces to be exposed to potable water shall be swabbed or sprayed with a one percent hypochlorite solution.
- E. Connections Using Solid Sleeves: Where connections are shown on the Drawings using solid sleeves, the CONTRACTOR shall furnish materials and labor necessary to make the connection to the existing pipe line.
- F. Connections Using Couplings: Where connections are shown on the Drawings using couplings, the CONTRACTOR shall furnish materials and labor necessary to make the connection to the existing pipe line, including all necessary cutting, plugging and backfill.

3.07 THRUST RESTRAINT

- A. Provide restraint at all points where hydraulic thrust may develop.
- B. Concrete Blocking
 1. Provide concrete blocking for all bends, tees, valves, and other points where thrust may develop, except where other exclusive means of thrust restraint are specifically shown on the Drawings.
 2. Concrete shall be as specified in this Section.
 3. Form and pour concrete blocking at fittings as shown on the Drawings and as directed by the ENGINEER. Pour blocking against undisturbed earth. Increase dimensions when required by over excavation.

3.08 INSPECTION AND TESTING

- A. Pressure and Leakage Test
 1. All sections of the water main subject to internal pressure shall be pressure tested in accordance with AWWA C600. A section of main will be considered ready for testing after completion of all thrust restraint and backfilling.
 2. Each segment of water main between main valves shall be tested individually. At no time shall the segment being tested exceed 3,500 feet without prior approval of the ENGINEER.

02665-25

Water Mains and Accessories

3. Test Preparation
 - a. For water mains less than 24-inches in diameter, flush sections thoroughly at flow velocities, greater than 2.5 feet per second, adequate to remove debris from pipe and valve seats. For water mains 24-inches in diameter and larger, the main shall be carefully swept clean, and mopped if directed by the ENGINEER. Partially open valves to allow the water to flush the valve seat.
 - b. Partially operate valves and hydrants to clean out seats.
 - c. Provide temporary blocking, bulkheads, flanges and plugs as necessary, to assure all new pipe, valves and appurtenances will be pressure tested.
 - d. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances. Insert corporation cocks at highpoints to expel air as main is filled with water as necessary to supplement automatic air valves. Corporation stops shall be constructed as detailed on the Drawings with a meter box.
 - e. Fill pipeline slowly with water. Provide a suitable pump with an accurate water meter to pump the line to the specified pressure.
 - f. The differential pressure across a valve or hydrant shall equal the maximum possible, but not exceed the rated working pressure. Where necessary, provide temporary backpressure to meet the differential pressure restrictions.
 - g. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure.
4. Test Pressure: Test the pipeline at 50 psi above the rated working pressure of the pipe, measured at the lowest point, for at least two hours. Maintain the test pressure within 5 psi of the specified test pressure for the test duration. Should the pressure drop more than 5 psi at any time during the test period, the pressure shall be restored to the specified test pressure. Provide an accurate pressure gage with graduation not greater than 5 psi.

02665-26

Water Mains and Accessories

5. Leakage

- a. Leakage shall be defined as the sum of the quantity of water that must be pumped into the test section, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.
- b. The OWNER assumes no responsibility for leakage occurring through existing valves.

6. Test Results: No test section shall be accepted if the leakage exceeds the limits determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

- Where:
- L = allowable leakage, in gallons per hour
 - S = length of pipe tested, in feet
 - D = nominal diameter of the pipe, in inches
 - P = average test pressure during the leakage test, in pounds per square inch (gauge)

As determined under Section 4 of AWWA C600.

If the water main section being tested contains lengths of various pipe diameters, the allowable leakage shall be the sum of the computed leakage for each diameter. The leakage test shall be repeated until the test section is accepted. All visible leaks shall be repaired regardless of leakage test results.

7. Completion: After a pipeline section has been accepted, relieve test pressure. Record type, size and location of all outlets on record drawings.

3.09 DISINFECTING PIPELINE

- A. After successfully pressure testing each pipeline section, disinfect in accordance with AWWA C651 for the continuous-feed method and these Specifications.
- B. Specialty Contractor: Disinfection shall be performed by an approved specialty contractor. Before disinfection is performed, the CONTRACTOR shall submit a written procedure for approval before being permitted to proceed with the

02665-27

Water Mains and Accessories

disinfection. This plan shall also include the steps to be taken for the neutralization of the chlorinated water.

C. Chlorination

1. Apply chlorine solution to achieve a concentration of at least 50 milligrams per liter free chlorine in new line. Retain chlorinated water for 24 hours.
2. Chlorine concentration shall be recorded at every outlet along the line at the beginning and end of the 24 hour period.
3. After 24 hours, all samples of water shall contain at least 25 milligrams per liter free chlorine. Re-chlorinate if required results are not obtained on all samples.

D. Disposal of Chlorinated Water: Reduce chlorine residual of disinfection water to less than one milligram per liter if discharged directly to a body of water or to less than two milligrams per liter if discharged onto the ground prior to disposal. Treat water with sulfur dioxide or other reducing chemicals to neutralize chlorine residual. Flush all lines until residual is equal to existing system.

E. Bacteriological Testing: After final flushing and before the main is placed into service, the CONTRACTOR shall assist the OWNER in collecting samples from the line to have tested for bacteriological quality. Testing shall be performed by the OWNER at a laboratory certified by the State of Kentucky. Re-chlorinate lines until the required results are obtained.

3.10 PROTECTION AND RESTORATION OF WORK AREA

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The CONTRACTOR shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.
2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished

02665-28

Water Mains and Accessories

immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.
 4. The Department of Transportation's engineer shall be authorized to stop all work by the CONTRACTOR when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.
- B. Man-Made Improvements: Protect, or remove and replace with the ENGINEER'S approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the Work.
- C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the ENGINEER. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.
- D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the CONTRACTOR. No stumps, wood piles, or trash piles will be permitted on the work site.
- E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the Project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

END OF SECTION

SECTION 02730
Sewers and Accessories

PART 1 GENERAL

1.01 SCOPE

- A. This Section describes products to be incorporated into sewers and accessories and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.
- B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the ENGINEER, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

Complete shop drawings and engineering data, including shop drawings, shall be submitted to the ENGINEER in accordance with the requirements of Section 01340 of these Specifications.

1.04 TRANSPORTATION AND HANDLING

- A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification.
- B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front loader. Do not use material damaged in handling.

1.05 STORAGE AND PROTECTION

- A. Store all pipe which cannot be distributed along the route. Make arrangements for the use of suitable storage areas.

02730 - 2

Sewers and Accessories

- B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. Valves shall be drained and stored in a manner that will protect them from damage by freezing.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.
- D. Store joint gaskets in a cool location, out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

1.07 QUALITY ASSURANCE

- A. Product manufacturers shall provide the ENGINEER with written certification that all products furnished comply with all applicable provisions of these Specifications.
- B. If ordered by the ENGINEER, each pipe manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of five days during initial pipe installation.

PART 2 PRODUCTS

2.01 PIPING MATERIALS

- A. Ductile Iron Pipe (DIP)
 - 1. Ductile iron pipe shall be utilized in force mains, stream crossings, highway and railroad crossings, and other applications as shown on the Drawings. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet.
 - 2. Ductile iron pipe shall be manufactured in accordance with AWWA C151. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings:

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 18	350
20	300
24	250
30 - 54	200
60 - 64	200

3. Pipe and fittings shall be cement lined in accordance with AWWA C104. Pipe and fittings shall be furnished with a bituminous outside coating.
4. Fittings shall be ductile iron and shall conform to AWWA C110 or AWWA C153 with a minimum rated working pressure of 150 psi.
5. Joints
 - a. Unless shown or specified otherwise, joints shall be push-on or restrained joint type for pipe and standard mechanical, push-on or restrained joints for fittings. Joints shall conform to AWWA C111. Flanged joints shall conform to AWWA C115.
6. Provide the appropriate gaskets for joints. Gaskets for flange joints shall be made of 1/8-inch thick, cloth reinforced rubber; gaskets may be ring type or full face type.
7. Provide the necessary bolts for mechanical, restrained and flange connections. Bolts for flange connections shall be steel with American Regular unfinished square or hexagon heads. Nuts shall be steel with American Standard Regular hexagonal dimensions, all as specified in ANSI B17.2. All bolts and nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A and 2B fit. Mechanical joint glands shall be ductile iron.
8. Acceptance: Acceptance will be on the basis of the ENGINEER's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

2.02 MANHOLES AND PRECAST CONCRETE PRODUCTS

- A. Provide manholes and other precast concrete products in accordance with the following:

1. Precast Concrete Sections

- a. Precast concrete sections shall meet the requirements of ASTM C 478. The minimum compressive strength of the concrete in precast sections shall be 4,000 psi.
- b. The minimum wall thickness shall be one-twelfth of the inside diameter of the base, riser or the largest cone diameter. Additionally, the wall thickness shall be sufficient for the proper installation of the rubber boots. Wall thickness shall be as shown on the Drawings.
- c. Transition slabs which convert bases larger than four feet in diameter to four foot diameter risers shall be designed by the manhole manufacturer to carry the live and dead loads exerted on the slab.
- d. Seal joints between precast sections by means of rubber O-ring gaskets or flexible butyl rubber sealant. Butyl rubber sealants shall meet the requirements of AASHTO M-198. Sealant shall be pre-formed type with a minimum nominal diameter of 1-inch. Butyl rubber sealant shall be equal to Kent Seal No. 2 or Concrete Sealants CS202.
- e. Precast sections shall be manufactured such that the spigot end is at the top of each section.

2. Brick and Mortar: Brick shall be whole and hardburned, conforming to ASTM C 32 Grade MS. Mortar shall be made of one part Portland cement and two parts clean sharp sand. Cement shall be Type 1 and shall conform to ASTM C 150. Sand shall meet ASTM C 53.

3. Iron Castings

- a. Cast iron manhole frames, covers and steps shall meet the requirements of ASTM A 48 for Class 30 gray iron and all applicable local standards. All castings shall be tough, close grained, smooth and free from blow holes, blisters, shrinkage, strains, cracks, cold shots and other imperfections. No casting will be accepted which weighs less than 95 percent of the design weight. Shop drawings must indicate the design weight and provide sufficient dimensions to permit checking. All castings shall be thoroughly cleaned in the shop and given two coats of approved bituminous paint before rusting begins.
- b. Manhole frames and covers shall be equal to the following:

Type	Design Weight
Non Traffic	300#

- c. All frames and covers shall have machined horizontal bearing surfaces.

- d. All manholes shall have standard frames and covers except where specifically shown otherwise on the Drawings.
 - e. Watertight covers shall be bolt-down type and shall be equipped with four 1/2-inch stainless steel bolts and a 1/8-inch red rubber or rubber O-ring gasket. Covers shall be rotatable and interchangeable. Bolt holes shall be bored through so that debris entering the bolt hole will fall into the manhole. Bolt holes shall have the full 360 degree circle within the cover's radius when bored through the cover.
5. Plastic Steps: Manhole steps of polypropylene molded around a steel rod equal to products of M.A. Industries may be used.
 6. Rubber Boots: Provide preformed rubber boots and fasteners equal to those manufactured by Kor-N-Seal or Press Seal Gasket Corporation.

2.03 CONCRETE

Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. For job mixed concrete, submit the concrete mix design for approval by the ENGINEER. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

PART 3 EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

- A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the OWNER. The CONTRACTOR shall call the all utilities, agencies or departments that own and/or operate utilities in the vicinity of the construction work site, at least 72 hours (three business days) prior to construction, to verify the location of the existing utilities.
- B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.
 1. Provide the required notice to the utility owners and allow them to locate their facilities according to Kentucky law. Field utility locations are valid for only ten days after original notice. The CONTRACTOR shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.
 2. Expose the facility to verify its true location and grade for a distance of at least 200 feet in advance of pipeline construction to verify its true location and

02730 - 6

Sewers and Accessories

grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.

3. Avoid utility damage and interruption by protecting it with means or methods recommended by the utility OWNER.
4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The CONTRACTOR shall provide the ENGINEER an updated copy of the log bi-weekly, or more frequently if required.

C. Conflict with Existing Utilities

1. **Horizontal Conflict:** Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed water main does not permit safe installation of the sewer by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The CONTRACTOR may change the proposed alignment of the sewer to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement and complies with regulatory agency requirements after a written request to and subsequent approval by the ENGINEER. Where such relocation of the sewer is not approved by the ENGINEER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.
2. **Vertical Conflict:** Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed sewer does not permit the crossing without immediate or potential future damage to the utility, main, service, or the sewer. The CONTRACTOR may change the proposed grade of the sewer to avoid vertical conflicts if the changed grade provides minimum required capacity, maintains adequate cover and complies with regulatory agencies requirements, after written request to and subsequent approval by the ENGINEER. Where such relocation of the sewer is not approved by the ENGINEER, the CONTRACTOR shall arrange to have the utility, main, or service relocated.

- D. **Electronic Locator:** Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation

1. Sewers should maintain a minimum 10 foot edge-to-edge separation from water mains. Where the sewer crosses a water main, an 18-inch vertical separation shall be maintained where possible. Where possible, a full joint of sewer pipe shall be centered over the water main. Any deviation shall be requested in writing to the ENGINEER.
2. Where the sewer crosses over a water main, the water main shall be encased in concrete to the first joint in each direction.
3. No water main shall be permitted to pass through or come in contact with any part of a manhole.

3.02 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.
- B. No pipe shall be strung further along the route than 1,000 feet beyond the area in which the CONTRACTOR is actually working without written permission from the OWNER. The OWNER reserves the right to reduce this distance to a maximum distance of 200 feet in residential and commercial areas based on the effects of the distribution to the adjacent property owners.
- C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The CONTRACTOR shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.
- D. No distributed pipe shall be placed inside drainage ditches.
- E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.03 LOCATION AND GRADE

- A. The Drawings show the alignment and grade of the sewer and the position of manholes and other appurtenances. The slope shown on the profile and/or called for in the Specifications is the slope of the invert of the pipe.
- B. From the information on the Drawings and the survey points found on the Project site, the CONTRACTOR shall perform all surveys necessary for the establishment of the horizontal and vertical alignment of the sewer.

02730 - 8

Sewers and Accessories

C. Reference Points

1. The CONTRACTOR shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the ENGINEER.
2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the ENGINEER for use prior to his verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to the nearest 0.01 foot.
3. The CONTRACTOR shall give the ENGINEER reasonable notice that reference points are set. The reference point locations must be verified by the ENGINEER prior to commencing clearing and grubbing operations.

- D. After the ENGINEER locates and marks the manhole centerlines or baselines of the sewer, the CONTRACTOR shall perform clearing and grubbing.

E. Cut Sheets

1. Cut sheets shall be utilized for basis of payment and confirming that the profile is as shown on the Drawings.
2. Prior to beginning installation of any section of the gravity sewer, prepare cut sheets from field run ground elevations and submit them to the ENGINEER for approval.
3. The survey, from which cut sheets are prepared, may be performed prior to or after clearing and grubbing operations. The surveyor shall obtain an elevation on each bench mark shown on the Drawings and provide this information to the ENGINEER.
4. No installation of the sewer shall commence prior to approval of the cut sheets.
5. Submittal of cut sheets shall be in accordance with Section 01340 of these Specifications.
6. Cut sheets shall provide the station (to the nearest 1 foot) and the elevation (to the nearest 0.1 foot) at maximum 100 foot intervals, plus at each change in slope of the ground and at each manhole centerline. The cut sheet shall also show the invert elevation of the sewer at the corresponding sewer station. From a straight line interpolation of the data, the CONTRACTOR shall calculate and record the station of each point where there is a change in the cut brackets indicated on the Bid form. The CONTRACTOR shall calculate and

record the length of the sewer between each change in cut bracket. The CONTRACTOR shall also indicate the pipe material and class as well as the type of bedding. The slope of the sewer shall also be indicated between manholes. At least one offset hub or temporary bench mark shall be provided at each manhole. Its elevation and the resulting cut from the hub to the manhole invert shall also be shown on the cut sheets.

- F. Construction shall begin at the low end of the sewer and proceed upstream without interruption. Multiple construction sites shall not be permitted without written authorization from the ENGINEER for each site. As a minimum, cut sheets between construction sites shall be submitted and approved before multiple construction sites will be permitted.
- G. The CONTRACTOR shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.04 LAYING AND JOINTING PIPE AND ACCESSORIES

- A. Lay all pipe and fittings to accurately conform to the lines and grades established by the ENGINEER.
- B. Pipe Installation
 - 1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings and valves shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to sewer materials and protective coatings and linings. Under no circumstances shall sewer materials be dropped or dumped into the trench.
 - 2. All pipe, fittings, valves 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. 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 free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe which contains dirt shall be laid.
 - 4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.

02730 - 10

Sewers and Accessories

5. 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.
6. It is common practice to lay pipe with the bells facing the direction in which work is progressing, however, it is not mandatory.
7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted.

C. Alignment and Gradient

1. Lay pipe straight in alignment and gradient or follow true curves, where shown on the Drawings, as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.
2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.
3. The CONTRACTOR shall check the invert elevation at each manhole and the pipe invert elevation at least three times daily, start, mid-day and end of day. Elevations shall be checked more frequently if more than 100 feet of pipe is installed in a day or if the pipe is being constructed at minimum slope.
4. The CONTRACTOR shall check the horizontal alignment of the sewer at the same schedule as for invert elevations.

- D. Expediting of Work: Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the ENGINEER.

E. Joint Assembly

1. Push-on, mechanical, flange and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.
2. Each restrained joint shall be inspected by the CONTRACTOR to ensure that it has been "homed" 100 percent.
3. The CONTRACTOR shall internally inspect each pipe joint to insure proper assembly for pipe 24-inches in diameter and larger after the pipe has been brought to final alignment.

F. Cutting Pipe

1. Cut ductile iron pipe using an abrasive wheel saw.
2. Cut PVC pipe using a suitable saw.
3. Remove all burrs and smooth the end before jointing.
4. The CONTRACTOR shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.

G. Valve and Fitting Installation

1. Prior to installation, valves shall be inspected for direction of opening, number of turns to open, freedom of operation, tightness of pressure-containing bolting and test plugs, cleanliness of valve ports and especially seating surfaces, handling damage and cracks. Defective valves shall be corrected or held for inspection by the ENGINEER. Valves shall be closed before being installed.
2. Valves, fittings, plugs and caps shall be set and joined to the pipe in the manner specified in this Section for cleaning, laying and joining pipe, except that 12-inch and larger valves shall be provided with special support, such as treated timbers, crushed stone, concrete pads or a sufficiently tamped trench bottom so that the pipe will not be required to support the weight of the valve.
3. A valve box shall be provided on each underground valve. They shall be carefully set, centered exactly over the operating nut and truly plumbed. The valve box shall not transmit shock or stress to the valve. The bottom flange of the lower belled portion of the box shall be placed below the valve operating nut. This flange shall be set on brick, so arranged that the weight of the valve box and superimposed loads will bear on the base and not on the valve or pipe. Extension stems shall be installed where depth of bury places the operating nut in excess of 30-inches beneath finished grade so as to set the top of the operating nut 30-inches below finished grade. The valve box cover shall be flush with the surface of the finished area or such other level as directed by the ENGINEER.
4. 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.

02730 - 12

Sewers and Accessories

3.05 MANHOLE AND PRECAST CONCRETE PRODUCT CONSTRUCTION

- A. Construct manholes as shown on the Drawings.
- B. Precast Concrete: Handle sections carefully to prevent cracking or chipping. Provide uniform bedding of the bottom section to prevent uneven loading. Install gaskets and joint sealants in accordance with manufacturer's recommendations to produce a watertight structure.
- C. Pipe Tee: Place, joint, and properly backfill the pipe tee prior to placing any riser sections. Meet all requirements for precast manholes.
- D. Brick: Bed the bottom and sides of every brick in mortar. Apply a smooth coat of mortar, 3/4-inch thick, on the inside and outside.
- E. Pipe Connections for HDPE Pipe: Install the manhole entry pieces as follows:
 - 1. Do not cut the smoothwall manhole entry piece. Instead, cut the spigot end off of standard quarter, half or full length pipe so that the manhole entry piece is properly positioned in the manhole wall.
 - 2. Prepare the field cut end so that a standard sealing ring can be installed for a watertight joint in accordance with manufacturer's recommendations.
 - 3. Connect rubber boot to the manhole entry piece and to the manhole wall using fasteners recommended by the boot manufacturer.
- F. Pipe Connections: All pipes shall be connected to precast concrete manholes by a rubber boot provided in a cored or precast hole of the proper diameter.
 - 1. Pipe 36-Inch Diameter and Less: Connect pipe to manhole utilizing rubber boots.
 - 2. Pipe 42-Inch Diameter and Larger: Construct manhole collars as shown on the Drawings after the pipe has been sealed into the manhole. Forms may be used in lieu of brick sidewalls upon written approval of the ENGINEER.
 - 3. If preformed openings must be enlarged or altered, or if new openings must be made in the field, minimize the amount of material removed to provide closely matched surfaces for grouting.
- G. Inverts: Form channels as shown on the Drawings, rounded, and troweled smooth. Maintain consistent grade through the invert.

- H. Top Elevations: Build manholes outside of paved areas to 18-inches above finished grade unless otherwise shown on the Drawings or directed by the ENGINEER. Build manholes in paved areas to existing grades.
- I. Drop Connections: Manholes requiring drop connections are shown on the Drawings. Construct drop connections of the same materials as the upstream sewer and in accordance with the details shown on the Drawings.
- J. Frames and Covers: Unless frame and cover is at grade, the frame shall be cast into the cone section.
- K. Seal all manhole joints and lift holes, both inside and out, with grout. Between precast sections, this is in addition to joint sealant.
- L. Invert Elevations: The invert elevations shown on the Drawings shall be for the invert at the centerline of the precast concrete manhole. Prior to setting the laser or other vertical alignment control system for the sewer upstream of the manhole, the CONTRACTOR shall verify the elevation of the sewer installed at the manhole. Should the elevation differ from that shown on the Drawings, the CONTRACTOR shall take the following corrective action:
 - 1. If the sewer is laid at negative grade, the CONTRACTOR shall remove and reinstall the sewer at the correct grade at no additional cost to the OWNER.
 - 2. If the sewer is laid at a grade less than that shown on the Drawings, thus reducing the sewer's capacity, the OWNER may require the sewer to be removed and relaid at the correct grade at no additional cost to the OWNER. As a minimum, the grade to the next upstream manhole shall be adjusted such that the next upstream manhole shall be set at the correct elevation.
 - 3. If the sewer is laid at a grade greater than that shown on the Drawings, and if the CONTRACTOR can show that there are no conflicts with upstream existing utilities or obstructions, the CONTRACTOR shall adjust the grade of the next upstream manhole such that the next upstream manhole shall be set at the correct elevation. If such an adjustment, in the ENGINEER's opinion, is substantial, the grade adjustment shall be spread over multiple sections of the sewer. If such an adjustment, in the OWNER's opinion, significantly reduces the sewer's capacity, the OWNER may require the CONTRACTOR to remove and relay that portion of the sewer laid at the improper grade.
- M. Manholes shall be constructed such that their walls are plumb.

02730 - 14

Sewers and Accessories

3.06 THRUST RESTRAINT

- A. Provide restraint at all points where hydraulic thrust may develop.
- B. Retainer Glands: Provide retainer glands and all associated fittings, valves and related piping. Retainer glands shall be installed in accordance with the manufacturer's recommendations, particularly, the required torque of the set screws. The CONTRACTOR shall furnish a torque wrench to verify the torque on all set screws which do not have inherent torque indicators.
- C. Harnessing: Provide harness rods only where specifically shown on the Drawings or directed by the ENGINEER. Harness rods shall be manufactured in accordance with ASTM A 36 and shall have an allowable tensile stress of no less than 22,000 psi. Harness rods shall be hot dip galvanized or field coated with bitumastic before backfilling. Where possible, harness rods shall be installed through the mechanical joint bolt holes. Where it is not possible, provide 90 degree bend eye bolts. Eye bolts shall be of the same diameter as specified in AWWA C111 for that pipe size. The eye shall be welded closed. Where eye bolts are used in conjunction with harness rods, an appropriate size washer shall be utilized with a nut on each end of the harness rod. Eye bolts shall be of the same material and coating as the harness rods.
- D. Concrete Blocking
 - 1. Provide concrete blocking for all other bends, tees, valves, and other points where thrust may develop, except where other means of thrust restraint are specifically shown on the Drawings.
 - 2. Form and pour concrete blocking at fittings as shown on the Drawings and as directed by the ENGINEER. Pour blocking against undisturbed earth. Increase dimensions when required by over excavation.
- E. Thrust Collars: Collars shall be constructed as shown on the Drawings. Concrete and reinforcing steel shall meet the requirements specified in Article 2.03 of this Section. The welded-on collar shall be attached to the pipe by the pipe manufacturer.

3.07 CONCRETE COLLARS

Construct collars as shown on the Drawings.

3.08 INSPECTION AND TESTING

- A. Clean and test lines before requesting final acceptance. Where any obstruction is met, clean the sewers by means of rods, swabs, or other instruments. When requested by the ENGINEER, flush out lines and manholes before final inspection.
- B. Gravity Sewers: Pipe lines shall be straight and show a uniform grade between manholes. Correct any discrepancies discovered during inspection.
 - 1. Infiltration Tests: Use only when groundwater is two feet above the top of the pipe.
 - a. Install suitable weirs in manholes selected by the ENGINEER to determine the leakage of ground water into the sewer. The maximum length of line for each infiltration test shall be 5,000 feet. Measure leakage only when all visible leaks have been repaired and the ground water is two feet above the top of the pipe. If leakage in any section of the sewer line exceeds 100 gpd/inch diameter/mile, locate and repair leaks. Repair methods must be approved by the ENGINEER. After repairs are completed, re-test for leakage.
 - b. Furnish, install, and remove the necessary weirs, plugs, and bulkheads required to perform the leakage tests. Where continuous monitoring of flow level is required, the OWNER will provide and operate monitoring equipment.
 - 2. Exfiltration Tests: Choose one of the following when groundwater is not two feet above the top of the pipe.
 - a. Hydrostatic Test
 - (1) Test pipe between manholes with a minimum of 10 feet hydrostatic pressure, measured at the center of the pipe at the upstream manhole.
 - (2) The ends of the pipe in the test section shall be closed with suitable watertight bulkheads. Inserted into the top of each bulkhead shall be a 2-inch pipe nipple with an elbow. At the upper end of the test section, a 12-inch riser pipe shall be connected to the 2-inch nipple. The test section of pipe shall be filled through the pipe connection in the lower bulkhead which shall be fitted with a valve, until all air is exhausted and until water overflows the riser pipe at the upper end. Water may be introduced into the pipe 24 hours prior to the test period to allow complete saturation. House service lines, if installed, shall also be fitted with suitable bulkheads having provisions for the release of air while the test section is being filled with water.
 - (3) During the test period, which shall extend over a period of two hours, water shall be introduced into the riser pipe from

measured containers at such intervals as are necessary to maintain the water level at the top of the riser pipe. The total volume of water added during the test period shall not exceed that specified for infiltration.

b. Low-Pressure Air Test

- (1) Prior to air testing, the section of sewer between manholes shall be thoroughly cleaned and wetted. Immediately after cleaning or while the pipe is water soaked, the sewer shall be tested with low-pressure air. At the CONTRACTOR's option, sewers may be tested in lengths between manholes or in short sections (25 feet or less) using inflatable balls pulled through the line from manhole to manhole. Air shall be slowly supplied to the plugged sewer section until internal air pressure reaches approximately 4.0 psi. After this pressure is reached and the pressure allowed to stabilize (approximately two to five minutes), the pressure may be reduced to 3.5 psi before starting the test. If a 1.0 psi drop does not occur within the test time, then the line has passed the test. If the pressure drops more than 1.0 psi during the test time, the line is presumed to have failed the test, and the CONTRACTOR will be required to locate the failure, make necessary repairs, and retest the line. Minimum test time for various pipe sizes, in accordance with ASTM C 828 is as follows:

Nominal Pipe Size, inches	T (Time Min/100) Feet
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0
39	6.6
42	7.3
48	8.6
54	9.8

- (2) Required test equipment, including inflatable balls, braces, air hose, air source, timer, rotameter as applicable, cut-off valves, pressure reducing valve, 0-15 psi pressure gauge, 0-5 psi pressure gauge with gradations in 0.1 psi and accuracy of \pm two percent, shall be provided by the CONTRACTOR. Testing equipment shall be equal to Cherne Air-Loc Testing Systems.
- (3) The CONTRACTOR shall keep records of all tests made. Copy of such records will be given to the ENGINEER or the OWNER. Such records shall show date, line number and stations, operator, and such other pertinent information as required by the ENGINEER.
- (4) The CONTRACTOR is cautioned to observe proper safety precautions in performance of the air testing. It is imperative that plugs be properly secured and that care be exercised in their removal. Every precaution shall be taken to avoid the possibility of over-pressurizing the sewer line.

4. Deflection Test

- a. Test PVC gravity sewer for excessive deflection by passing a mandrel through the pipe. Deflection of the pipe shall not exceed the following:

Nominal Pipe Diameter	Maximum Allowable Deflection
≤ 12-inches	5%
15 to 30-inches	4%
> 30-inches	3%

- b. The mandrel size shall be based upon the maximum possible inside diameter for the type of pipe being tested, taking into account the allowable manufacturing tolerances of the pipe. The mandrel shall have an odd number of legs, or vanes, with a quantity of such equal to or greater than nine. The legs of the mandrel shall be permanently attached to the mandrel. A mandrel with variable sizes shall not be allowed. The mandrel shall be constructed of steel aluminum or other material approved by the ENGINEER, and shall have sufficient rigidity so the legs of the mandrel will not deform when pulling through a pipe. The mandrel dimensions shall be checked by the ENGINEER before use by the CONTRACTOR.
- c. Excavate and install properly any section of pipe not passing this test. Re-test until results are satisfactory.
- d. This test shall be performed within the first 30 days of installation and during final inspection, at the completion of this contract.

C. Force Main Pressure and Leakage Test

- 1. All sections of pipeline subject to internal pressure shall be pressure tested in accordance with AWWA C600. A section of line will be considered ready for testing after completion of all thrust restraint and backfilling. Each segment of pipeline between line valves shall be tested individually.
- 2. Test Preparation
 - a. Flush pipeline section thoroughly at flow velocities adequate to remove debris from pipe and valve seats. Partially operate valves and hydrants to clean out seats. Provide correctly sized temporary outlets in number adequate to achieve flushing velocities.
 - b. Provide temporary blocking, bulkheads, flanges and plugs as necessary, to assure all new pipe, valves and appurtenances will be pressure tested.
 - c. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances. Unless permanent air vents are in place, insert temporary corporation stops at highpoints to expel air as line is filled with water.
 - d. Fill pipeline slowly with water. Provide a suitable pump with an accurate water meter to pump the line to the specified pressure.

Differential pressure at valves and hydrants shall equal the maximum possible, but shall not exceed manufacturer's pressure rating.

3. Test Pressure: Test the pipeline at 50 psi measured at the lowest point for at least two hours. The test pressure shall not vary by more than 5 psi for the test duration. Should the pressure drop more than 5 psi at any time during the test period, the pressure shall be restored to the specified test pressure. Provide an accurate pressure gage with graduation not less than 5 psi.
4. Leakage
 - a. Leakage shall be defined as the quantity of water that must be pumped into the test section equal to the sum of the water, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.
 - b. The OWNER assumes no responsibility for leakage occurring through existing valves.
5. Test Results: No test section shall be accepted if the leakage exceeds the limits determined under Section 4 of AWWA C600. The leakage test shall be repeated until the test section is accepted. All visible leaks shall be repaired regardless of leakage test results.
6. Completion: After a pipeline section has been accepted, relieve test pressure. Record type, size and location of all outlets on record drawings.

3.09 PROTECTION AND RESTORATION OF WORK AREA

- A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.
 1. The CONTRACTOR shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.
 2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

02730 - 20

Sewers and Accessories

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.
 4. The Department of Transportation's ENGINEER shall be authorized to stop all work by the CONTRACTOR when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.
- B. Man-Made Improvements: Protect, or remove and replace with the ENGINEER's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the work.
- C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the ENGINEER. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.
- D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the CONTRACTOR. No stumps, wood piles, or trash piles will be permitted on the work site.
- E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

END OF SECTION

SECTION 02767
Sewer Flow Control

PART 1 GENERAL

- A. Sewer flow control may be required to conduct the sewer line installation, sewer line testing, and sewer line sealing operations effectively. In general, flow control will be required when sewer line flows back up in the system which would cause sewage backup into residences, commercial or industrial customers structures or exiting the system onto the surface. All cost of required sewer flow control shall be included in the unit price bid for gravity sewer installation in as much as No additional compensation shall be awarded the CONTRACTOR for flow control.

PART 2 PRODUCTS

Not Required.

PART 3 EXECUTION

3.01 PLUGGING OR BLOCKING

- A. Insert a sewer line plug into the line at a manhole upstream from the line segment that is to be inspected, tested, and sealed. The plug shall be designed so that a portion of the sewage flow can be released. During the inspection portion of the operation, shut off or substantially reduce flows so that the pipe can be properly inspected.

3.02 BYPASS PUMPING

- A. When bypass pumping is required to ensure the completion of the connection to the existing sewer line, inspection, testing, and sealing work, furnish pumping equipment, conduit, etc. Conduct pumping operations from manhole to manhole, and discharge no flow on the surface or in natural waterways.

3.03 LIABILITY

- A. The Contractor shall be responsible for damages to private or public property that may result from his sewer flow control operations.

END OF SECTION

SECTION 02933

Seeding

PART 1 GENERAL

1.1 SCOPE

- A. The work covered by this section shall include the establishment of all ground cover including areas to be seeded and sodded. This work shall include the supply of all materials, labor, superintendence and maintenance as outlined in these specifications.
- B. The part of the site not covered by roads, walks, building, etc. shall be seeded according to these specifications. The areas to be sodded shall include a three foot strip immediately adjacent to all roads, walks, and structures, etc.
- C. Before final acceptance of the work, the CONTRACTOR shall satisfactorily clean all areas within the limits of his operations including the street surfaces, walks, gutters, fences, lawns, private property and structures, leaving them in as neat, clean and usable condition as originally found. He shall remove all machinery, tools, surplus materials, temporary buildings and other structures from the site of work. He shall so remove all organic matter and materials containing organic matter from all areas and places used by him during construction. All sewers, manholes, inlets, etc., shall be cleared of all scaffolding, sedimentation, debris, rubbish and dirt.

Where the CONTRACTOR's operations have resulted in filling existing ditches, clogging existing culverts, damaging existing bridges, ground surfaces, sidewalks, driveways, etc., the Contract shall reditch, clean culverts, repair or replace bridges, ground surfaces, sidewalks, driveways, etc., so as to return them to a condition as good as or better than existed prior to the beginning of his operations.

The CONTRACTOR's cleanup operations, which include repair, restoration or replacement of ground surfaces and existing improvements and the removal of rock, shall be performed continuously during the construction operations.

Following installation of the pipeline, "rough cleanup" work shall be performed. This shall consist of grading the trench to create a neat, low mound of backfill material and disposing of any excavated material, rubbish, etc. Crushed stone

02933-2

Seeding

shall be added to driveways where necessary and fences repaired to the satisfaction of the property owners. After trenches have had adequate time to settle, final grade work and seeding shall be performed.

Rough Grade Work and Cleanup (Rough Cleanup) shall be defined to include the final backfill and windrowing of the ditch line, filling and leveling street and driveway cuts, cleaning up and removal of rubbish, repair of fences and structures, and any other such work that may be required to result in a neat, orderly project area. Rough Cleanup shall be performed as other construction progresses and must be completed immediately after the adjacent pipeline construction.

Rough Cleanup is not a separate pay item. The cost for this work shall be included in the unit bid price for waterlines. If Rough Cleanup is not performed as specified, the OWNER will require deductions from partial payment estimates.

Final cleanup, grade work and seeding shall be performed on each line when backfilled trenches have had adequate time to settle, but at least within 2 months from the date each line is constructed. Final grade work and seeding on Kentucky Bureau of Highways rights-of-way shall be done in accordance with said Bureau's specifications and the permit granted to the OWNER specifically for this project.

Where work was performed on private property in lawns, earth of good quality, free from rock shall be spread over the disturbed area and graded and compacted to match adjacent ground contours. The graded area shall be hand raked until smooth and free from rock, potholes, and humps. The disturbed area shall then be seeded with the seed variety used on the original lawn (e.g., a bluegrass lawn shall be reseeded with bluegrass seed) and the seed raked in lightly. The seeded area shall be fertilized and then uniformly covered with straw to a depth of approximately 1-1/2 inches.

Where work was performed on private property and not in lawns the trench line shall be graded and filled if necessary to match adjacent contours. All rock larger than 1-1/2" in diameter shall be removed from the disturbed area. In general, pasture and fallow land shall be fertilized and seeded with Kentucky 31 Fescue and plowed fields shall be left unseeded, however, the desire of each property owner shall govern regarding seeding.

02933-3

Seeding

In all cases on private property the rate of seed and fertilizer application shall be that recommended by the University of Kentucky Cooperative Extension Service for new plantings of the variety of grass seed used.

If the trench line settles following final grade work or if grass seed fails to germinate within a reasonable time, the CONTRACTOR shall regrade or reseed the area in question as specified above and as directed by the ENGINEER.

The OWNER reserves the right to require the CONTRACTOR to obtain a signed Release from each property owner affected by the work. Said Release shall indicate that the property owner is satisfied with the restoration of his land. However, the execution of such a release shall not relieve the CONTRACTOR from any of his contractual obligations or other claims that may arise at a later date. The widths of construction easements obtained by the OWNER from property owners is normally 20 feet and the CONTRACTOR shall confine his activities to the area within the limits of the easements unless specific permission is obtained by the CONTRACTOR from property owners.

PART 2 PRODUCTS

2.1 LIME

- A. Agriculture lime shall be spread over the entire area to be planted at an average rate of one (1) ton per acre. One tillage operation shall incorporate both the lime and the fertilizer into the soil to a depth of four inches (4").

2.2 FERTILIZER

- A. Two fertilizer materials shall be applied to all areas to be seeded. The first shall be complete commercial fertilizer with 1:2:2 ratio of nitrogen, phosphorus, and potassium. Eight hundred pounds (800 lbs) per acre of a 6-12-12 fertilizer, or equivalent amount of another 1:2:2 ratio fertilizer shall be used.
- B. In addition to a complete fertilizer, a slowly available nitrogen fertilizer shall be applied. Two hundred fifty pounds (250 lbs.) per acre of area formaldehyde (38-0-0) shall be used.

02933-4

Seeding

- C. Both fertilizer materials shall be free flowing and suitable for application with approved equipment. Each material shall conform to State fertilizer laws. Bagged fertilizer shall be delivered in sealed standard containers and shall bear the name, trademark, and warranty of the producer. The fertilizers shall be incorporated into the surface four inches (4") by tillage.

2.3 SEED

- A. Grass seed shall be fresh, clean and new crop seed composed of the following varieties mixed in the proportion by weight as shown and shall be certified as to varietal purity. All seed shall be mixed by a dealer furnished in sealed standard containers, and tagged with the dealer's guaranteed statement of composition of mixture and percentage of purity and germination. All areas disturbed by construction activity shall be seeded within the following blend at a rate of two hundred pounds (200 lbs.) per acre (4.6 pounds per 1000 square feet).
- B. The quality of seed shall conform to or exceed the minimum requirement for seed quality of the Kentucky Seed Improvement Association and shall meet or exceed the following standards for purity and germination:

Variety	Min%		Seeding Rate	
	Purity	Germ	Wt. %	Pounds Per Acre
Kentucky Bluegrass-Kenblue	98	80	20	40
Creeping Red Fescue-Pennlawn	98	85	70	140
Perennial Ryegrass	95	90	10	20

2.4 MULCH

- A. Mulch for hydroseeding shall be natural wood cellulose fiber or wood pulp which disperses readily in water and which has no toxic effect when combined with seed or other materials. It shall be a commercially available product made for use in spray applicators. Wood cellulose mulch shall be applied at a rate of 1000 lbs. per acre when work is done in the spring or fall season as defined below and 1500 pounds per acre when work is done during summer months.

02933-5

Seeding

2.5 SOD

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

PART 3 EXECUTION

3.1 PLANTING SEASON

- A. The normal seasonal dates for seeding mixtures containing Kentucky Bluegrass or tall fescue shall be August 15 to October 15 and from the time the soil is workable in the spring to May 1. Seeding of a specified grass variety at times other than the normal seasonal dates must be approved by the ENGINEER. Seeding shall not be done during windy weather or when the ground is excessively wet, frozen or otherwise untiltable.

3.2 SOIL PREPARATION

- A. All areas shall be graded to surface drain as shown on the plans. The lime and fertilizer shall be applied at the rates specified above and tilled into the surface 4 inches with approved tillage equipment to provide a reasonably firm, but friable seedbed.
- B. All areas to be seeded or sodded shall meet the specified grades, and be free of any weed or undesirable plant growth or debris.
- C. Lime and fertilizer for all areas shall be applied at the rate specified and incorporated into the top four inches by approved tillage equipment. The seed and wood cellulose mulch shall then be mixed with adequate water to produce a slurry and then applied uniformly with a hydroseeder at the rates specified above. Any area inadequately covered shall be redone as directed by the ENGINEER.

3.3 MAINTENANCE OF SEEDED AREAS:

- A. The CONTRACTOR shall maintain seeded areas until they have been mowed two times and then he shall repair eroded areas one time after the second mowing.

02933-6

Seeding

Each mowing shall be when the grass is about four inches (4") high and cut back to about 2 1/2". After the second mowing, the CONTRACTOR shall notify the ENGINEER that he is ready to repair erosion damage so that an inspection can be scheduled when the erosion repair work is complete. Once the erosion areas have been filled with topsoil, fertilized, seeded and mulched and the work has been inspected and approved by the ENGINEER, the work under this section is complete. Any further erosion repair work necessary will be treated as an extra and shall be done only when authorized by the ENGINEER.

3.4 CARE DURING CONSTRUCTION

- A. The CONTRACTOR shall be responsible for repair to turf areas damaged by his equipment or men until all work is accepted. Temporary haul roads and storage areas shall be tilled to depth of four inches (4") and fertilized, seeded and mulched as specified above.

END OF SECTION

SECTION 02957
Erosion Control and Stabilization

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes provisions for erosion control and stabilization.

PART 2 PRODUCTS

2.1 EROSION CONTROL

- A. All drainage paths and swales to be cut, graded, and seeded prior to any utilities trenching.
- B. All drainage paths and excavated areas to be mulched upon completion of seeding. Straw bales are to be staked perpendicular to flow in bottom of swale every 100 feet along drainage swale route. Straw bales to remain in swale route until a substantial growth of grass has been established. Straw bales are to be staked around all inlet rims where swale lines are excavated to route storm water flow into inlet.
- C. Erosion control requires immediate seeding and mulching of any stripped and unvegetated areas, including unpaved right-of-ways.

2.2 SEEDING

- A. A leguminous inoculated seed mixture shall be used for all seed areas. Class of seeding as follows:
 - 1. Mixture A: shall be used for all drainage paths, swales, side slopes, and all other areas where existing lawn is disturbed during construction.

Seed mixture shall be as follows:

- 2 lbs./1000 sq. ft. - Chewings Fescue
- 2 lbs./1000 sq. ft. - Kentucky Bluegrass
- 2 lbs./1000 sq. ft. - Perennial Rye

02957-2

Erosion Control and Stabilization

Seed shall be sown at a rate of 6 lbs. per 1000 sq. ft. of area.

2. Mixture B: shall be for all areas disturbed by excavation and re-grading as seasonal or temporary cover in bare areas.

Seed mixture shall be as follows:

1 lb./1000 sq. ft. - Perennial Rye
1 lb./1000 sq. ft. - Annual Rye

Seed shall be sown at a rate of 4 lbs. per 1000 sq. ft. of area.

3. Mixture C: shall be used for all lake or pond banks.

Seed mixture shall be as follows:

20% Perennial Ryegrass
15% Kentucky Bluegrass
15% Creeping Red Fescue
50% Nutri-Kote plus Apron fungicide seed coating.

Seed shall be sown at a rate of 5 lbs. per 1000 sq. ft. of area.

2.3 FERTILIZER

- A. Apply a minimum of 600 lbs. of 12-12-12 fertilizer per acre.

2.4 MULCH

- A. Mulch shall consist of clean, seed-free threshed straw of wheat, rye, oats, or barley. Spread mulch uniformly to form a continuous blanket not less than 1.5 inches loose measurement over "Mixture A" and "Mixture C" seeded areas.
- B. The mulch shall be held in place by being mechanically crimped into the soil, tackified with a bio-degradable tackifier, or netted and stapled to the soil with degradable netting. The mulch should be applied at a minimum rate of 1500 lbs. per acre.

2.5 STRAW TACKIFIER - MULCH TACKIFIER

02957-3

Erosion Control and Stabilization

- A. The tackifier shall be a naturally derived product from all organic sources resulting in a strong resilient muciloid, non-bitumen M-Binder. The product can be used in a hydro-seeder with both 100% Virgin Wood Fiber or Paper Wood Cellulose mulch and can be sprayed on 100% Wheat Straw Mulch for stabilization from the wind. Application rates vary between 60-140 lbs. per acre depending upon the existing conditions. The product shall be packed in 40 lbs. fiber bags.

Technical Specifications:

Protein Content	1.62
Ash Content	2.7
Fiber	4.0
pH of 1% Solution	6.8
Settleable Solids	5.0

- B. Erosion control requires immediate seeding and mulching of any stripped and un-vegetated areas, including unpaved right-of-ways.

PART 3 (NOT USED)

END OF SECTION

SECTION 03300
Cast-in-place Concrete

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- B. Cast-in-place concrete includes the following:
 - 1. Foundations and footings.
 - 2. Slabs-on-grade.
 - 3. Fill for steel deck.
 - 4. Foundation walls.
 - 5. Shear walls.
 - 6. Load-bearing building walls.
 - 7. Building frame members.
 - 8. Equipment pads and bases.
 - 9. Fill for steel pan stairs.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by ENGINEER.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar

diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.

- D. Shop drawings for formwork indicating fabrication and erection of forms for specific finished concrete surfaces. Show form construction including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that affect exposed concrete visually.
 - 1. ENGINEER's review is for general applications and features only. Designing formwork for structural stability and efficiency is CONTRACTOR's responsibility.
- E. Samples of materials as requested by ENGINEER, including names, sources, and descriptions, as follows:
 - 1. Color finishes.
 - 2. Normal weight aggregates.
 - 3. Fiber reinforcement.
 - 4. Reglets.
 - 5. Waterstops.
 - 6. Vapor retarder/barrier.
 - 7. Form liners.
- F. Laboratory test reports for concrete materials and mix design test.
- G. Material certificates in lieu of material laboratory test reports when permitted by ENGINEER. Material certificates shall be signed by manufacturer and CONTRACTOR, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 - 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- B. Concrete Testing Service: Engage a testing agency acceptable to ENGINEER to perform material evaluation tests and to design concrete mixes.
- C. Materials and installed work may require testing and retesting at any time during

03300-3

Cast-in-place Concrete

progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at CONTRACTOR's expense.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Textured Finish Concrete: Units of face design, size, arrangement, and configuration to match control sample. Provide solid backing and form supports to ensure stability of textured form liners.
- D. Forms for Cylindrical Columns and Supports: Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.
- E. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to support weight of placed concrete without deformation.
- F. Carton Forms: Biodegradable paper surface, treated for moisture-resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- G. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- H. Form Ties: Factory-fabricated, adjustable-length, stainless steel, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches (38 mm) to the plane of the exposed concrete surface.
 - 1. Provide ties that, when removed, will leave holes not larger than 1 inch (25 mm) in diameter in the concrete surface. Use only stainless material.

03300-4

Cast-in-place Concrete

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615 Grade 60 (ASTM A 615M Grade 400), deformed.
- B. Galvanized Reinforcing Bars: ASTM A 767 (ASTM A 767M), Class II [2.0 oz. zinc psf (610 g/sq. m)], hot-dip galvanized after fabrication and bending.
- C. Epoxy-Coated Reinforcing Bars: ASTM A 775 (ASTM A 775M).
- D. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- E. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- F. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- G. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A.
- H. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1) or stainless steel (CRSI, Class 2).

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Use one brand of cement throughout Project.
- B. Fly Ash: ASTM C 618, Type F.
- C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
 - 1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
 - 2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Engineer.

03300-5

Cast-in-place Concrete

- D. Lightweight Aggregates: ASTM C 330.
- E. Water: Potable.
- F. Fiber Reinforcement: Polypropylene fibers engineered and designed for secondary reinforcement of concrete slabs, complying with ASTM C 1116, Type III, not less than 3/4 inch long.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Gilco Fibers, Cormix Construction Chemicals.
 - b. Durafiber, Durafiber Corp.
 - c. Fiberstrand 100, Euclid Chemical Co.
 - d. Fibermesh, Fibermesh Co., Div. Synthetic Industries, Inc.
 - e. Forta, Forta Corp.
 - f. Grace Fibers, W.R. Grace & Co.
 - g. Polystrand, Metalcrete Industries
- G. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.
- H. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Air-Tite, Cormix Construction Chemicals.
 - b. Air-Mix or Perma-Air, Euclid Chemical Co.
 - c. Darex AEA or Daravair, W.R. Grace & Co.
 - d. MB-VR or Micro-Air, Master Builders, Inc.
 - e. Sealtight AEA, W.R. Meadows, Inc.
 - f. Sika AER, Sika Corp.
- I. Water-Reducing Admixture: ASTM C 494, Type A.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Chemtard, ChemMasters Corp.
 - b. PSI N, Cormix Construction Chemicals.

03300-6

Cast-in-place Concrete

- c. Eucon WR-75, Euclid Chemical Co.
 - d. WRDA, W.R. Grace & Co.
 - e. Pozzolith Normal or Polyheed, Master Builders, Inc.
 - f. Metco W.R., Metalcrete Industries.
 - g. Prokrete-N, Prokrete Industries.
 - h. Plastocrete 161, Sika Corp.
- J. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.
- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Super P, Anti-Hydro Co., Inc.
 - b. Cormix 200, Cormix Construction Chemicals.
 - c. Eucon 37, Euclid Chemical Co.
 - d. WRDA 19 or Daracem, W.R. Grace & Co.
 - e. Rheobuild or Polyheed, Master Builders, Inc.
 - f. Superslump, Metalcrete Industries.
 - g. PSPL, Prokrete Industries.
 - h. Sikament 300, Sika Corp.
- K. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.
- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Q-Set, Conspec Marketing & Manufacturing Co.
 - b. Lubricon NCA, Cormix Construction Chemicals.
 - c. Accelguard 80, Euclid Chemical Co.
 - d. Daraset, W.R. Grace & Co.
 - e. Pozzutec 20, Master Builders, Inc.
 - f. Accel-Set, Metalcrete Industries.
- L. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. PSI-R Plus, Cormix Construction Chemicals.
 - b. Eucon Retarder 75, Euclid Chemical Co.
 - c. Daratard-17, W.R. Grace & Co.
 - d. Pozzolith R, Master Builders, Inc.
 - e. Protard, Prokrete Industries.

03300-7

Cast-in-place Concrete

- f. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

- A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 0.0217- inch- (0.46-mm-) thick galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than 0.0336 inch thick (0.76 mm) with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.
- C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.
- D. Rubber Waterstops: Corps of Engineers CRD-C 513.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Progress Unlimited.
 - c. Williams Products, Inc.
- E. Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Greenstreak Plastic Products Co.
 - c. W.R. Meadows, Inc.
 - d. Progress Unlimited.
 - e. Schlegel Corp.
 - f. Vinylex Corp.
- F. Sand Cushion: Clean, manufactured or natural sand.
- G. Vapor Retarder: Provide vapor retarder that is resistant to deterioration when tested according to ASTM E 154, as follows:

03300-8

Cast-in-place Concrete

1. Polyethylene sheet not less than 8 mils (0.2 mm) thick.
- H. Vapor Barrier: Premolded seven-ply membrane consisting of reinforced core and carrier sheet with fortified bitumen layers, protective weathercoating, and plastic antistick sheet. Water vapor transmission rate of 1 perm when tested according to ASTM E 96, Method B. Provide manufacturer's recommended mastics and gusset tape.
1. Product: Subject to compliance with requirements, provide Sealtight Premoulded Membrane by W.R. Meadows, Inc.
- I. Nonslip Aggregate Finish: Provide fused aluminum oxide granules or crushed emery as the abrasive aggregate for a nonslip finish, with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, nonglazing, and unaffected by freezing, moisture, and cleaning materials.
- J. Colored Wear-Resistant Finish: Packaged dry combination of materials consisting of portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground nonfading mineral oxides interground with cement. Color as selected by OWNER from manufacturers' standards, unless otherwise indicated.
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Conshake 600 Colortone, Conspec Marketing & Mfg. Co.
 - b. Floorcron, Cormix Construction Chemicals.
 - c. Quartz Tuff, Dayton-Superior.
 - d. Surfex, Euclid Chemical Co.
 - e. Colorundum, A.C. Horn, Inc.
 - f. Quartz Plate, L&M Construction Chemicals, Inc.
 - g. Colorcron, Master Builders, Inc.
 - h. Floor Quartz, Metalcrete Industries
 - i. Lithochrome Color Hardener, L.M. Scofield Co.
 - j. Harcol Redi-Mix, Sonneborn-Chemrex.
 - k. Hard Top, Symons Corp.
- K. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m), complying with AASHTO M 182, Class 2.
- L. Moisture-Retaining Cover: One of the following, complying with ASTM C 171.
1. Waterproof paper.

03300-9

Cast-in-place Concrete

2. Polyethylene film.
 3. Polyethylene-coated burlap.
- M. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal (4.9 sq. m/L).
1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
 - b. Spartan-Cote, The Burke Co.
 - c. Conspec #1, Conspec Marketing & Mfg. Co.
 - d. Sealco 309, Cormix Construction Chemicals.
 - e. Day-Chem Cure and Seal, Dayton Superior Corp.
 - f. Eucocure, Euclid Chemical Co.
 - g. Horn Clear Seal, A.C. Horn, Inc.
 - h. L&M Cure R, L&M Construction Chemicals, Inc.
 - i. Masterkure, Master Builders, Inc.
 - j. CS-309, W.R. Meadows, Inc.
 - k. Seal N Kure, Metalcrete Industries.
 - l. Kure-N-Seal, Sonneborn-Chemrex.
 - m. Stontop CS2, Stonhard, Inc.
- N. Water-Based Acrylic Membrane Curing Compound: ASTM C 309, Type I, Class B.
1. Provide material that has a maximum volatile organic compound (VOC) rating of 350 g/L.
 2. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Highseal, Conspec Marketing and Mfg. Co.
 - b. Sealco - VOC, Cormix Construction Chemicals.
 - c. Safe Cure and Seal, Dayton Superior Corp.
 - d. Aqua-Cure, Euclid Chemical Co.
 - e. Dress & Seal WB, L&M Construction Chemicals, Inc.
 - f. Masterkure 100W, Master Builders, Inc.
 - g. Vocomp-20, W.R. Meadows, Inc.
 - h. Metcure, Metalcrete Industries.
 - i. Stontop CS1, Stonhard, Inc.
- O. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

03300-10

Cast-in-place Concrete

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Aquafilm, Conspec Marketing and Mfg. Co.
 - b. Eucobar, Euclid Chemical Co.
 - c. E-Con, L&M Construction Chemicals, Inc.
 - d. Confilm, Master Builders, Inc.
 - e. Waterhold, Metalcrete Industries.

- P. Underlayment Compound: Free-flowing, self-leveling, pumpable, cement-based compound for applications from 1 inch (25 mm) thick to feathered edges.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. K-15, Ardex, Inc.
 - b. Self-Leveling Wear Topping, W.R. Bonsal Co.
 - c. Conflow, Conspec Marketing and Mfg. Co.
 - d. Corlevel, Cormix Construction Chemicals.
 - e. LevelLayer II, Dayton Superior Corp.
 - f. Flo-Top, Euclid Chemical Co.
 - g. Gyp-Crete, Gyp-Crete Corp.
 - h. Levelex, L&M Construction Chemicals, Inc.
 - i. Underlayment 110, Master Builders, Inc.
 - j. Stoncrete UL1, Stonhard, Inc.
 - k. Concrete Top, Symons Corp.
 - l. Thoro Underlayment Self-Leveling, Thoro System Products.

- Q. Bonding Agent: Polyvinyl acetate or acrylic base.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Polyvinyl Acetate (Interior Only):
 - 1) Superior Concrete Bonder, Dayton Superior Corp.
 - 2) Euco Weld, Euclid Chemical Co.
 - 3) Weld-Crete, Larsen Products Corp.
 - 4) Everweld, L&M Construction Chemicals, Inc.
 - 5) Herculox, Metalcrete Industries.
 - 6) Ready Bond, Symons Corp.

03300-11
Cast-in-place Concrete

- b. Acrylic or Styrene Butadiene:
 - 1) Acrylic Bondcrete, The Burke Co.
 - 2) Strongbond, Conspec Marketing and Mfg. Co.
 - 3) Day-Chem Ad Bond, Dayton Superior Corp.
 - 4) SBR Latex, Euclid Chemical Co.
 - 5) Daraweld C, W.R. Grace & Co.
 - 6) Hornweld, A.C. Horn, Inc.
 - 7) Everbond, L&M Construction Chemicals, Inc.
 - 8) Acryl-Set, Master Builders Inc.
 - 9) Intralok, W.R. Meadows, Inc.
 - 10) Acrylpave, Metalcrete Industries.
 - 11) Sonocrete, Sonneborn-Chemrex.
 - 12) Stonlock LB2, Stonhard, Inc.
 - 13) Strong Bond, Symons Corp.

- R. Epoxy Adhesive: ASTM C 881, two-component material suitable for use on dry or damp surfaces. Provide material type, grade, and class to suit Project requirements.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Burke Epoxy M.V., The Burke Co.
 - b. Spec-Bond 100, Conspec Marketing and Mfg. Co.
 - c. Resi-Bond (J-58), Dayton Superior.
 - d. Euco Epoxy System #452 or #620, Euclid Chemical Co.
 - e. Epoxite Binder 2390, A.C. Horn, Inc.
 - f. Epabond, L&M Construction Chemicals, Inc.
 - g. Concreative Standard Liquid, Master Builders, Inc.
 - h. Rezi-Weld 1000, W.R. Meadows, Inc.
 - i. Metco Hi-Mod Epoxy, Metalcrete Industries.
 - j. Sikadur 32 Hi-Mod, Sika Corp.
 - k. Stonset LV5, Stonhard, Inc.
 - l. R-600 Series, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Engineer for preparing and reporting proposed mix designs.

03300-12

Cast-in-place Concrete

1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to ENGINEER of each proposed mix for each class of concrete prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed.
- C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
1. 4000 psi (27.6 MPa), 28-day compressive strength; water-cement ratio, 0.44 maximum (non-air-entrained), 0.35 maximum (air-entrained).
- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
1. Subjected to freezing and thawing: W/C 0.45.
 2. Subjected to deicers/watertight: W/C 0.40.
 3. Subjected to brackish water, salt spray, or deicers: W/C 0.40.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Ramps, slabs, and sloping surfaces: Not more than 3 inches (75 mm).
 2. Reinforced foundation systems: Not less than 1 inch (25 mm) and not more than 3 inches (75 mm).
 3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than 8 inches (200 mm) after adding admixture to site-verified 2 - 3 inch (50 - 75 mm) slump concrete.
 4. Other concrete: Not more than 4 inches (100 mm).
- F. Lightweight Structural Concrete: Lightweight aggregate and concrete shall conform to ASTM C 330. Proportion mix to produce concrete with a minimum compressive strength of 3000 psi (20.7) at 28 days and a calculated equilibrium unit weight of 110 pcf (1762 kg/cu. m) plus or minus 3 pcf (48.1 kg/cu. m) as determined by ASTM C 567. Concrete slump at the point of placement shall be the minimum necessary for efficient mixing, placing, and finishing. Maximum slump shall be 6 inches (150 mm) for pumped concrete and 5 inches (125 mm) elsewhere. Air entrain concrete exposed to weather according to ACI 301 requirements.
- G. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by ENGINEER. Laboratory test data for revised mix

03300-13
Cast-in-place Concrete

design and strength results must be submitted to and accepted by ENGINEER before using in Work.

- H. Fiber Reinforcement: Add at manufacturer's recommended rate but not less than 1.5 lb/cu. yd. (0.9 kg/cu. m).

2.6 ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg C).
- C. Use high-range water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.
- D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for 1-1/2 inch (38 mm) maximum aggregate.
 - b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for 1 inch (25 mm) maximum aggregate.
 - c. 5.0 percent (moderate exposure); 6.0 percent (severe exposure) for 3/4 inch (19 mm) maximum aggregate.
 - d. 5.5 percent (moderate exposure); 7.0 percent (severe exposure) for 1/2 inch (13 mm) maximum aggregate.
 - 2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 2 to 4 percent air.
- E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

03300-14

Cast-in-place Concrete

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
 - 1. When air temperature is between 85 deg F (29 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
 - 1. Provide Class A tolerances for concrete surfaces exposed to view.
 - 2. Provide Class C tolerances for other concrete surfaces.
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.

03300-15

Cast-in-place Concrete

- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.
- B. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended mastic or pressure-sensitive tape.
 - 1. Cover vapor retarder/barrier with sand cushion and compact to depth indicated.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
 - 1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least

03300-16

Cast-in-place Concrete

one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure.
- B. Provide keyways at least 1-1/2 inches (38 mm) deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.
- F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch (3 mm) wide by one-fourth of slab depth or inserts 1/4 inch (6 mm) wide by one-fourth of slab depth, unless otherwise indicated.
 - 1. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris.
 - 2. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
 - 3. If joint pattern is not shown, provide joints not exceeding 15 ft. (4.5 m) in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
 - 4. Provide joint fillers and sealants.

3.6 INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
- C. Install dovetail anchor slots in concrete structures as indicated on drawings.
- D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.
 - 1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.

03300-18

Cast-in-place Concrete

- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.

- E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 - 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 - 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 - 3. Maintain reinforcing in proper position on chairs during concrete placement.

- F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

- G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 - 1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

- H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

03300-19

Cast-in-place Concrete

1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.
- B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
- C. Smooth-Rubbed Finish: Unless otherwise shown or scheduled, provide smooth-rubbed finish on all exposed, vertical concrete surfaces that have received smooth-formed finish treatment not later than 1 day after form removal.
 1. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Grout-Cleaned Finish: Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.
 1. Combine one part portland cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard portland cement and

03300-20

Cast-in-place Concrete

white portland cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.

2. Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

- E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

- A. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.

1. After placing slabs, finish surface to tolerances of F(F) 15 (floor flatness) and F(L) 13 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.

- B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.

1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

- C. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.

1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free

03300-21

Cast-in-place Concrete

of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to ASTM E 1155 (ASTM E 1155M). Grind smooth any surface defects that would telegraph through applied floor covering system.

- D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a fine broom.
- E. Nonslip Broom Finish: Apply a nonslip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with before application.
- F. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and where indicated.
 - 1. After completing float finishing and before starting trowel finish, uniformly spread dampened nonslip aggregate at a rate of 25 lb per 100 sq. ft. (12 kg/10 sq. m) of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.
 - 2. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose nonslip aggregate.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated

03300-22

Cast-in-place Concrete

items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.12 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.
- D. Provide moisture curing by the following methods:
 - 1. Keep concrete surface continuously wet by covering with water.
 - 2. Use continuous water-fog spray.
 - 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4 inch (100 mm) lap over adjacent absorptive covers.
- E. Provide moisture-retaining cover curing as follows:
 - 1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches (75 mm) and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
 - 1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

03300-23

Cast-in-place Concrete

2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
- H. Curing Unformed Surfaces: Cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.
1. Final cure concrete surfaces to receive finish flooring with a moisture-retaining cover, unless otherwise directed.

3.13 SHORES AND SUPPORTS

- A. General: Comply with ACI 347 for shoring and reshoring in multistory construction, and as specified.
- B. Extend shoring from ground to roof for structures four stories or less, unless otherwise permitted.
- C. Extend shoring at least three floors under floor or roof being placed for structures over four stories. Shore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.
- D. Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to support work without excessive stress or deflection.
- E. Keep reshores in place a minimum of 15 days after placing upper tier, or longer, if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.14 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and

03300-24

Cast-in-place Concrete

protection operations are maintained.

- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.15 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable.

3.16 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable.
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh (1.2 mm) sieve, using only enough water as required for handling and placing.
 - 1. Cut out honeycombs, rock pockets, voids over 1/4 inch (6 mm) in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch (25 mm). Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 - 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before

03300-25

Cast-in-place Concrete

proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

- C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable.
 4. Repair defective areas, except random cracks and single holes not exceeding 1 inch (25 mm) in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

03300-26

Cast-in-place Concrete

- E. Repair isolated random cracks and single holes 1 inch (25 mm) or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- F. Perform structural repairs with prior approval of ENGINEER for method and procedure, using specified epoxy adhesive and mortar.
- G. Repair methods not specified above may be used, subject to acceptance of ENGINEER.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: The CONTRACTOR will employ a testing agency to perform tests and to submit test reports, at no additional cost to the OWNER.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by ENGINEER.
 - 1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and one test for each set of compressive-strength specimens.
 - d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yd. (4 cu. m) plus additional sets for each 50 cu. yd. (38 cu. m) more than the first 25 cu. yd. (19 cu. m) of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
 - 2. When frequency of testing will provide fewer than five strength tests for a given

03300-27

Cast-in-place Concrete

- class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
3. When total quantity of a given class of concrete is less than 50 cu. yd. (38 cu. m), ENGINEER may waive strength testing if adequate evidence of satisfactory strength is provided.
 4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi (3.4 MPa).
- C. Test results will be reported in writing to ENGINEER within 3 days. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
- E. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION

SECTION 03310
Flowable Fill Concrete

PART 1 GENERAL

1.1 DESCRIPTION

Flowable fill is a low strength mixture of portland cement, sand, Class F fly ash, and water. It is proportioned to flow under and around the pipe requiring no compaction and little or no finishing. Flowable fill may be used by the CONTRACTOR as backfill material for pipe. When using flowable fill with aluminum pipe, an approved means of separation must be provided, such as bituminous coating.

PART 2 PRODUCT

2.2 MATERIALS

Ingredient materials shall meet the requirements specified in the following sections of the Standard Specifications:

Portland Cement, Type I	801
Sand	804
Fly Ash, Class F	844
Water	803

The flowable fill shall be initially mixed in the following proportions per cubic yard:

Cement (Minimum)	40 lbs.
Fly Ash	300 lbs.
Sand (SSD)	3000 lbs.
Water (Maximum)	550 lbs.

To expedite settlement of the flowable fill it will be necessary for bleed water to appear on the surface within 5 to 10 minutes after placement. A delay in bleeding indicates there are too many fines in the mixture or insufficient water. If the maximum water was added, the fly ash quantity shall be reduced in increments of 50 lbs. until mixture is bleeding freely. Approximately 60 lbs. of sand shall be added to replace each 50 lbs. increment of fly ash to maintain the original yield. The flowable fill is too dry when cracks develop as it flows into place.

A set of test cylinders shall be cast for each 300 cubic yards of flowable fill. Cylinders shall not be rodded, but the sides of the mold shall be tapped lightly after each layer. The test cylinders should be allowed to bleed for about 30 minutes, refilled, and then covered with a sheet of tough durable impervious plastic. Secure the plastic in place around the mold, within one inch of the top, with a rubber band or string prior to covering with wet burlap. Remove the burlap after 24 hours and cure at 60°F to 90°F, in the shade, until 28 days old. Then remove the plastic covering and mold and perform compressive strength test. The average of the 28 days compressive strength tests is expected to be approximately 50 PSI.

PART 3 EXECUTION

3.3 CONSTRUCTION

Flowable fill shall be delivered in a revolving drum truck mixer conforming to Section 601 to insure that the mixture is in suspension when placed. Agitation is required during transportation and waiting time. Subsidence may occur if the mixture is not agitated. Normally, a trench can be backfilled directly from the truck chute or a pump may be used.

The flowable fill may extend from the top of the compacted bedding to the bottom of the pavement structure. Flowable fill shall be a minimum of 2 hours of age prior to the addition and compaction of any material above it.

When flowable fill is used, the CONTRACTOR may reduce the trench width to a minimum of 6 inches clear on each side of the pipe. Standing water in the trench does not have to be pumped out before backfilling with flowable fill.

Certain types of pipe may float, therefore backfilling may have to be done in lifts or else the pipe will need to be anchored. Backfilling in lifts is generally more applicable to long lines of pipe, allowing time for a substantial amount of the water to dissipate prior to applying the next lift. Anchors can be made of small lumber, metal straps, and must be adequately spaced. For larger diameter pipe, it may be possible to maintain a surge of flowable fill on top of the pipe to help prevent floating. Generally floating is not a problem after the level of the backfill is above the springline of the pipe. The CONTRACTOR is responsible to take whatever action is necessary to insure that the pipe remains in the correct horizontal position and at the specified elevation.

END OF SECTION



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE
CORPS OF ENGINEERS
P.O. BOX 59
LOUISVILLE, KENTUCKY 40201-0059

November 23, 2018

Regulatory Division
South Branch
ID No. LRL-2018-945-ncc

Mr. Randall G. Payne
Kentucky Transportation Cabinet
Division of Environmental Analysis
200 Mero Street
Frankfort, Kentucky 40622

Dear Mr. Payne:

This is in response to your request for authorization to replace the US Highway 62 Bridge that crosses Hinkle Creek, and the SR 48 Bridge that crosses East Fork Simpson Creek, and the reconstruction of a culvert between the two bridges, located in Bloomfield, Nelson County, Kentucky. 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 maintenance of a structure which has been previously authorized, either by DA Permit or by having been constructed prior to current Federal laws. Therefore, the project is authorized under the provisions of 33 CFR 330 Nationwide Permit (NWP) No. 3, Maintenance, as published in the Federal Register January 6, 2017. Under the provisions of this authorization you must comply with the enclosed Terms and General Conditions for Nationwide Permit No. 3, and the following Special Conditions:

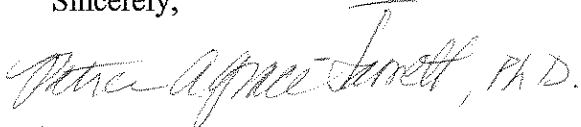
- a. To address impacts to the US Highway 62 Bridge, the SR 48 Bridge, and the culvert between the two bridges located within the Bloomfield Historic District in Bloomfield, Nelson County, Kentucky, the enclosed Memorandum of Agreement (MOA), dated September 10, 2018, between the Federal Highway Administration, the Kentucky State Historic Preservation Officer, and the Kentucky Transportation Cabinet includes measures to be implemented to mitigate impacts to the bridges and culvert. The authorization under this Corps permit is conditional upon your compliance with all the terms and conditions associated with the MOA, which are incorporated by reference in this permit. Failure to comply with the MOA would constitute non-compliance with the Corps permit.

You must also comply with the enclosed Water Quality Certification (WQC) Conditions for Nationwide Permit No. 3 dated March 19, 2017, issued by the Kentucky Division of Water (KDOW). 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 March 18, 2022. The enclosed Compliance Certification must be submitted to the District Engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later. Note that we also perform periodic inspections to ensure compliance with our permit conditions and applicable Federal laws. A copy of this letter will be forwarded to the KDOW and to the Kentucky State Historic Preservation Office.

If you have any questions, please contact this office by writing to the above address, ATTN: CELRL-RDS, or by calling Mrs. Norma Condra at 502-315-6680. All correspondence pertaining to this matter should refer to our ID No. LRL-2018-945-ncc.

Sincerely,


for David Baldrige
Chief, South Branch
Regulatory Division

Enclosures

ADDRESS FOR COORDINATING AGENCIES

Ms. Beth Harrod
Kentucky Energy & Environment Cabinet
Division of Water
300 Sower Boulevard, 3rd Floor
Frankfort, KY 40601

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



MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

**ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION**

R. BRUCE SCOTT
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

**General Certification--Nationwide Permit # 14
Linear Transportation Projects**

This General Certification is issued March 19, 2017, in conformity with the requirements of Section 401 of the Clean Water Act of 1977, as amended (33 U.S.C. §1341), as well as Kentucky Statute KRS 224.16-050.

For this and all nationwide permits, the definition of surface water is as per 401 KAR 10:001 Chapter 10, Section 1(80): Surface Waters means those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface. Lagoons used for waste treatment and effluent ditches that are situated on property owned, leased, or under valid easement by a permitted discharger are not considered to be surface waters of the commonwealth.

Agricultural operations, as defined by KRS 224.71-100(1) conducting activities pursuant to KRS 224.71-100 (3), (4), (5), (6), or 10 are deemed to have certification if they are implementing an Agriculture Water Quality Plan pursuant to KRS 224.71-145.

For all other operations, the Commonwealth of Kentucky hereby certifies under Section 401 of the Clean Water Act (CWA) that it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 304, 306 and 307 of the CWA, will not be violated for the activity covered under NATIONWIDE PERMIT 14, namely Linear Transportation Projects, provided that the following conditions are met:

1. The activity will not occur within surface waters of the Commonwealth identified by the Kentucky Division of Water as Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters.
2. The activity will not occur within surface waters of the Commonwealth identified as perpetually-protected (e.g. deed restriction, conservation easement) mitigation sites.
3. The activity will impact less than 1/2 acre of wetland/marsh.

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 2

4. The activity will impact less than 300 linear feet of surface waters of the Commonwealth. Stream realignment greater than 100 feet and in-stream stormwater detention/retention basins are not covered under this general water quality certification.
5. For complete linear transportation projects, all impacts shall not exceed a cumulative length of 500 linear feet within each Hydrologic Unit Code (HUC) 14.
6. Any crossings must be constructed in a manner that does not impede natural water flow.
7. Stream impacts covered under this General Water Quality Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KWQP).
8. The Kentucky Division of Water may require submission of a formal application for an individual certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
9. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
10. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:
 - Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
 - Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur (401 KAR 10:031 Section 2 and KRS 224.70-100).
 - Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to,

General Certification--Nationwide Permit # 14
Linear Transportation Projects
Page 3

upstream, or downstream of the structures. All sediment and erosion control devices shall be removed and the natural grade restored within the completion timeline of the activities.

- Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
- Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access.
- To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
- 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 in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation.
- Any 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 rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement.
- 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 such work will be done.
- 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 KDOW shall be notified immediately by calling (800) 928-2380.

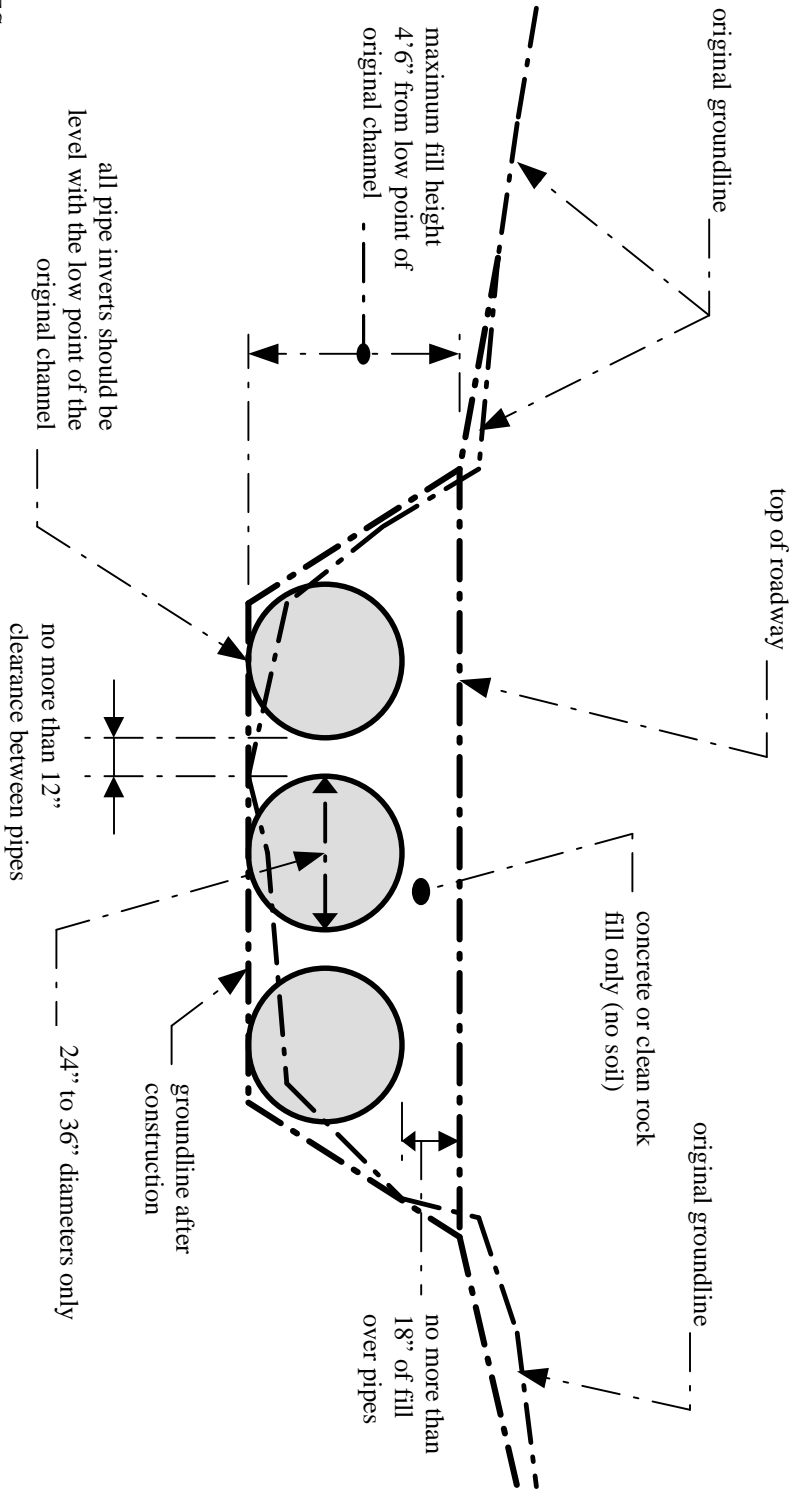
Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

GENERAL CONDITIONS FOR WATER QUALITY CERTIFICATION

1. The Kentucky Division of Water may require submission of a formal application for an Individual Certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
2. Nationwide permits issued by the U.S. Army Corps of Engineers for projects in Outstanding State Resource Waters, Cold Water Aquatic Habitats, and Exceptional Waters as defined by 401 KAR 10:026 shall require individual water quality certifications.
3. Projects requiring in-stream stormwater detention/retention basins shall require individual water quality certifications.
4. Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur.
5. Sediment and erosion control measures (e.g., check-dams, silt fencing, or hay bales) shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, placement shall not be conducted in such a manner that may cause instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control measures shall be removed and the natural grade restored prior to withdrawal from the site.
6. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
7. To the maximum extent practicable, all in-stream work under this certification shall be performed during low flow.
8. 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 in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize re-suspension of sediments and disturbance to the channel, banks, or riparian vegetation.
9. If there are water supply intakes located downstream that may be affected by increased turbidity, the permittee shall notify the operator when work will be performed.
10. Removal of existing riparian vegetation should be restricted to the minimum necessary for project construction.

11. Should stream pollution, 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.

ATTACHMENT 1



NOTES:

1. This is a conceptual drawing. The number and size of pipes and other details will vary depending on specific site conditions.
2. The pipes and backfill must be contained within the stream channel as shown above. During the construction of the approaches and access roadway across the floodplain, unstable and unconsolidated materials unsuitable for roadways may be excavated and replaced with riprap, crushed stone, or other stable road construction materials. This may only be done, however, with the following provisions: (1) the disposal of excess, unconsolidated materials thus excavated must be outside of the floodplain and (2) the finished surface of the completed road may be no more than three inches (3") above the pre-construction surface of the floodplain at any point beyond the top of banks.

LOW-WATER CROSSING

STANDARD DRAWING
Not to Scale



Item Number: 04-1078.00 **Contract ID:** Unavailable **County:** NELSON
Letting Date: 01/24/2020 **Project Manager:** KYTC\JOSEPH.FERGUSON BR-KY
Description:
ADDRESS DEFICIENCIES OF BRIDGES ON US 62 (HINKLE CREEK) AND KY 48 IN BLOOMFIELD 090B00096N (SR 28.2)
090B00095N (12CCR)

Info: Welcome to the Clear View Production site. All changes here will affect Production SYP.

Search Project Reports

Open CAP Report

#	Requestor	Location	Request Date	CAP Description	Modified By	Modified
1	District 4	Projectwide	11/27/2018	KYTC commits to implementing historic impact mitigation as outlined in the signed MOA transmitted to FHWA by letter dated August 9, 2018. JMF	ky\joseph.ferguson	11/28/2018

New

Milestones

Funding

CAP

Evaluations

Details

GUARDRAIL DELIVERY VERIFICATION SHEET

Contract Id: _____

Contractor: _____

Section Engineer: _____

District & County: _____

<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QTY LEAVING PROJECT</u>	<u>QTY RECEIVED@BB YARD</u>
GUARDRAIL (Includes End treatments & crash cushions)	LF	_____	_____
STEEL POSTS	EACH	_____	_____
STEEL BLOCKS	EACH	_____	_____
WOOD OFFSET BLOCKS	EACH	_____	_____
BACK UP PLATES	EACH	_____	_____
CRASH CUSHION	EACH	_____	_____
NUTS, BOLTS, WASHERS	BAG/BCKT	_____	_____
DAMAGED RAIL TO MAINT. FACILITY	LF	_____	_____
DAMAGED POSTS TO MAINT. FACILITY	EACH	_____	_____

***Required Signatures before Leaving Project Site**

Printed Section Engineer's Representative _____ & Date _____

Signature Section Engineer's Representative _____ & Date _____

Printed Contractor's Representative _____ & Date _____

Signature Contractor's Representative _____ & Date _____

***Required Signatures after Arrival at Bailey Bridge Yard (All material on truck must be counted & the quantity received column completed before signatures)**

Printed Bailey Bridge Yard Representative _____ & Date _____

Signature Bailey Bridge Yard Representative _____ & Date _____

Printed Contractor's Representative _____ & Date _____

Signature Contractor's Representative _____ & Date _____

**Payment for the bid item remove guardrail will be based upon the quantities shown in the Bailey Bridge Yard received column. Payment will not be made for guardrail removal until the guardrail verification sheets are electronically submitted to the Section Engineer by the Bailey Bridge Yard Representative.

Completed Form Submitted to Section Engineer Date: _____ By: _____

PART II
SPECIFICATIONS AND STANDARD DRAWINGS

SPECIFICATIONS REFERENCE

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2016*.

SUPPLEMENTAL SPECIFICATIONS

The contractor shall use the Supplemental Specifications that are effective at the time of letting.
The Supplemental Specifications can be found at the following link:

<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

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.

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

11

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:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

SPECIAL PROVISION FOR EMBANKMENT AT BRIDGE END BENT STRUCTURES

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

1.0 DESCRIPTION. Construct a soil, granular, or rock embankment with soil, granular or cohesive pile core and place structure granular backfill, as the Plans require. Construct the embankment according to the requirements of this Special Provision, the Plans, Standard Drawing RGX 100 and 105, and the Standard Specifications, Current Edition.

2.0 MATERIALS.

2.1 Granular Embankment. Conform to Subsection 805.10. When Granular Embankment materials are erodible or unstable according to Subsection 805.03.04, use the Special Construction Methods found in 3.2 of the Special Provision.

2.2 Rock Embankment. Provide durable rock from roadway excavation that consists principally of Unweathered Limestone, Durable Shale (SDI equal to or greater than 95 according to KM 64-513), or Durable Sandstone.

2.3 Pile Core. Provide a pile core in the area of the embankments where deep foundations are to be installed unless otherwise specified. The Pile Core is the zone indicated on Standard Drawings RGX 100 and 105 designated as Pile Core. Material control of the pile core area during embankment construction is always required. Proper Pile Core construction is required for installation of foundation elements such as drilled or driven piles or drilled shafts. The type of material used to construct the pile core is as directed in the plans or below. Typically, the pile core area will be constructed from the same material used to construct the surrounding embankment. Pile Core can be classified as one of three types:

A) Pile Core - Conform to Section 206 of the Standard Specifications. Provide pile core material consisting of the same material as the adjacent embankment except the material in the pile core area shall be free of boulders or particle sizes larger than 4 inches in any dimension or any other obstructions that may hinder pile driving operations. If the pile core material hinders pile driving operations, take the appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

B) Granular Pile Core. Granular pile core is required only when specified in the plans. Select a gradation of durable rock to facilitate pile driving that conforms to Subsection 805.11. If granular pile core material hinders pile driving operations, take appropriate means necessary to reach the required pile tip elevation, at no expense to the Department.

C) Cohesive Pile Core. Cohesive Pile Core is required only when specified in the plans. Conform to Section 206 of the Standard Specifications and use soil with at least 50 percent passing a No. 4 sieve having a minimum Plasticity Index (PI) of 10. In addition, keep the cohesive pile core free of boulders, larger than 4 inches in any dimension, or any other obstructions, which would interfere with drilling operations. If cohesive pile core material interferes with drilling operations, take appropriate means necessary to maintain

excavation stability, at no expense to the Department.

2.4 Structure Granular Backfill. Conform to Subsection 805.11

2.5 Geotextile Fabric. Conform to Type I or Type IV in Section 214 and 843.

3.0 CONSTRUCTION.

3.1 General. Construct roadway embankments at end bents according to Section 206 and in accordance with the Special Provision, the Plans, and Standard Drawings for the full embankment section. In some instances, granular or rock embankment will be required for embankment construction for stability purposes, but this special provision does not prevent the use of soil when appropriate. Refer to the plans for specific details regarding material requirements for embankment construction.

Place and compact the pile core and structure granular backfill according to the applicable density requirements for the project. If the embankment and pile core are dissimilar materials (i.e., a granular pile core is used with a soil embankment or a cohesive pile core is used with a granular embankment), a Geotextile Fabric, Type IV, will be required between the pile core and embankment in accordance with Sections 214 and 843 of the Standard Specifications.

When granular or rock embankment is required for embankment construction, conform to the general requirements of Subsection 206.03.02 B. In addition, place the material in no greater than 2-foot loose lifts and compact with a vibrating smooth wheel roller capable of producing a minimum centrifugal force of 15 tons. Apply these requirements to the full width of the embankment for a distance of half the embankment height or 50 feet, whichever is greater, as shown on Standard Drawing RGX-105.

When using granular pile core, install 8-inch perforated underdrain pipe at or near the elevation of the original ground in the approximate locations depicted on the standard drawing, and as the Engineer directs, to ensure positive drainage of the embankment. Wrap the perforated pipe with a fabric of a type recommended by the pipe manufacturer.

After constructing the embankment, excavate for the end bent cap, drive piling, install shafts or other foundation elements, place the mortar bed, construct the end bent, and complete the embankment to finish grade according to the construction sequence shown on the Plans or Standard Drawings and as specified hereinafter.

Certain projects may require widening of existing embankments and the removal of substructures. Construct embankment according to the plans. Substructure removal shall be completed according to the plans and Section 203. Excavation may be required at the existing embankment in order to place the structure granular backfill as shown in the Standard Drawings.

After piles are driven or shafts installed (see design drawings), slope the bottom of the excavation towards the ends of the trench as noted on the plans for drainage. Using a separate pour, place concrete mortar, or any class concrete, to provide a base for forming and placing the cap. Place side forms for the end bent after the mortar has set sufficiently to support workmen and forms without being disturbed.

Install 4-inch perforated pipe in accordance with the plans and Standard Drawings. In the event slope protection extends above the elevation of the perforated pipe, extend the pipe through the slope protection.

After placing the end bent cap and achieving required concrete cylinder strengths, remove adjacent forms and fill the excavation with compacted structure granular backfill material (maximum 1' loose lifts) to the level of the berm prior to placing beams for the bridge. Place Type IV geotextile fabric between embankment material and structure granular backfill. After completing the end bent backwall, or after completing the span end

wall, place the compacted structure granular backfill (maximum 1' loose lifts) to subgrade elevation. If the original excavation is enlarged, fill the entire volume with compacted structure granular backfill (maximum 1' loose lifts) at no expense to the Department. Do not place backfill before removing adjacent form work. Place structure granular backfill material in trench ditches at the ends of the excavation. Place Geotextile Fabric, Type IV over the surface of the compacted structure granular backfill prior to placing aggregate base course.

Tamp the backfill with hand tampers, pneumatic tampers, or other means approved by the Engineer. Thoroughly compact the backfill under the overhanging portions of the structure to ensure that the backfill is in intimate contact with the sides of the structure.

Do not apply seeding, sodding, or other vegetation to the exposed granular embankment.

3.2 Special Construction Methods. Erodible or unstable materials may erode even when protected by riprap or channel lining; use the special construction method described below when using these materials.

Use fine aggregates or friable sandstone granular embankment at "dry land" structures only. Do not use them at stream crossings or locations subject to flood waters.

For erodible or unstable materials having 50 percent or more passing the No. 4 sieve, protect with geotextile fabric. Extend the fabric from the original ground to the top of slope over the entire area of the embankment slopes on each side of, and in front of, the end bent. Cover the fabric with at least 12 inches of non-erodible material.

For erodible or unstable materials having less than 50 percent passing a No. 4 sieve, cover with at least 12 inches of non-erodible material.

Where erodible or unstable granular embankment will be protected by riprap or channel lining, place Type IV geotextile fabric between the embankment and the specified slope protection.

4.0 MEASUREMENT.

4.1 Granular Embankment. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure for payment any Granular Embankment that is not called for in the plans.

The Department will not measure for payment any special construction caused by using erodible or unstable materials and will consider it incidental to the Granular Embankment regardless of whether the erodible or unstable material was specified or permitted.

4.2 Rock Embankment. The Department will not measure for payment any rock embankment and will consider it incidental to roadway excavation or embankment in place, as applicable. Rock embankments will be constructed using granular embankment on projects where there is no available rock present within the excavation limits of the project.

4.3 Pile Core. Pile core will be measured and paid under roadway excavation or embankment in place, as applicable. The Department will not measure the pile core for separate payment. The Department will not measure for payment the 8-inch perforated underdrain pipe and will consider it incidental to the Pile Core.

4.4 Structure Granular Backfill. The Department will measure the quantity in cubic yards using the plan quantity, increased or decreased by authorized adjustments as specified in Section 204. The Department will not measure any additional material required for backfill outside the limits shown on the Plans and Standard Drawings for payment and will

consider it incidental to the work.

The Department will not measure for payment the 4-inch perforated underdrain pipe and will consider it incidental to the Structure Granular Backfill.

4.5 Geotextile Fabric. The Department will not measure the quantity of fabric used for separating dissimilar materials when constructing the embankment and pile core and will consider it incidental to embankment construction.

The Department will not measure for payment the Geotextile Fabric used to separate the Structure Granular Backfill from the embankment and aggregate base course and will consider it incidental to Structure Granular Backfill.

The Department will not measure for payment the Geotextile Fabric required for construction with erodible or unstable materials and will consider it incidental to embankment construction.

4.6 End Bent. The Department will measure the quantities according to the Contract. The Department will not measure furnishing and placing the 2-inch mortar or concrete bed for payment and will consider it incidental to the end bent construction.

4.7 Structure Excavation. The Department will not measure structure excavation on new embankments for payment and will consider it incidental to the Structure Granular Backfill or Concrete as applicable.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02223	Granular Embankment	Cubic Yards
02231	Structure Granular Backfill	Cubic Yards

The Department will consider payment as full compensation for all work required in this provision.

September 16, 2016

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

FHWA-1273 -- Revised May 1, 2012

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

I. GENERAL

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

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
- (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
- (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

**KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS**

**EMPLOYMENT REQUIREMENTS
RELATING TO
NONDISCRIMINATION OF EMPLOYEES
(APPLICABLE TO FEDERAL-AID SYSTEM CONTRACTS)**

**AN ACT OF THE KENTUCKY GENERAL ASSEMBLY
TO PREVENT DISCRIMINATION IN EMPLOYMENT**

**KRS CHAPTER 344
EFFECTIVE JUNE 16, 1972**

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

Standard Title VI/Non-Discrimination Assurances

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **Federal Highway Administration** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **Federal Highway Administration**, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **Federal Highway Administration** may determine to be appropriate, including, but not limited to:
 - a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the **Federal Highway Administration** may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Standard Title VI/Non-Discrimination Statutes and Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 *et seq.*)

EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 3 Fountain Place, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: January 27, 2017

"General Decision Number: KY20200038 01/03/2020

Superseded General Decision Number: KY20190038

State: Kentucky

Construction Type: Highway

Counties: Anderson, Bath, Bourbon, Boyd, Boyle, Bracken, Breckinridge, Bullitt, Carroll, Carter, Clark, Elliott, Fayette, Fleming, Franklin, Gallatin, Grant, Grayson, Greenup, Hardin, Harrison, Henry, Jefferson, Jessamine, Larue, Lewis, Madison, Marion, Mason, Meade, Mercer, Montgomery, Nelson, Nicholas, Oldham, Owen, Robertson, Rowan, Scott, Shelby, Spencer, Trimble, Washington and Woodford Counties in Kentucky.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher)

BRICKLAYER.....\$ 26.80 12.38

BRKY0002-006 06/01/2017

BRACKEN, GALLATIN, GRANT, MASON & ROBERTSON COUNTIES:

Rates Fringes

BRICKLAYER.....\$ 27.81 13.01

BRKY0007-004 06/01/2017

BOYD, CARTER, ELLIOT, FLEMING, GREENUP, LEWIS & ROWAN COUNTIES:

Rates Fringes

BRICKLAYER.....\$ 32.98 19.02

BRKY0017-004 06/01/2017

ANDERSON, BATH, BOURBON, BOYLE, CLARK, FAYETTE, FRANKLIN,
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,
OWEN, SCOTT, WASHINGTON & WOODFORD COUNTIES:

Rates Fringes

BRICKLAYER.....\$ 26.47 12.76

CARP0064-001 05/01/2015

Rates Fringes

CARPENTER.....\$ 27.50 16.06

Diver.....\$ 41.63 16.06

PILEDRIVERMAN.....\$ 27.75 16.06

* ELEC0212-008 06/03/2019

BRACKEN, GALLATIN and GRANT COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 30.18	18.89

ELEC0212-014 11/26/2018

BRACKEN, GALLATIN & GRANT COUNTIES:

	Rates	Fringes
Sound & Communication Technician.....	\$ 24.35	10.99

ELEC0317-012 06/01/2019

BOYD, CARTER, ELLIOT & ROWAN COUNTIES:

	Rates	Fringes
ELECTRICIAN (Wiremen) Electrician.....	\$ 34.35	25.70

ELEC0369-007 05/28/2019

ANDERSON, BATH, BOURBON, BOYLE, BRECKINRIDGE, BULLITT, CARROLL,
CLARK, FAYETTE, FRAONKLIN, GRAYSON, HARDIN, HARRISON, HENRY,
JEFFERSON, JESSAMINE, LARUE, MADISON, MARION, MEADE, MERCER,
MONTGOMERY, NELSON, NICHOLAS, OLDHAM, OWEN, ROBERTSON, SCOTT,
SHELBY, SPENCER, TRIMBLE, WASHINGTON, & WOODFORD COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 32.44	17.22

* ELEC0575-002 05/27/2019

FLEMING, GREENUP, LEWIS & MASON COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 33.75	17.19

ENGI0181-018 07/01/2019

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1.....	\$ 33.30	16.50
GROUP 2.....	\$ 30.44	16.50
GROUP 3.....	\$ 30.89	16.50
GROUP 4.....	\$ 30.12	16.50

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 Concrete Pump; Skid
Steer Machine with all Attachments; Switchman or Brakeman;
Throttle Valve Person; Tractair & Road Widening Trencher;
Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger;
Welding Machine; Well Points; & Whirley Oiler

GROUP 3 - All Off Road Material Handling Equipment,
including Articulating Dump Trucks; Greaser on Grease
Facilities servicing Heavy Equipment

GROUP 4 - Bituminous Distributor; Burlap & Curing Machine;
Cement Gun; Concrete Saw; Conveyor; Deckhand Oiler; Grout
Pump; Hydraulic Post Driver; Hydro Seeder; Mud Jack; Oiler;
Paving Joint Machine; Power Form Handling Equipment; Pump;
Roller (Earth); Steerman; Tamping Machine; Tractor (Under
50 H.P.); & Vibrator

CRANES - with booms 150 ft. & Over (Including JIB), and where
the length of the boom in combination with the length of
the piling leads equals or exceeds 150 ft. - \$1.00 over
Group 1 rate

EMPLOYEES ASSIGNED TO WORK BELOW GROUND LEVEL ARE TO BE PAID
10%
ABOVE BASIC WAGE RATE. THIS DOES NOT APPLY TO OPEN CUT WORK.

IRON0044-009 06/01/2019

BRACKEN, GALLATIN, GRANT, HARRISON, ROBERTSON,
BOURBON (Northern third, including Townships of Jackson,
Millersburg, Ruddel Mills & Shawhan);
CARROLL (Eastern third, including the Township of Ghent);
FLEMING (Western part, excluding Townships of Beechburg, Colfax,
Elizaville, Flemingsburg, Flemingsburg Junction, Foxport,
Grange City, Hillsboro, Hilltop, Mount Carmel, Muses Mills,
Nepton, Pecksridge, Plummers Landing, Plummers Mill, Poplar
Plains, Ringos Mills, Tilton & Wallingford);
MASON (Western two-thirds, including Townships of Dover,
Lewisburg, Mays Lick, Maysville, Minerva, Moranburg,
Murphysville, Ripley, Sardis, Shannon, South Ripley &
Washington);
NICHOLAS (Townships of Barefoot, Barterville, Carlisle,
Ellisville, Headquarters, Henryville, Morningglory, Myers &
Oakland Mills);
OWEN (Townships of Beechwood, Bromley, Fairbanks, Holbrook,
Jonesville, Long Ridge, Lusby's Mill, New, New Columbus, New
Liberty, Owenton, Poplar Grove, Rockdale, Sanders, Teresita &
Wheatley);
SCOTT (Northern two-thirds, including Townships of Biddle,
Davis, Delaplain, Elmville, Longlick, Muddy Ford, Oxford,
Rogers Gap, Sadieville, Skinnersburg & Stonewall)

	Rates	Fringes
IRONWORKER		
Fence Erector.....	\$ 28.00	21.20
Structural.....	\$ 29.47	21.20

IRON0070-006 06/01/2019

ANDERSON, BOYLE, BRECKINRIDGE, BULLITT, FAYETTE, FRANKLIN,
 GRAYSON, HARDIN, HENRY, JEFFERSON, JESSAMINE, LARUE, MADISON,
 MARION, MEADE, MERCER, NELSON, OLDHAM, SHELBY, SPENCER,
 TRIMBLE, WASHINGTON & WOODFORD
 BOURBON (Southern two-thirds, including Townships of Austerlity,
 Centerville, Clintonville, Elizabeth, Hutchison, Littlerock,
 North Middletown & Paris);
 CARROLL (Western two-thirds, including Townships of Carrollton,
 Easterday, English, Locust, Louis, Prestonville & Worthville);
 CLARK (Western two-thirds, including Townships of Becknerville,
 Flanagan, Ford, Pine Grove, Winchester & Wyandotte);
 OWEN (Eastern eighth, including Townships of Glenmary, Gratz,
 Monterey, Perry Park & Tacketts Mill);
 SCOTT (Southern third, including Townships of Georgetown, Great
 Crossing, Newtown, Stampling Ground & Woodlake);

	Rates	Fringes
IRONWORKER.....	\$ 29.68	22.75

IRON0769-007 06/01/2019

BATH, BOYD, CARTER, ELLIOTT, GREENUP, LEWIS, MONTGOMERY & ROWAN
 CLARK (Eastern third, including townships of Bloomingdale,
 Hunt, Indian Fields, Kiddville, Loglick, Rightangele & Thomson);
 FLEMING (Townships of Beechburg, Colfax, Elizaville,
 Flemingsburg, Flemingsburg Junction, Foxport, Grange City,
 Hillsboro, Hilltop, Mount Carmel, Muses Mills, Nepton,
 Peckstridge, Plummers Landing, Plummers Mill, Poplar Plains,
 Ringos Mills, Tilton & Wallingford);
 MASON (Eastern third, including Townships of Helena, Marshall,
 Orangeburg, Plumville & Springdale);
 NICHOLAS (Eastern eighth, including the Township of Moorefield
 Sprout)

	Rates	Fringes
IRONWORKER		
ZONE 1.....	\$ 32.00	25.95
ZONE 2.....	\$ 32.40	25.95
ZONE 3.....	\$ 34.00	25.95

ZONE 1 - (no base rate increase) Up to 10 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.

ZONE 2 - (add \$0.40 per hour to base rate) 10 to 50 mile radius of Union Hall, 1643 Greenup Ave, Ashland, KY.

ZONE 3 - (add \$2.00 per hour to base rate) 50 mile radius & over of Union Hall, 1643 Greenup Ave, Ashland, KY.

 LABO0189-003 07/01/2018

BATH, BOURBON, BOYD, BOYLE, BRACKEN, CARTER, CLARK, ELLIOTT, FAYETTE, FLEMING, FRANKLIN, GALLATIN, GRANT, GREENUP, HARRISON, JESSAMINE, LEWIS, MADISON, MASON, MERCER, MONTGOMERY, NICHOLAS, OWEN, ROBERTSON, ROWAN, SCOTT, & WOOLFORD COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter

Tender; Cement Mason Tender; Cleaning of Machines;
Concrete; Demolition; Dredging; Environmental - Nuclear,
Radiation, Toxic & Hazardous Waste - Level D; Flagperson;
Grade Checker; Hand Digging & Hand Back Filling; Highway
Marker Placer; Landscaping, Mesh Handler & Placer; Puddler;
Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail
& Fence Installer; Signal Person; Sound Barrier Installer;
Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper;
Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer);
Brickmason Tender; Mortar Mixer Operator; Scaffold Builder;
Burner & Welder; Bushhammer; Chain Saw Operator; Concrete
Saw Operator; Deckhand Scow Man; Dry Cement Handler;
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
- Level C; Forklift Operator for Masonary; Form Setter;
Green Concrete Cutting; Hand Operated Grouter & Grinder
Machine Operator; Jackhammer; Pavement Breaker; Paving
Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven
Georgia Buggy & Wheel Barrow; Power Post Hole Digger;
Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind
Trencher; Sand Blaster; Concrete Chipper; Surface Grinder;
Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman;
Gunnite Operator & Mixer; Grout Pump Operator; Side Rail
Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free
Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher;
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;
& Tunnel Mucker (Free Air); Directional & Horizontal
Boring; Air Track Drillers (All Types); Powdermen &
Blasters; Troxler & Concrete Tester if Laborer is Utilized

LAB00189-008 07/01/2018

ANDERSON, BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE,
 MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE &
 WASHINGTON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement
 Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter
 Tender; Cement Mason Tender; Cleaning of Machines;
 Concrete; Demolition; Dredging; Environmental - Nuclear,
 Radiation, Toxic & Hazardous Waste - Level D; Flagperson;
 Grade Checker; Hand Digging & Hand Back Filling; Highway
 Marker Placer; Landscaping, Mesh Handler & Placer; Puddler;
 Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail
 & Fence Installer; Signal Person; Sound Barrier Installer;
 Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper;
 Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer);
 Brickmason Tender; Mortar Mixer Operator; Scaffold Builder;
 Burner & Welder; Bushhammer; Chain Saw Operator; Concrete
 Saw Operator; Deckhand Scow Man; Dry Cement Handler;
 Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
 - Level C; Forklift Operator for Masonary; Form Setter;
 Green Concrete Cutting; Hand Operated Grouter & Grinder
 Machine Operator; Jackhammer; Pavement Breaker; Paving
 Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven
 Georgia Buggy & Wheel Barrow; Power Post Hole Digger;

Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind
Trencher; Sand Blaster; Concrete Chipper; Surface Grinder;
Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman;
Gunnite Operator & Mixer; Grout Pump Operator; Side Rail
Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free
Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher;
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;
& Tunnel Mucker (Free Air); Directional & Horizontal
Boring; Air Track Drillers (All Types); Powdermen &
Blasters; Troxler & Concrete Tester if Laborer is Utilized

LABO0189-009 07/01/2018

BRECKINRIDGE & GRAYSON COUNTIES

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 23.07	14.21
GROUP 2.....	\$ 23.32	14.21
GROUP 3.....	\$ 23.37	14.21
GROUP 4.....	\$ 23.97	14.21

LABORERS CLASSIFICATIONS

GROUP 1 - Aging & Curing of Concrete; Asbestos Abatement
Worker; Asphalt Plant; Asphalt; Batch Truck Dump; Carpenter
Tender; Cement Mason Tender; Cleaning of Machines;
Concrete; Demolition; Dredging; Environmental - Nuclear,
Radiation, Toxic & Hazardous Waste - Level D; Flagperson;
Grade Checker; Hand Digging & Hand Back Filling; Highway
Marker Placer; Landscaping, Mesh Handler & Placer; Puddler;

Railroad; Rip-rap & Grouter; Right-of-Way; Sign, Guard Rail
& Fence Installer; Signal Person; Sound Barrier Installer;
Storm & Sanitary Sewer; Swamper; Truck Spotter & Dumper;
Wrecking of Concrete Forms; General Cleanup

GROUP 2 - Batter Board Man (Sanitary & Storm Sewer);
Brickmason Tender; Mortar Mixer Operator; Scaffold Builder;
Burner & Welder; Bushhammer; Chain Saw Operator; Concrete
Saw Operator; Deckhand Scow Man; Dry Cement Handler;
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
- Level C; Forklift Operator for Masonary; Form Setter;
Green Concrete Cutting; Hand Operated Grouter & Grinder
Machine Operator; Jackhammer; Pavement Breaker; Paving
Joint Machine; Pipelayer; Plastic Pipe Fusion; Power Driven
Georgia Buggy & Wheel Barrow; Power Post Hole Digger;
Precast Manhole Setter; Walk-Behind Tamper; Walk-Behind
Trencher; Sand Blaster; Concrete Chipper; Surface Grinder;
Vibrator Operator; Wagon Driller

GROUP 3 - Asphalt Luteman & Raker; Gunnite Nozzleman;
Gunnite Operator & Mixer; Grout Pump Operator; Side Rail
Setter; Rail Paved Ditches; Screw Operator; Tunnel (Free
Air); Water Blaster

GROUP 4 - Caisson Worker (Free Air); Cement Finisher;
Environmental - Nuclear, Radiation, Toxic & Hazardous Waste
- Levels A & B; Miner & Driller (Free Air); Tunnel Blaster;
& Tunnel Mucker (Free Air); Directional & Horizontal
Boring; Air Track Drillers (All Types); Powdermen &
Blasters; Troxler & Concrete Tester if Laborer is Utilized

PAIN0012-005 06/11/2005

BATH, BOURBON, BOYLE, CLARK, FAYETTE, FLEMING, FRANKLIN,
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,
ROBERTSON, SCOTT & WOODFORD COUNTIES:

	Rates	Fringes
PAINTER		
Bridge/Equipment Tender		
and/or Containment Builder..\$	18.90	5.90
Brush & Roller.....\$	21.30	5.90
Elevated Tanks;		
Steeplejack Work; Bridge &		
Lead Abatement.....\$	22.30	5.90
Sandblasting &		
Waterblasting.....\$	22.05	5.90
Spray.....\$	21.80	5.90

 PAIN0012-017 05/01/2015

BRACKEN, GALLATIN, GRANT, MASON & OWEN COUNTIES:

	Rates	Fringes
PAINTER (Heavy & Highway		
Bridges - Guardrails -		
Lightpoles - Striping)		
Bridge Equipment Tender		
and Containment Builder.....\$	20.73	9.06
Brush & Roller.....\$	23.39	9.06
Elevated Tanks;		
Steeplejack Work; Bridge &		
Lead Abatement.....\$	24.39	9.06
Sandblasting & Water		
Blasting.....\$	24.14	9.06
Spray.....\$	23.89	9.06

 PAIN0118-004 06/01/2018

ANDERSON, BRECKINRIDGE, BULLITT, CARROLL, GRAYSON, HARDIN,
 HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM, SHELBY,
 SPENCER, TRIMBLE & WASHINGTON COUNTIES:

	Rates	Fringes
PAINTER		
Brush & Roller.....	\$ 22.00	12.52
Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning.....	\$ 23.00	12.52

 PAIN1072-003 12/01/2018

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS and ROWAN COUNTIES

	Rates	Fringes
Painters:		
Bridges; Locks; Dams; Tension Towers & Energized Substations.....	\$ 33.33	18.50
Power Generating Facilities.	\$ 30.09	18.50

 PLUM0248-003 06/01/2018

BOYD, CARTER, ELLIOTT, GREENUP, LEWIS & ROWAN COUNTIES:

	Rates	Fringes
Plumber and Steamfitter.....	\$ 36.00	20.23

 PLUM0392-007 06/01/2018

BRACKEN, CARROLL (Eastern Half), GALLATIN, GRANT, MASON, OWEN &
 ROBERTSON COUNTIES:

Rates	Fringes
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Breaker

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

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

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

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates

the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on

a wage determination matter

* a conformance (additional classification and rate) ruling

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

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

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

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

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

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

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative

Review Board (formerly the Wage Appeals Board). Write to:

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

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

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END OF GENERAL DECISION

"

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

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

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

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

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

TO: EMPLOYERS/EMPLOYEES

PREVAILING WAGE SCHEDULE:

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

OVERTIME:

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

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

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

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

GOALS FOR MINORITY PARTICIPATION IN EACH TRADE	GOALS FOR FEMALE PARTICIPATION IN EACH TRADE
9.6%	6.9%

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

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

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

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

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

PART IV
INSURANCE

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

PART V
BID ITEMS

PROPOSAL BID ITEMS

201016

Page 1 of 4

Report Date 3/27/20

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	132.00	TON		\$	
0020	00190		LEVELING & WEDGING PG64-22	142.00	TON		\$	
0030	00221		CL2 ASPH BASE 0.75D PG64-22	83.00	TON		\$	
0040	00301		CL2 ASPH SURF 0.38D PG64-22	136.00	TON		\$	
0050	02101		CEM CONC ENT PAVEMENT-8 IN	40.00	SQYD		\$	
0060	24970EC		ASPHALT MATERIAL FOR TACK NON-TRACKING	.60	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0070	01810		STANDARD CURB AND GUTTER	272.00	LF		\$	
0080	01890		ISLAND HEADER CURB TYPE 1	71.00	LF		\$	
0090	01982		DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE	6.00	EACH		\$	
0100	01990		DELINEATOR FOR BARRIER WALL-B/W	4.00	EACH		\$	
0110	02004		RELOCATE WATER-FILLED BARRIERS	321.00	LF		\$	
0120	02005		WATER-FILLED BARRIERS	305.00	LF		\$	
0130	02014		BARRICADE-TYPE III	5.00	EACH		\$	
0140	02200		ROADWAY EXCAVATION	35.00	CUYD		\$	
0150	02242		WATER	52.00	MGAL		\$	
0160	02351		GUARDRAIL-STEEL W BEAM-S FACE	125.00	LF		\$	
0170	02360		GUARDRAIL TERMINAL SECTION NO 1	2.00	EACH		\$	
0180	02363		GUARDRAIL CONNECTOR TO BRIDGE END TY A	2.00	EACH		\$	
0190	02430		RIGHT-OF-WAY MONUMENT TYPE 1A	14.00	EACH		\$	
0200	02562		TEMPORARY SIGNS	487.00	SQFT		\$	
0210	02585		EDGE KEY	99.00	LF		\$	
0220	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	30.00	SQYD	\$2.00	\$	\$60.00
0230	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0240	02651		DIVERSIONS (BY-PASS DETOURS)	1.00	LS		\$	
0250	02653		LANE CLOSURE	4.00	EACH		\$	
0260	02671		PORTABLE CHANGEABLE MESSAGE SIGN	6.00	EACH		\$	
0270	02677		ASPHALT PAVE MILLING & TEXTURING	15.00	TON		\$	
0280	02705		SILT TRAP TYPE C	3.00	EACH		\$	
0290	02708		CLEAN SILT TRAP TYPE C	6.00	EACH		\$	
0300	02720		SIDEWALK-4 IN CONCRETE	215.00	SQYD		\$	
0310	02726		STAKING	1.00	LS		\$	
0320	02731		REMOVE STRUCTURE 35'X17' CONC. BRIDGE,	1.00	LS		\$	
0330	02731		REMOVE STRUCTURE 86'X31' 5 SPAN BRIDGE	1.00	LS		\$	
0340	02731		REMOVE STRUCTURE REMOVE TOP SLAB 192'X17' BOX CULVER	1.00	LS		\$	
0350	02775		ARROW PANEL	2.00	EACH		\$	
0360	04934		TEMP SIGNAL MULTI PHASE	1.00	EACH		\$	
0370	06510		PAVE STRIPING-TEMP PAINT-4 IN	8,867.00	LF		\$	

PROPOSAL BID ITEMS

201016

Page 2 of 4

Report Date 3/27/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0380	06514		PAVE STRIPING-PERM PAINT-4 IN	1,731.00	LF		\$	
0390	06540		PAVE STRIPING-THERMO-4 IN W	344.00	LF		\$	
0400	06565		PAVE MARKING-THERMO X-WALK-6 IN	358.00	LF		\$	
0410	06568		PAVE MARKING-THERMO STOP BAR-24IN	56.00	LF		\$	
0420	08821		DRAIN PIPE-8 IN PART OF TRENCH DRAIN	15.00	LF		\$	
0430	22766ED		TRENCH DRAIN	64.00	LF		\$	
0440	23010EN		PAVE MARK TEMP PAINT STOP BAR-24 IN	80.00	LF		\$	
0450	23158ES505		DETECTABLE WARNINGS	90.00	SQFT		\$	
0460	50005		REMOVE/REPLACE PORCH	1.00	EACH		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0470	00461		CULVERT PIPE-15 IN	169.00	LF		\$	
0480	01493		DROP BOX INLET TYPE 2	1.00	EACH		\$	
0490	01559		DROP BOX INLET TYPE 13G	2.00	EACH		\$	

Section: 0004 - BRIDGE-27520

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0500	02998		MASONRY COATING	306.00	SQYD		\$	
0510	03299		ARMORED EDGE FOR CONCRETE	51.40	LF		\$	
0520	04793		CONDUIT-1 1/4 IN	12.00	LF		\$	
0530	04795		CONDUIT-2 IN	183.50	LF		\$	
0540	04810		ELECTRICAL JUNCTION BOX BRIDGE - EAST FORK SIMPSON CREEK - DWG 27520	4.00	EACH		\$	
0550	08001		STRUCTURE EXCAVATION-COMMON	124.00	CUYD		\$	
0560	08002		STRUCTURE EXCAV-SOLID ROCK	57.00	CUYD		\$	
0570	08100		CONCRETE-CLASS A	157.10	CUYD		\$	
0580	08104		CONCRETE-CLASS AA	66.30	CUYD		\$	
0590	08150		STEEL REINFORCEMENT	18,118.00	LB		\$	
0600	08151		STEEL REINFORCEMENT-EPOXY COATED	8,306.00	LB		\$	
0610	08661		PRECAST PC BOX BEAM CB12-48	654.40	LF		\$	
0620	23378EC		CONCRETE SEALING	2,557.00	SQFT		\$	
0630	24751ED		REMOVE STORE & REINSTALL 27520	4.00	EACH		\$	
0640	24877ED		RAIL SYSTEM TYPE C411	171.50	LF		\$	

Section: 0005 - BRIDGE-27521

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0650	02220		FLOWABLE FILL	63.70	CUYD		\$	
0660	02403		REMOVE CONCRETE MASONRY	260.00	CUYD		\$	
0670	03250		WATERPROOFING MEMBRANE	534.00	SQYD		\$	
0680	08002		STRUCTURE EXCAV-SOLID ROCK	53.00	CUYD		\$	

PROPOSAL BID ITEMS

201016

Page 3 of 4

Report Date 3/27/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0690	08003		FOUNDATION PREPARATION	1.00	LS		\$	
0700	08100		CONCRETE-CLASS A	390.40	CUYD		\$	
0710	08150		STEEL REINFORCEMENT	53,367.00	LB		\$	
0720	08151		STEEL REINFORCEMENT-EPOXY COATED	1,152.00	LB		\$	
0730	24877ED		RAIL SYSTEM TYPE C411	46.40	LF		\$	

Section: 0006 - BRIDGE-27522

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0740	02231		STRUCTURE GRANULAR BACKFILL	275.00	CUYD		\$	
0750	02998		MASONRY COATING	126.00	SQYD		\$	
0760	08001		STRUCTURE EXCAVATION-COMMON	238.00	CUYD		\$	
0770	08002		STRUCTURE EXCAV-SOLID ROCK	37.00	CUYD		\$	
0780	08100		CONCRETE-CLASS A	80.60	CUYD		\$	
0790	08150		STEEL REINFORCEMENT	5,732.00	LB		\$	
0800	08151		STEEL REINFORCEMENT-EPOXY COATED	2,323.00	LB		\$	
0810	08160		STRUCTURAL STEEL 9,660 LB	1.00	LS		\$	
0820	21688EN		REM DRY STONE MASONRY WALL	67.00	LF		\$	

Section: 0007 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0830	00071		CRUSHED AGGREGATE SIZE NO 57	325.00	TON		\$	
0840	15000		S BYPASS PUMPING	5.00	EACH		\$	
0850	15087		S LATERAL LONG SIDE 04 INCH	1.00	EACH		\$	
0860	15088		S LATERAL LONG SIDE 06 INCH	1.00	EACH		\$	
0870	15089		S LATERAL SHORT SIDE 04 INCH	1.00	EACH		\$	
0880	15090		S LATERAL SHORT SIDE 06 INCH	9.00	EACH		\$	
0890	15092		S MANHOLE	7.00	EACH		\$	
0900	15093		S MANHOLE ABANDON/REMOVE	1.00	EACH		\$	
0910	15095		S MANHOLE CASTING STANDARD	5.00	EACH		\$	
0920	15096		S MANHOLE CASTING WATERTIGHT	2.00	EACH		\$	
0930	15112		S PIPE PVC 08 INCH	758.00	LF		\$	
0940	15136		S LATERAL LOCATE	10.00	EACH		\$	
0950	20757ED		PAVEMENT REPAIR	288.00	SQYD		\$	

Section: 0008 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0960	00071		CRUSHED AGGREGATE SIZE NO 57	879.00	TON		\$	
0970	14003		W CAP EXISTING MAIN	6.00	EACH		\$	
0980	14004		W DIRECTIONAL BORE	100.00	LF		\$	
0990	14009		W ENCASMENT STEEL BORED RANGE 4	60.00	LF		\$	
1000	14019		W FIRE HYDRANT ASSEMBLY	4.00	EACH		\$	
1010	14021		W FIRE HYDRANT REMOVE	2.00	EACH		\$	

PROPOSAL BID ITEMS

201016

Page 4 of 4

Report Date 3/27/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1020	14056		W PIPE PVC 02 INCH	40.00	LF		\$	
1030	14059		W PIPE PVC 06 INCH	70.00	LF		\$	
1040	14060		W PIPE PVC 08 INCH	1,590.00	LF		\$	
1050	14085		W SERV PE/PLST SHORT SIDE 3/4 IN	14.00	EACH		\$	
1060	14088		W STRUCTURE REMOVAL	1.00	EACH		\$	
1070	14089		W TAPPING SLEEVE AND VALVE SIZE 1	1.00	EACH		\$	
1080	14091		W TIE-IN 02 INCH	1.00	EACH		\$	
1090	14093		W TIE-IN 04 INCH	3.00	EACH		\$	
1100	14094		W TIE-IN 06 INCH	4.00	EACH		\$	
1110	14104		W VALVE 04 INCH	3.00	EACH		\$	
1120	14105		W VALVE 06 INCH	1.00	EACH		\$	
1130	14106		W VALVE 08 INCH	5.00	EACH		\$	
1140	20757ED		PAVEMENT REPAIR	586.00	SQYD		\$	

Section: 0009 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1150	02569		DEMOBILIZATION	1.00	LS		\$	