



CALL NO. 101

CONTRACT ID. 261519

JEFFERSON COUNTY

FED/STATE PROJECT NUMBER STPM 8743 (004)

DESCRIPTION BEULAH CHURCH ROAD (KY 864)

WORK TYPE GRADE & DRAIN WITH ASPHALT SURFACE

PRIMARY COMPLETION DATE 9/30/2028

LETTING DATE: September 24,2026

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN DAYLIGHT TIME September 24,2026. 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.

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PART I

SCOPE OF WORK

ADMINISTRATIVE DISTRICT - 05

CONTRACT ID - 261519
STPM 8743 (004)
COUNTY - JEFFERSON
PCN - DE05608642619
STPM 8743 (004)

BEULAH CHURCH ROAD (KY 864) WIDEN BEULAH CHURCH RD. FROM TWO TO THREE LANES FROM I-265 TO CEDAR CREEK RD., A DISTANCE OF 01.37 MILES.GRADE & DRAIN WITH ASPHALT SURFACE SYP NO. 05-00481.00.
GEOGRAPHIC COORDINATES LATITUDE 38:06:39.00 LONGITUDE 85:36:57.00
ADT 7,300

COMPLETION DATE(S):
COMPLETED BY 09/30/2028 APPLIES TO ENTIRE CONTRACT

CONTRACT NOTES

INSURANCE

Refer to Kentucky Standard Specifications for Road and Bridge Construction, current edition.

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 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/construction-procurement). 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 state agency certifies that it is in compliance with the provisions of KRS 45A.150, "Access to contractor's books, documents, papers, records, or other evidence directly pertinent to the contract." The Contractor, as defined in KRS 45A.030, 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 agreement for the purpose of financial audit or program review. 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. Records and other prequalification information confidentially disclosed as part of the bid process shall not be deemed as directly pertinent to the agreement and shall be exempt from disclosure as provided in KRS 61.878(1)(c).

BOYCOTT PROVISIONS

If applicable, the contractor represents that, pursuant to [KRS 45A.607](#), they are not currently engaged in, and will not for the duration of the contract engage in, the boycott of a person or an entity based in or doing business with a jurisdiction with which Kentucky can enjoy open trade. **Note:** The term Boycott does not include actions taken for bona fide business or economic reasons, or actions specifically required by federal or state law.

If applicable, the contractor verifies that, pursuant to KRS 41.480, they do not engage in, and will not for the duration of the contract engage in, in energy company boycotts as defined by KRS 41.472.

LOBBYING PROHIBITIONS

The contractor represents that they, and any subcontractor performing work under the contract, have not violated the agency restrictions contained in [KRS 11A.236](#) during the previous ten (10) years, and pledges to abide by the restrictions set forth in such statute for the duration of the contract awarded.

The contractor further represents that, pursuant to [KRS 45A.328](#), they have not procured an original, subsequent, or similar contract while employing an executive agency lobbyist who was convicted of a crime related to the original, subsequent, or similar contract within five (5) years of the conviction of the lobbyist.

Revised: 1/1/2025

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 Transportation Cabinet, Department of Highways, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, disability, income- level, or Limited English Proficiency (LEP) in consideration for an award.

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 are acceptable per Section 108.01 of the Standard Specifications for Road and Bridge Construction. Sub-Contractors fulfilling a disadvantaged business enterprise goal on a project may enter into a 2nd tier subcontract with a Non-DBE Subcontractor. However, in this instance, none of the work subcontracted to the Non-DBE Contractor will count toward fulfilling the established Disadvantaged Goal for the project.

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.

AFTER PROJECT AWARD AND BEFORE NOTICE TO PROCEED/WORK ORDER IS ISSUED (SEE SECTION 103.06, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION)

Prime Contractors awarded a federally funded project with a DBE Goal greater than zero will be required to submit a fully executed DBE Subcontract, along with the attached FHWA 1273 and Certificate of Liability Insurance for each DBE Firm submitted as part of the previously approved DBE Utilization Plan (TC 14-35). A signed quote or purchase order shall be attached when the DBE subcontractor is a material supplier or broker.

The Certificate of Liability Insurance submitted must meet the requirements outlined in Section 107.18 of the Standard Specifications for Road and Bridge Construction.

Changes to **APPROVED** DBE Participation Plans must be approved by the Office for Civil Rights & Small Business Development. 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 for 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:

- Suspension of Prequalification;
- 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 and Non-DBE Subcontractors 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 for Civil Rights and Small Business Development
6th Floor West 200 Mero Street
Frankfort, KY 40622

The prime contractor should notify the KYTC Office for 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. Tony Youssefi. Mr. Youssefi's current contact information is email address – tyousseffi@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.

PROHIBITION ON TELECOMMUNICATIONS EQUIPMENT OR SERVICES

In accordance with the FY 2019 National Defense Authorization Act (NDAA), 2 CFR 200.216, and 2 CFR 200.471, Federal agencies are prohibited, after August 13, 2020, from obligating or expending financial assistance to obtain certain telecommunications and video surveillance services and equipment from specific producers. As a result of these regulations, contractors and subcontractors are prohibited, on projects with federal funding participation, from providing telecommunication or video surveillance equipment, services, or systems produced by:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities)

**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.

INCIDENTAL SURFACING

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

FUEL AND ASPHALT PAY ADJUSTMENT

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

ASPHALT PAVEMENT RIDE QUALITY CATEGORY A

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

OPTION A

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

MATERIAL TRANSFER VEHICLE (MTV)

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

SPECIAL NOTE FOR INLAID PAVEMENT MARKERS

I. DESCRIPTION

Except as provided herein, perform all work in accordance with the Department's Standard and Supplemental Specifications and applicable Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications. This work shall consist of:

- (1) Maintain and Control Traffic; and (2) furnish and install Inlaid Pavement Markers (IPMs) in recessed grooves; and (3) any other work as specified by these notes and the Contract.

II. MATERIALS

The Department will sample all materials in accordance with the Department's Sampling Manual. Make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these Notes.

- A. Maintain and Control Traffic.** See Traffic Control Plan.
- B. Markers.** Provide reflective lenses with depth control breakaway positioning tabs. Before furnishing the markers, provide to the Engineer the manufacturer's current recommendations for adhesives and installation procedures. Use one brand and design throughout the project. Use markers meeting the specifications in the table below.

SPECIFICATIONS FOR HOUSING AND REFLECTOR	
Material:	Polycarbonate Plastic
Weight:	Housing 2.00 oz.
	Reflector 2.00oz.
Housing Size:	5.00" x 3.00" x 0.70" high
Specific Intensity of Reflectivity at 0.2° Observation Angle	
White:	3.0 at 0°entrance angle
	1.2 at 20°entrance angle
Yellow:	60% of white values
Red:	25% of white values

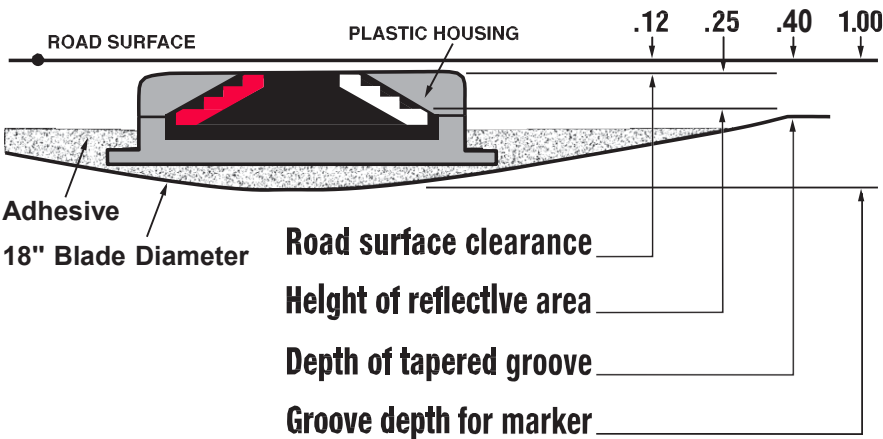
C. **Adhesives.** Use adhesives that conform to the manufacturer's recommendations.

III. CONSTRUCTION

A. **Maintain and Control Traffic.** See Traffic Control Plan.

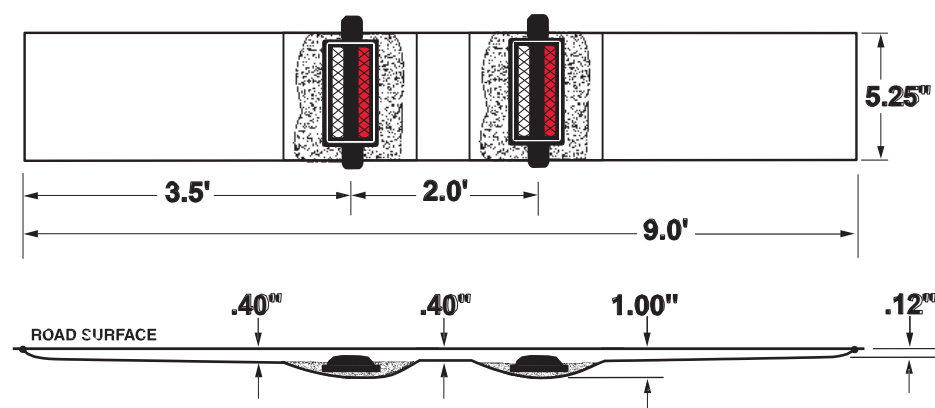
B. **Installation.** Install IPMs in recessed grooves cut into the final course of pavement according to the manufacturer's recommendations. Do not cut the grooves until the pavement has cured sufficiently to prevent damaging the pavement. Cut installation grooves using diamond blades on saws that accurately control groove dimensions. Remove all dirt, grease, oil, loose or unsound layers, and any other material from the marker area which would reduce the bond of the adhesive. Maintain pavement surfaces in a clean condition until placing markers.

Prepare the pavement surfaces, and install the markers in the recessed groove according to the drawing below. Use an approved snowplowable epoxy adhesive. Ensure that the adhesive bed area is equal to the bottom area of the marker, and apply adhesive in sufficient quantity to force excess out around the entire perimeter of the marker. Use materials, equipment, and construction procedures that ensure proper adhesion of the markers to the pavement surface according to the manufacturer's recommendations. Remove all excess adhesive from in front of the reflective faces. If any adhesive or foreign matter cannot be removed from the reflective faces, or if any marker fails to properly adhere to the pavement surface, remove and replace the marker at no additional cost to the Department.



Inlaid Pavement Markers
Page 3 of 4

C. Location and Spacing. Install the markers in the pattern for high reflectivity with two (2) IPMs per groove. Locate and space markers as shown in the current standard drawings or sepias (note: use Inlaid Pavement Markers wherever Type V Pavement Markers are called for). Do not install markers on bridge decks. Do not install a marker on top of a pavement joint or crack. Offset the recessed groove a minimum of 3 inches from any longitudinal pavement joint or crack and at least one inch from the painted stripe, ensuring that the finished line of markers is straight with minimal lateral deviation. Give preference to maintaining the 3-inch offset between recessed groove and joint as opposed to keeping the line of markers straight.



Place inlaid markers as much in line with existing pavement striping as possible. Place markers installed along an edge line or channelizing line so that the near edge of the plastic housing is no more than one inch from the near edge of the line. Place markers installed along a lane line between and in line with the dashes. Do not place markers over the lines except where the lines deviate visibly from their correct alignment, and then only after obtaining the Engineer's prior approval of the location.

If conflicts between recessed groove placement in relation to pavement joint and striping cannot be resolved, obtain the Engineer's approval to eliminate the marker or revise the alignment.

D. Disposal of Waste. Dispose of all removed pavement, debris, and other waste at sites off the right of way obtained by the Contractor at no additional cost to the Department. See Special Note for waste and Borrow.

E. Restoration. Be responsible for all damage to public and/or private property resulting from the work. Restore all damaged features in like kind materials and design at no additional cost to the Department.

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Inlaid Pavement Markers

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F. On-Site Inspection. Make a thorough inspection of the site prior to submitting a bid and be thoroughly familiar with existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid as evidence of this inspection having been made and will not honor any claims for money or grant Contract time extensions resulting from site conditions.

G. Caution. Do not take information shown on the drawings and in this proposal and the types and quantities of work listed as an accurate or complete evaluation of the material and conditions to be encountered during construction, but consider the types and quantities of work listed as approximate only. The bidder must draw his own conclusion as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation or extension of Contract time if the conditions encountered are not in accordance with the information shown.

IV. MEASUREMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. "INLAID PAYMENT MARKER" shall be measured as each. One (1) installation of "INLAID PAVEMENT MARKER" will consist of grooving the pavement, removing cuttings and debris, preheating pavement to remove moisture, adhesives, and installation of two (2) markers with all lenses in accordance with this note.

Note: Each pay item of Inlaid Pavement Marker will require two markers.

V. PAYMENT

A. Maintain and Control Traffic. See Traffic Control Plan.

B. Inlaid Pavement Markers. The Department will make payment for the completed and accepted quantity of completely installed "INLAID PAVEMENT MARKERS" at the Contract unit price, each. Accept payment as full compensation for all labor, equipment, materials, and incidentals to accomplish this work to the satisfaction of the Engineer. A system of one (1) groove and two (2) markers shall be paid as one "INLAID PAVEMENT MARKER". The bid item "INLAID PAVEMENT MARKER" shall be used regardless of the color and type of lenses required.

December 5, 2018

SPECIAL NOTE

For Installation of Historical Sign

Jefferson County
KY 864 - Widen Beulah Church Road from 2 To 3 Lanes from I-265 To Cedar Creek Road
Item No. 5-481.00

Installation of a Historical Sign will be covered by **bid item 24601EC INSTALL HISTORICAL SIGN**. Said sign will be furnished by KYTC and shall be installed by the contractor, at a location designated by KYTC, after the completion of all construction. The sign and post will be stored at the District 5 Office until such time that the contractor is ready pick up and install.

Below is an example of the sign. Color and content will vary. The sign will come with a 3.5-inch round, 6-foot-long post. The contractor shall set the post, 24-inches deep into an 8-inch diameter hole, 30 inches deep, filled with concrete.



SPECIAL NOTE

For Tree Removal

Jefferson County

**KY 864 - Widen Beulah Church Road from 2 to 3 lanes
from I-265 to Cedar Creek Rd.**

Item No. 5-481.00

**NO CLEARING OF TREES 5 INCHES OR GREATER
(DIAMETER BREAST HEIGHT) FROM MAY 15 - JULY 31.**

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

SPECIAL NOTE FOR PIPELINE INSPECTION

1.0 DESCRIPTION. The Department will perform visual inspections on all pipe on the project. A video inspection will be required on projects having more than 250 linear feet of storm sewer and/or culvert pipe and on routes with an ADT of greater than 1,000 vehicles. Conduct video inspections on all pipe located under the roadway and 50 percent of the remaining pipe not under the roadway. Storm sewer runs and outfall pipes not under the roadway take precedence over rural entrance pipes. Contractors performing this item of work must be prequalified with the Department in the work type J51 (Video Pipe Inspection and Cleaning). Deflection testing shall be completed using a mandrel in accordance with the procedure outlined below or by physical measurement for pipes greater than 36 inches in diameter. Mandrel testing for deflection must be completed prior to the video inspection testing. Unless otherwise noted, Section references herein are to the Department's Standard Specifications for Road and Bridge Construction, current edition.

2.0 VIDEO INSPECTION. Ensure pipe is clear of water, debris or obstructions. Complete the video inspection and any necessary measurement prior to placing the final surface over any pipe. When paving will not be delayed, take measurements 30 days or more after the completion of earthwork to within 1 foot of the finished subgrade. Notify the Engineer a minimum of 24 hours in advance of inspection and notify the Engineer immediately if distresses or locations of improper installation are logged.

2.1 INSPECTION FOR DEFECTS AND DISTRESSES

A) Begin at the outlet end and proceed through to the inlet at a speed less than or equal to 30 ft/minute. Remove blockages that will prohibit a continuous operation.

B) Document locations of all observed defects and distresses including but not limited to: cracking, spalling, slabbing, exposed reinforcing steel, sags, joint offsets, joint separations, deflections, improper joints/connections, blockages, leaks, rips, tears, buckling, deviation from line and grade, damaged coatings/paved inverts, and other anomalies not consistent with a properly installed pipe.

C) During the video inspection provide a continuous 360 degree pan of every pipe joint.

D) Identify and measure all cracks greater than 0.1" and joint separations greater than 0.5".

E) Video Inspections are conducted from junction to junction which defines a pipe run. A junction is defined as a headwall, drop box inlet, curb box inlet, manhole, buried junction, or other structure that disturbs the continuity of the pipe. Multiple pipe inspections may be conducted from a single set up location, but each pipe run must be on a separate video file and all locations are to be referenced from nearest junction relative to that pipe run.

F) Record and submit all data on the TC 64-765 and TC 64-766 forms.

3.0 MANDREL TESTING. Mandrel testing will be used for deflection testing. For use on Corrugated Metal Pipe, High Density Polyethylene Pipe, and Polyvinyl Chloride Pipe, use a mandrel device with an odd number of legs (9 minimum) having a length not less than the outside diameter of the mandrel. The diameter of the mandrel at any point shall not be less than the diameter specified in Section 3.6. Mandrels can be a fixed size or a variable size.

3.1 Use a proving ring or other method recommended by the mandrel manufacturer to verify mandrel diameter prior to inspection. Provide verification documentation for each size mandrel to the Engineer.

3.2 All deflection measurements are to be based off of the AASHTO Nominal Diameters. Refer to the chart in section 3.6.

3.3 Begin by using a mandrel set to the 5.0% deflection limit. Place the mandrel in the inlet end of the pipe and pull through to the outlet end. If resistance is met prior to completing the entire run, record the maximum distance achieved from the inlet side, then remove the mandrel and continue the inspection from the outlet end of the pipe toward the inlet end. Record the maximum distance achieved from the outlet side.

3.4 If no resistance is met at 5.0% then the inspection is complete. If resistance occurred at 5.0% then repeat 3.1 and 3.2 with the mandrel set to the 10.0% deflection limit. If the deflection of entire pipe run cannot be verified with the mandrel then immediately notify the Engineer.

3.5 Care must be taken when using a mandrel in all pipe material types and lining/coating scenarios. Pipe damaged during the mandrel inspection will be video inspected to determine the extent of the damage. If the damaged pipe was video inspected prior to mandrel inspection then a new video inspection is warranted and supersedes the first video inspection. Immediately notify the Engineer of any damages incurred during the mandrel inspection and submit a revised video inspection report.

3.6 AASHTO Nominal Diameters and Maximum Deflection Limits.

Base Pipe Diameter	AASHTO Nominal Diameter	Max. Deflection Limit	
		5.0%	10.0%
(inches)	(inches)	(inches)	
15	14.76	14.02	13.28
18	17.72	16.83	15.95
24	23.62	22.44	21.26
30	29.53	28.05	26.58
36	35.43	33.66	31.89
42	41.34	39.27	37.21
48	47.24	44.88	42.52
54	53.15	50.49	47.84
60	59.06	56.11	53.15

4.0 PHYSICAL MEASUREMENT OF PIPE DEFLECTION. Alternate method for deflection testing when there is available access or the pipe is greater than 36 inches in diameter, as per 4.1. Use a contact or non-contact distance instrument. A leveling device is recommended for establishing or verifying vertical and horizontal control.

4.1 Physical measurements may be taken after installation and compared to the AASHTO Nominal Diameter of the pipe as per Section 3.6. When this method is used, determine the smallest interior diameter of the pipe as measured through the center point of the pipe (D2). All measurements are to be taken from the inside crest of the corrugation. Take the D2 measurements at the most deflected portion of the pipe run in question and at intervals no greater than ten (10) feet through the run. Calculate the deflection as follows:

$$\% \text{ Deflection} = [(AASHTO \text{ Nominal Diameter} - D2) / AASHTO \text{ Nominal Diameter}] \times 100\%$$

Note: The Engineer may require that preset monitoring points be established in the culvert prior to backfilling. For these points the pre-installation measured diameter (D1) is measured and recorded. Deflection may then be calculated from the following formula:

$$\% \text{ Deflection} = [(D1 - D2) / D1] (100\%)$$

4.2 Record and submit all data.

5.0 DEDUCTION SCHEDULE. All pipe deductions shall be handled in accordance with the tables shown below.

FLEXIBLE PIPE DEFLECTION	
Amount of Deflection (%)	Payment
0.0 to 5.0	100% of the Unit Bid Price
5.1 to 9.9	50% of the Unit Bid Price ⁽¹⁾
10 or greater	Remove and Replace ⁽²⁾

⁽¹⁾ Provide Structural Analysis for HDPE and metal pipe. Based on the structural analysis, pipe may be allowed to remain in place at the reduced unit price. ⁽²⁾ The Department may allow the pipe to remain in place with no pay to the Contractor in instances where it is in the best interest to the public and where the structural analysis demonstrates that the pipe should function adequately.

RIGID PIPE REMEDIATION TABLE PIPE	
Crack Width (inches)	Payment
≤ 0.1	100% of the Unit Bid Price
Greater than 0.1	Remediate or Replace ⁽¹⁾

(1) Provide the Department in writing a method for repairing the observed cracking. Do not begin work until the method has been approved.

6.0 PAYMENT. The Department will measure the quantity in linear feet of pipe to inspect. 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>
24814EC	Pipeline Inspection	Linear Foot
10065NS	Pipe Deflection Deduction	Dollars

SPECIAL NOTE FOR NON-TRACKING TACK COAT

1. DESCRIPTION AND USEAGE. This specification covers the requirements and practices for applying a non-tracking tack asphalt coating. Place this material on the existing pavement course, prior to placement of a new asphalt pavement layer. Use when expedited paving is necessary or when asphalt tracking would negatively impact the surrounding area. This material is not suitable for other uses. Ensure material can “break” within 15 minutes under conditions listed in 3.2.
2. MATERIALS, EQUIPMENT, AND PERSONNEL.

- 2.1 Non-Tracking Tack. Provide material conforming to Subsection 2.1.1.
- 2.1.1 Provide a tack conforming to the following material requirements:

Property	Specification	Test Procedure
Viscosity, SFS, 77 ° F	20 – 100	AASHTO T 72
Sieve, %	0.3 max.	AASHTO T 59
Asphalt Residue ¹ , %	50 min.	AASHTO T 59
Oil Distillate, %	1.0 max.	AASHTO T 59
Residue Penetration, 77 ° F	0 - 30	AASHTO T 49
Original Dynamic Shear (G*/sin δ), 82 ° C	1.0 min.	AASHTO T 315
Softening Point, ° F	149 min.	AASHTO T 53
Solubility, %	97.5 min.	AASHTO T 44

¹ Bring sample to 212 °F over a 10-15 minute period. Maintain 212 °F for 15-20 minutes or until 30-40 mL of water has distilled. Continue distillation as specified in T59.

- 2.2. Equipment. Provide a distributor truck capable of heating, circulating, and spraying the tack between 170 °F and 180 °F. Do not exceed 180 °F. Circulate the material while heating. Provide the correct nozzles that is recommend by the producer to ensure proper coverage of tack is obtained. Ensure the bar can be raised to between 14” and 18” from the roadway.
- 2.3. Personnel. Ensure the tack supplier has provided training to the contractor on the installation procedures for this product. Make a technical representative from the supplier available at the request of the Engineer.

3. CONSTRUCTION.

3.1 Surface Preparation. Prior to the application of the non-tracking tack, ensure the pavement surface is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the surface by scraping, sweeping, and the use of compressed air. Ensure this preparation process occurs shortly before application to prevent the return of debris on to the pavement. If rain is expected within one hour after application, do not apply material. Apply material only when the surface is dry, and no precipitation is expected.

- 3.2 Non-tracking Tack Application. Placement of non-tracking tack is not permitted from October 1st to May 15th. When applying material, ensure the roadway temperature is a minimum of 40°F and rising. Prior to application, demonstrate competence in applying the tack according to this note to the satisfaction of the Engineer. Heat the tack in the distributor to between 170 – 180 °F. After the initial heating, between 170 – 180 °F, the material may be sprayed between 165 °F and 180 °F. Do not apply outside this temperature range. Apply material at a minimum rate of 0.70 pounds (0.08 gallons) per square yard. Ensure full coverage of the material on the pavement surface. Full coverage of this material is critical. Increase material application rate if needed to achieve full coverage. Schedule the work so that, at the end of the day's production, all non-tracking tack is covered with the asphalt mixture. If for some reason the non-tracking tack cannot be covered by an asphalt mixture, ensure the non-tracking tack material is clean and reapply the non-tracking tack prior to placing the asphalt mixture. Do not heat material more than twice in one day.
- 3.3 Non-tracking Tack Certification. Furnish the tack certification to the Engineer stating the material conforms to all requirements herein prior to use.
- 3.4 Sampling and Testing. The Department will require a sample of non-tracking tack be taken from the distributor at a rate of one sample per 15,000 tons of mix. Take two 1 gallon samples of the heated material and forward the sample to the Division of Materials for testing within 7 days. Ensure the product temperature is between 170 and 180 °F at the time of sampling.
4. MEASUREMENT. The Department will measure the quantity of non-tracking tack in tons. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of non-tracking tack, the cleaning of the pavement surface, or furnishing and placing the non-tracking tack. The Department will consider all such items incidental to the non-tracking tack.
5. PAYMENT. The Department will pay for the non-tracking tack at the Contract unit bid price and apply an adjustment for each manufacturer's lot of material based on the degree of compliance as defined in the following schedule. Non-tracking tack will not be permitted for use from October 1st to May 15th. During this timeframe, the department will allow the use of an approved asphalt emulsion in lieu of a non-tracking tack product but will not adjust the unit bid price of the material. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

Non-Tracking Tack Price Adjustment Schedule						
Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
Viscosity, SFS, 77 ° F	20 – 100	19 - 102	17 - 18	15 - 16	14	≤13
			103 - 105	106 - 107	108 - 109	≥ 110
Sieve, %	0.30 max.	≤ 0.40	0.41 - 0.50	0.51 - 0.60	0.61 - 0.70	≥ 0.71
Asphalt Residue, %	50 min.	≥49.0	48.5 – 48.9	48.0 – 48.4	47.5-47.9	≤ 47.4
Oil Distillate, %	1.0 max.	≤1.0	1.1-1.5	1.6 - 1.7	1.8-1.9	>2.0
Residue Penetration, 77 ° F.	30 max.	≤ 31	32 - 33	34 - 35	36 - 37	≥ 38
Original Dynamic Shear (G*/sin δ), 82 ° C	1.0 min.	≥0.95	0.92 – 0.94	0.90 – 0.91	0.85 - 0.89	≤ 0.84
Softening Point, ° F	149 min.	≥145	142 - 144	140 - 141	138 - 139	≤ 137
Solubility, %	97.5 min.	≥ 97.0	96.8 – 96.9	96.6 – 96.7	96.4 – 96.5	≤ 96.3

Code
24970EC

Pay Item
Asphalt Material for Tack Non-Tracking

Pay Unit
Ton

Revised: May 23, 2022

SPECIAL NOTE FOR EXPERIMENTAL KYCT AND FIELD RUT TESTING

June 2025 Update

1.0 General

1.1 Description. The KYCT (Kentucky Method for Cracking Test) and the IDEAL-RT/IDT-HT test results will help determine if the mixture is susceptible to cracking and rutting. During the experimental phase, data will be gathered and analyzed by the Department to determine the durability and stability of the bituminous mixes. Additionally, the data will help the Department to create future performance-based specifications which will include the KYCT and field rutting test methods.

2.0 Equipment

2.1 KYCT Testing Equipment. The Department will require a Marshall Test Press with digital recording capabilities. Other CT testing equipment may be used for testing with prior approval by the Department.

2.2 Water Baths. One or more water baths will be required that can maintain a temperature of 77° +/- 1.8° F with a digital thermometer showing the water bath temperature. Also, one water bath shall have the ability to suspend gyratory specimen fully submerged in water in accordance with AASHTO T-166, current edition.

2.3 Field Rutting Tests. If the contractor elects to perform the IDEAL-RT test, in conformance with ASTM D8360-22, the acquisition of the "Option A" or "Option B" test fixture is required. If the IDT-HT is desired, the test press utilized for the KYTC is sufficient. The Department shall approve all test configurations at their discretion.

2.4 Gyratory Molds. Gyratory molds will be required to assist in the production of gyratory specimens in accordance with AASHTO T-312, current edition.

2.5 Ovens. Adequate (minimum of two ovens) will be required to accommodate the additional molds and asphalt mixture necessary to perform the acceptance testing as outlined in Section 402 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

2.6 Department Equipment. The Department will provide gyratory molds, PINE 850 Test Press with digital recordation, and CT testing equipment to assist during this experimental phase so data can be gathered.

3.0 Testing Requirements

3.1 Acceptance Testing. Perform all acceptance testing and aggregate gradation as according with Section 402 and Section 403 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

3.2 KYCT Testing. Perform crack resistance analysis (KYCT) in accordance with the current Kentucky Method for KYCT Index Testing during the plant production of all surface mixtures. Conform to KYTC Specifications for Mix Design approvals. All production testing is currently informational.

3.2.1 KYCT Frequency. Obtain an adequate sample of hot mix asphalt to ensure the acceptance testing, gradation, and KYCT gyratory samples can be fabricated and is representative of the bituminous mixture. Acceptance specimens shall be fabricated first, then after the specified amount of oven conditioning, fabricate the KYCT samples with the gyratory compactor in accordance with Section 2.4 of this Special Note. Analysis of the KYCT specimens will be required one per subplot produced from the same asphalt material and at the same time as the acceptance specimen is sampled and tested.

3.2.2 Number of Specimens and Conditioning. Fabricate specimens in accordance with the Kentucky Method for KYCT Index Testing. Contrary to the method, for field specimens, fabricate three replicates for cracking resistance analyses and three replicates for rutting resistance analyses. The specimens shall be compacted at the temperature in accordance with KM 64-411.

Contrary to the Kentucky Method, plant produced bituminous material shall be short-term conditioned immediately after sampling for two hours uncovered in the oven at compaction temperature in accordance with KM 64-411.

While the fabricated specimens are allowed to cool in air (fan is permissible) for 30 minutes +/- 5 minutes, find the bulk specific gravity of each specimen according to AASHTO T166. Next, condition the replicates in a 77 °F water bath for 30 minutes +/- 5 minutes. To ensure confidence and reliability of the test results provided by KYCT testing and Field Rut testing, reheating of the asphalt mixture is prohibited.

3.2.3 Long Term Aging CT's. For long-term aging and cracking resistance considerations in mix design, mix and condition 3 specimens uncovered for 20 hours at compaction temperature in accordance with KM 64-411. Perform KYCT testing in accordance with KM 64-450 and record the results on the Long-Term KYCT tab of the latest version of the MixPack.

3.2.4 Record Times. For each subplot, record the time required between drying aggregates in the plant to KYCT specimen fabrication. The production time may vary due to the time that the bituminous material is held in the silo. Record the preconditioning time when the time exceeds the one-hour specimen cool down time as required in accordance with The Kentucky Method for KYCT Index Testing. The preconditioning time may exceed an hour if the technician is unable to complete the test on the same day or within the specified times as outlined in The Kentucky Method for KYCT Index Testing. The production time and the preconditioning time shall be recorded on the AMAW.

3.2.5 File Name. As according to section 7.12 of The Kentucky Method for KYCT Index Testing, save the filename with the following format: "CID_Aproved Mix Number_Lot Number_Sublot Number_Date"

3.3 Field Rut Testing. Perform the rut resistance analysis (IDEAL-RT or IDT-HT) in accordance with ASTM D8360-22 or ALDOT458, respectively. Contrary to ASTM D8360 & ALDOT458, precondition the test specimens in a water bath or forced draft oven at 50 °C +/- 1 °C for 60 +/- 5 min before completing the test.

3.3.1 Field Rut Testing Frequency. Perform one test per lot of mixture produced. The plant produced bituminous material sampled for the field rut test does not have to be obtained at the same time as the acceptance and KYCT sample. If the field rut test sample is not obtained at the same time as the KYCT sample, determine the Maximum Specific Gravity of the KYCT sample in accordance with AASHTO T-209 coinciding with the test specimens.

3.3.2 Number of Specimens and Conditioning. Fabricate in accordance with the Kentucky Method for KYCT Index Testing. Contrary to the method, for field specimens, fabricate three

replicates for rutting resistance analyses. The specimens shall be compacted at the temperature in accordance with KM 64-411. Contrary to the Kentucky Method, plant produced bituminous material shall be short-term conditioned immediately after sampling for two hours uncovered in the oven at compaction temperature in accordance with KM 64-411.

3.3.3 Record Times. Record the production time as according to section 3.2.3 in this special note. Also record the time that the specimens were fabricated. All times shall be recorded on the AMAW.

3.3.4 File Name. Record all field rut data in the latest version of the AMAW.

4.0 Data

Submit the AMAW and all test data that was obtained for acceptance, gradation, KYCT, and field rut testing within five working days once all testing has been completed for a lot to Central Materials Lab and the District Materials Engineer. Also, any data and or comments that the asphalt contractor or district personnel deem informational during this experimental phase, shall also be submitted to the Central Materials Lab and the District Materials Engineer. Any questions or comments regarding any item in this Special Note can be directed to the Central Office, Division of Materials, Asphalt Branch.

5.0 Payment

Any additional labor and testing equipment that is required to fabricate and test the KYCT and field rut specimens shall be considered incidental to the asphalt surface line item. The Department will perform the testing for the KYCT and field rut specimens if a producer does not possess the proper equipment.

June 12th, 2025

SPECIAL NOTE FOR RECYCLED ASPHALT PAVEMENT (RAP) STOCKPILE MANAGEMENT

I. GENERAL

The use of reclaimed asphalt pavement (RAP) from Department projects or other approved sources in hot mix asphalt (HMA) or warm mix asphalt (WMA) shall be subject to stockpile management and handling of material as described in this section.

The Department approves RAP on a stockpile basis, following the process set forth in this method. The contractor's responsibilities in the process are as follows:

- To obtain the Department's approval of all RAP prior to its use on a Department project and to deliver test data and samples as required
- To monitor and preserve the quality and uniformity of the approved material during storage and handling, adding no unapproved material to the existing stockpile
- To comply with the Department's requirements regarding replenishment of approved stockpiles

The Department will approve RAP based on its composition and variability in gradation and asphalt content, and on visual inspections of the stockpile, which the Department may conduct at its discretion. The Department may withdraw approval of a stockpile if the requirements of this specification are not followed in good faith.

The Maximum Percentage Allowed in a mix design will be based on these criteria and on the category of RAP source, as defined in this document.

II. APPROVAL PROCESS

Qualified asphalt producers (listed in List of Approved Materials-Asphalt Mixing Plants) may submit requests for RAP stockpile approval to the Asphalt Branch, Division of Materials, in the Annual Certification for Previously Approved Asphalt Mixing Plants and Related Equipment. The requester shall provide test results as prescribed in Part IID. The Division of Materials may, at their discretion, collect samples or inspect a RAP stockpile consistent with Section IIE.

Upon completion of the review of testing results and, if applicable, visual inspection, the Division of Materials, Asphalt Branch will approve or disapprove the material by letter and will assign a Stockpile Identification Number for each approved RAP stockpile. Note: The contractor's average gradation and asphalt content, as listed in the approval letter, shall be the gradation used in subsequent mix designs. The approval letter will state the applicable limits on the use of the material in mix designs and will summarize the Department's findings, listing the average gradation and asphalt content from the contractor's tests and the corresponding values found by the Department. Where the Maximum Percentage Allowed is low due to variability, the contractor may elect to improve the uniformity of the material by further processing and may again sample, test, and request approval for the material.

No material shall be added to a stockpile after it has been approved, except as provided in Parts V, VI, and VII below.

IIA. RAP Quality Management Plan

For a contractor to receive approval to use RAP on any department project, a RAP Quality Management Plan must first be approved by the department. The RAP Quality Management Plan shall be submitted to the

Division of Materials annually for approval as part of the Contractor's Quality Control Plan/Checklist. The Quality Management Plan is required to demonstrate how the Contractor will provide consistency and quality of material utilized in all asphalt mixes produced for use on Department projects. The Quality Management Plan shall include:

- Unprocessed RAP Stockpiles
 - Designation of stockpile(s) as single or multiple source
 - Designation of stockpile(s) as classified or unclassified
 - Designation of stockpile(s) as captive or continuously replenishing
 - Plan for how stockpile(s) is built (layers, slope, etc.)
 - Plan to minimize stockpile(s) contamination
- Processing and Crushing
 - Equipment used to feed screener or crusher
 - Excavation process based on equipment type
- Processing Millings
 - Single Project or Source
 - Screening, Fractionation, or Crushing plan
 - Multiple Source
 - Process to achieve uniform material from stockpile
 - Screening, Fractionation, or Crushing plan
- Processed RAP Stockpiles
 - Minimization of segregation
 - Minimization of moisture

IIB. RAP Stockpile Placement

All processed RAP stockpiles shall be placed on a sloped, paved surface. The requirement for a paved surface may be waived by the Cabinet if the Contractor's RAP Quality Management Plan demonstrates effective material handling that will minimize deleterious material from beneath the processed stockpile entering the plant. *No processed stockpile will be placed directly on grass or dirt.*

IIC. Stockpile Identification Signs

RAP stockpiles shall be identified with posted signs displaying the gradation of material in the stockpile (course, intermediate, or fine). These signs shall be made of weatherproof material and shall be highly visible. Numerals shall be easily readable from outside the stockpile area. If a stockpile exists in two or more parts, each part must have its own sign.

IID. Standard Approval Procedure

The Contractor shall obtain random samples representative of the entire stockpile and shall have each sample tested for gradation and asphalt content according to KM 64-426, KM 64-427, and AASHTO T308. The material samples must be in its final condition after all crushing and screening. At least one sample shall be obtained for each 1,000 tons of processed RAP, with a minimum of five samples per stockpile. Sampling shall be performed according to the method prescribed for asphalt mix aggregates in the Department's Materials Field Testing and Sampling Manual and KM 64-601. The minimum sampling size (after quartering) for tests of RAP samples is 1,500 g. except for samples containing particles more than one inch in diameter, for which the minimum is 2,000 g.

To request approval of a RAP stockpile, submit the following documents to the Division of Materials. It is the requester's responsibility to correctly address, label, and deliver these submittals:

- Submit request for approval at beginning of the paving season as part of the Annual Certification for Previously Approved Asphalt Mixing Plants and Related Equipment.
- If requesting approval after paving season begins, submit memo, including stockpile portion of the inspection list for Annual Certification for Previously Approved Asphalt Mixing Plants and Related Equipment, to Division of Materials.
- Reports of the tests prescribed above using the Stockpile <INSERT NAME> document.
- A drawing of the plant site showing the location of the stockpile to be approved *and all other stockpiles on the premises*

Mail, deliver or email the request form, with test reports and site drawing, to:

Kentucky Transportation Cabinet
Division of Materials
ATTN: Asphalt Branch Manager
1227 Wilkinson Boulevard
Frankfort, Kentucky 40601

Robert.Semones@ky.gov

III. Tests and inspections by the Department

The Department shall have the right to observe the collection of samples, or to perform the sampling and testing as a verification of contractor submittal. As a condition of approval, the Department may at any time inspect and sample RAP stockpiles for which approval has been requested and may perform additional quality control tests to determine the consistency and quality of the material.

The approval letter issued by the Department will include any results of verification testing performed by the Cabinet. The approved contractor results should be used by mix design technicians in the design calculations.

III. RAP STOCKPILE TIERED MANAGEMENT AND EFFECTIVE BINDER CONTENT

The stockpile management and approval requirements will be tiered based on the maximum cold feed percentages as defined in this section and Table 1. below.

Table 1. Tiered Testing Requirements

Mix Type	0-≤12%	12-≤20%	20-≤35%
Surface	Tier 1	Tier 2	Tier 3
Base	Tier 1	Tier 2	Tier 3

NOTE: All asphalt mixes and binder selection will be subject to Section 409 of the current Standard Specifications.

The following requirements will apply based on the percentage of RAP in the mix.

Tier 1

Tier 1 mixes (less than or equal to 12% RAP) will be subject to the requirements of sections IIA, IIB, and IIC.

Tier 2

Tier 2 mixes (12% to less than 20% RAP) will be subject to the requirements of Section II in its entirety and Table 2 requirements.

Tier 3

Tier 3 Asphalt Base mixes with 20% to less than 35% RAP, Tier 3 Asphalt Surface mixes with 20% to less than 30% RAP will be subject to Section II in its entirety and Table 2 requirements.

IV. MAXIMUM PERCENTAGE OF RAP ALLOWED

The Maximum Percent of RAP allowed in mix designs shall be the lowest percentage determined by the gradation and asphalt content of the RAP, as established under the criteria below, and requirements listed in Section III.

Limits according to range in gradation and bitumen content

The Maximum Percent of RAP Allowed, based on gradation and asphalt content, shall be determined by the Department using the standard deviation of these values. This standard deviation will be calculated using data provided by the contractor from at least five samples. While the contractor is required to provide the data from these tested samples, the Department retains the discretion to perform its own sampling and testing to support or verify its findings. An apparent outlier shall not be considered in determining these ranges. Where one result appears to be unrepresentative of the whole, two or more additional samples shall be tested. The outlying value of all tests shall then be excluded from the range. The maximum percentage of RAP allowable shall be the lowest percentage determined according to Table 2 below.

Table 2. Maximum Percent RAP According to Variability in Test Results

	Standard Deviation as calculated above:		
Surface			
% asphalt content	< 0.4	< 0.5	
% passing No. 200 sieve	< 1.25	< 1.5	
% passing Median Sieve	< 4.0	< 5.0	
	Allowable RAP Cold Feed %		
	Tier 3 - 20%-30%	Tier 2 - 12%-20%	Tier 1 - 0%-12%
Base			
% asphalt content	< 0.5	< 0.75	
% passing No. 200 sieve	< 1.5	< 2.25	
% passing Median sieve	< 5.0	< 7.0	
	Allowable RAP Cold Feed %		
	Tier 3 - 20%-35%	Tier 2 - 12%-20%	Tier 1 - 0%-12%

NOTE: These allowances notwithstanding, the Contractor is required to maintain the mixture within the Mixture Control Tolerances of Kentucky Method 443.

The percentage allowable in mix designs shall be limited to meet the design criteria for viscosity established in the Standard Specifications.

V. GENERAL STOCKPILE REQUIREMENTS AND REPLENISHMENT

V.A. Single Pavement Source

Early approval of material from a single pavement source. When a new stockpile is to consist entirely of millings removed from a single existing pavement, the stockpile may be approved based on samples taken during the milling and processing operations, prior to completion of milling. The initial stockpile may be approved as either a new stockpile or a new stockpile in continual replenishment status.

For continual replenishment status, samples shall be taken from the processed stockpile after it reaches 1,000 tons. A total of five initial samples, plus one additional sample for every 1,000 tons, is required. As prescribed in Part II above, the contractor shall test all samples and deliver the test results, together with a letter request for approval in Continual Replenishment status, to the address indicated. The stockpile shall be subject to initial approval as prescribed above in Part II. Once approved, it may be replenished without further approvals as provided in Part VII below.

V.B. Heterogeneous or contaminated material

Asphalt pavement millings containing traffic detection loops, raised pavement markers, or other debris must be separated and excluded before stockpiling RAP for approval for use in KYTC asphaltic concrete mixtures.

No material other than RAP from an approved stockpile shall be included in mixtures for State projects. The following materials are specifically excluded:

- Material contaminated with foreign matter such as liquids, soil, concrete, or debris
- Plant waste, especially waste containing abnormal concentrations of bitumen, drum build-up, or material from spills or plant clean-up operations

The following materials shall not be added to or placed in proximity to an approved stockpile but may be accumulated in a separate stockpile and submitted for approval according to Part III:

- Production mixtures returned to the plant for any reason.
- Mis-proportioned mixtures, especially those generated at start-up.

VI. REPLENISHMENT OF STOCKPILES

An approved RAP stockpile may be replenished with Department approval, provided the replenishment material meets all necessary requirements for approval and maintains uniformity in gradation and asphalt content as outlined in this document.

VI.A. Procedure and approval criteria

The procedure for requesting approval of a stockpile replenishment, that is not in continual replenishment status, shall be the same as for approval of an original stockpile, and the material for the replenishment shall meet all criteria for approval as a new stockpile. RAP proposed for replenishment shall be sampled and tested by the Contractor for gradation and asphalt cement as prescribed in Section II above. The Laboratory shall

review these results and provide approval for use in Department asphalt mix designs, according to Table 2 above.

VI.B. Effect of replenishment on existing approved mix designs

Replenishment of a stockpile may render certain mix designs invalid, depending on the percent RAP allowed in the design and on the difference in average properties between the old and new stockpiles. A replenished stockpile may be used as the RAP ingredient in an existing approved design provided that:

1. The Maximum Percent Allowed for the replenishment stockpile equals or exceeds the percent RAP called for in the mix design. In no case may the Maximum Percent Allowed be exceeded.

However, if a mix design calls for up to 5.0 percent more than the Maximum Percent Allowed for the replenishment, the *design* may be adjusted, with approval, to use the lower percent allowed, provided that the production mixture continues to meet all acceptance criteria. For example, a design which calls for 20 percent RAP may be adjusted and produced with 15 percent if it continues to meet for acceptance.

VII. CONTINUAL REPLENISHMENT WITHOUT RE-APPROVAL

At the request of the contractor, a previously approved stockpile may be placed in Continual Replenishment Status and may be replenished any number of times without re-approval provided that:

1. Replenishment is within six months of the last stockpile addition.
2. The contractor shall continue to monitor and test the materials added to the stockpile and shall forward these results to the Division of Materials for every 1,000 tons of RAP added to the stockpile.
3. The contractor must certify that replenishment materials are free of contaminants.
4. The Department shall be notified by letter to the Director of the Division of Materials that the stockpile is being replenished on a continual basis.
5. The RAP Maximum Percent Allowed for continual replenishment shall be limited by Sections III and IV.

Note: Upon request, one 20-pound sample bag of RAP for each Continual Replenishment Stockpile shall be submitted to the Division of Materials for petrographic analysis every 12 months.

The Department may inspect, sample, and test such stockpiles at its discretion and may, upon determining that the stockpile is unsuitable, withdraw approval of the material and all mix designs which include it. Approval of the stockpile may be withdrawn at any time based upon extreme or erratic ingredient proportions, unsuitable ingredients, or poor performance, as determined by the Division of Materials, Asphalt Branch. The Department will conduct periodic comparison testing on the opposite quarters of samples submitted by the Contractor for special replenishment approval category. The approval of the stockpile may be withdrawn if

erroneous information was found on the contractor's testing and/or improper sampling procedures were involved after a thorough investigation.

VIII. DEPLETION OF STOCKPILE AND EXPIRATION OF APPROVAL

When a stockpile has been fully depleted, the Contractor may replenish it within 24 months after the date of depletion; a depleted stockpile not replenished after 24 months will be removed from the approved list and may not be replenished.

Approval of a stockpile may be withdrawn if, in the finding of the Division of Materials, Asphalt Branch, the total amount of material used in new mixtures equals the total tonnage of the original stockpile plus all approved replenishments. Six years from the original approval of a stockpile or from its most recent replenishment, a stockpile shall be presumed to be depleted, and its approval shall expire. This shall apply to all stockpiles, regardless of status or history of use.

IX. RECORDS

The Contractor shall maintain records at the plant site on all RAP stockpiles. These records shall be available for inspection by representatives of the Department and shall include the following:

- All test results.
- The Department's approval letter for each stockpile and replenishment, together with the Contractor's requests for approval and all data submitted therewith.
- A current drawing of all stockpile locations at the plant site, including unapproved stockpiles, showing stockpile numbers of all stockpiles approved for State work.

X. RELOCATION OF STOCKPILE

If material from an approved RAP stockpile is to be moved to another location, the contractor shall seek approval from the Department prior to its further use on State projects. A letter request shall be submitted to the Division of Materials indicating the current stockpile location, the total quantity of material to be moved, and the amount, if any, to remain in the current location. The Division of Materials will issue an approval letter applicable to the new location.

June 18, 2025

SPECIAL NOTE FOR FIXED COMPLETION DATE AND LIQUIDATED DAMAGES

KY 864 - WIDEN BEULAH CHURCH ROAD
FROM 2 TO 3 LANES FROM I-265 TO CEDAR CREEK ROAD
JEFFERSON COUNTY
ITEM NO. 5-481.00

FIXED COMPLETION DATE

Specified fixed completion date for this contract is **September 30, 2028**.

LIQUIDATED DAMAGES TO BE ASSESSED FOR FIXED COMPLETION DATE

For each calendar day beyond a fixed completion date of **September 30, 2028**, the Department will assess liquidated damages per Section 108.09 of the current edition of the Standard Specifications for Road and Bridge Construction.

LIQUIDATED DAMAGES TO BE ASSESSED FOR ROAD CLOSURES

PHASE 1 CONSTRUCTION:

The contractor will be allowed 30 calendar days to close Cooper Chapel Road and perform the work for this phase. For each calendar day (or portion of a day), the road is not reopened to traffic LIQUIDATED DAMAGES will be assessed at \$10,000 a day until the road is open to traffic.

PHASE 2 CONSTRUCTION:

The contractor will be allowed 14 calendar days to close the road and complete the tie in of Cedar Creek to newly constructed Beulah Church Road. For each calendar day (or portion of a day), the road is not reopened to traffic LIQUIDATED DAMAGES will be assessed at \$10,000 a day until the road is open to traffic.

PHASE 3 CONSTRUCTION:

The contractor will be allowed 14 calendar days to complete the tie in of Cedar Creek to Beulah Church Road. For each calendar day (or portion of a day), the road is not reopened to traffic LIQUIDATED DAMAGES will be assessed at \$10,000 a day until the road is open to traffic.

PHASE 4 CONSTRUCTION:

The contractor will be allowed 14 calendar days to complete the tie in of KY 864/Cooper Chapel Road. For each calendar day (or portion of a day), the road is not reopened to traffic LIQUIDATED DAMAGES will be assessed at \$10,000 a day until the road is open to traffic.



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

☒	Original	☐	Re-Certification	RIGHT OF WAY CERTIFICATION	
ITEM #		COUNTY		PROJECT # (STATE)	PROJECT # (FEDERAL)
5-481.00		Jefferson		12F0 FD52 056 8631301R	STPM 8743 (004)
PROJECT DESCRIPTION					
KY 864 - WIDEN BEULAH CHURCH ROAD FROM 2 TO 3 LANES FROM I-265 TO CEDAR CREEK ROAD.(2010BOP)					
☐	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		74	EXCEPTION (S) Parcel #	ANTICIPATED DATE OF POSSESSION WITH EXPLANATION	
Number of Parcels That Have Been Acquired					
Signed Deed		72			
Condemnation		1			
Signed ROE					
Notes/ Comments (Text is limited. Use additional sheet if necessary.)					
There were 74 parcels on this project. 72 have signed deeds, we have an ROE from the Court on one parcel, and the remaining parcel was an HOA that we acquired only SLI.					
LPA RW Project Manager			Right of Way Supervisor		
Printed Name				Printed Name	
Signature				Signature	
Date				Tom Boykin	
Right of Way Director			FHWA		
Printed Name				Printed Name	
Signature		Digitally signed by Kelly Divine Date: 2022.12.13 13:33:55 -06'00'		Signature	
Date				Date	
				No Signature Required as per FHWA-KYTC Current Stewardship Agreement	

UTILITIES AND RAIL CERTIFICATION NOTE

Project:	5-481.00	Jefferson County	KY 864
Funding Source:	OSTPM8743004	FD52 056 8631301U	
Description:	KY 864 - WIDEN BEULAH CHURCH ROAD FROM 2 TO 3 LANES FROM I-265 TO CEDAR CREEK ROAD.(2010BOP)		
Mile Point:	1.818 To 3.445		

GENERAL UTILITY NOTES

- Please Note: The information presented in this Utility Note is informational in nature and the information contained herein is not guaranteed.
- 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.
- The contractor should be aware that there is UTILITY WORK INCLUDED IN THIS ROAD CONSTRUCTION CONTRACT. The Contractor shall review the GENERAL UTILITY NOTES AND INSTRUCTIONS which may include KYTC Utility Bid Item Descriptions, utility owner supplied specifications, plans, list of utility owner preapproved subcontractors, and other instructions. Utility contractors may be added via addendum if KYTC is instructed to do so by the utility owner. Potential contractors must seek prequalification from the utility owner. Any revisions must be sent from the utility owner to KYTC a minimum of one week prior to bid opening.

UTILITIES AND RAIL CERTIFICATION NOTE

Project:	5-481.00	Jefferson County	KY 864
Funding Source:	OSTPM8743004	FD52 056 8631301U	
Description:	KY 864 - WIDEN BEULAH CHURCH ROAD FROM 2 TO 3 LANES FROM I-265 TO CEDAR CREEK ROAD.(2010BOP)		
Mile Point:	1.818 To 3.445		

4. For all projects under 2000 Linear feet which require a normal excavation locate request pursuant to KRS 367.4901-4917, the awarded contractor shall field mark the proposed excavation or construction boundaries of the project (also called white lining) using the procedure set forth in KRS 367.4909(9)(k). For all projects over 2000 linear feet, which are defined as a “Large Project” in KRS 367.4903(18), the awarded contractor shall initially mark the first 2000 linear feet minimally of proposed excavation or construction boundaries of the project to be worked using the procedure set forth in KRS 367.4909(9)(k). This temporary field locating of the project excavation boundary shall take place prior to submitting an excavation location request to the underground utility protection Kentucky Contact Center. For large projects, the awarded contractor shall work with the impacted utilities to determine when additional white lining of the remainder of the project site will take place. This provision shall not alter or relieve the awarded contractor from complying with requirements of KRS 367.4905 to 367.4917 in their entirety.
5. 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.

UTILITIES AND RAIL CERTIFICATION NOTE

Project:	5-481.00	Jefferson County	KY 864
Funding Source:	OSTPM8743004	FD52 056 8631301U	
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Mile Point:	1.818 To 3.445		

THE FOLLOWING UTILITY OWNERS HAVE FACILITIES LOCATED WITHIN THE PROJECT LIMITS - See the sections listed for each utility for details

Utility Company	Facility Type
AT&T	KY - Communication - Jefferson
AT&T has facilities to be relocated/adjusted by the owner or their subcontractor and is to be coordinated with the road contract.	
Charter Communications	KY - Communication - Jefferson
Charter Communications is relocating /adjusting their facilities with the project limits and will be complete prior to construction.	
Louisville Gas and Electric Company	Electric-Jefferson
LG&E Electric is relocating /adjusting their facilities with the project limits and will be complete prior to construction.	
LG&E Electric has facilities to be relocated/adjusted by the owner or their subcontractor and is to be coordinated with the road contract.	
Louisville Gas and Electric Company	Natural Gas-Jefferson
LG&E Natural Gas is relocating /adjusting their facilities with the project limits and will be complete prior to construction.	
Louisville Water Company	Water - Jefferson
Louisville Water Company has facilities to be relocated/adjusted by the road contractor as included in this contract.	
Metropolitan Sewer District	Sewer - Jefferson
Louisville Water Company has facilities to be relocated/adjusted by the road contractor as included in this contract.	

* THE CONTRACTOR IS FULLY RESPONSIBLE FOR PROTECTION OF ALL UTILITIES *

THE FOLLOW FACILITY OWNERS HAVE FACILITIES WITHIN THE PROJECT LIMITS WHICH DO NOT REQUIRE RELOCATION PRIOR TO OR DURING CONSTRUCTION

Utility Company	Facility Type
Not Applicable	Not Applicable

UTILITIES AND RAIL CERTIFICATION NOTE

Project:	5-481.00	Jefferson County	KY 864
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Description:	KY 864 - WIDEN BEULAH CHURCH ROAD FROM 2 TO 3 LANES FROM I-265 TO CEDAR CREEK ROAD.(2010BOP)		
Mile Point:	1.818 To 3.445		

THE FOLLOWING FACILITY OWNERS ARE RELOCATING/ADJUSTING THEIR FACILITIES WITHIN THE PROJECT LIMITS AND WILL BE COMPLETE PRIOR TO CONSTRUCTION

Utility Company	Facility Type	Completion Date
Charter Communications	KY – Communication -Jefferson	4/30/2026
All Charter communications aerial fiber runs on LG&E electric poles. An aerial cable runs along the west side of Beulah Church Rd from STA96+00 to STA128+50 from STA135+50 to STA140+50. An aerial cable runs along the east side of Beulah Church Rd from STA120+00 to STA147+00. An aerial cable runs along the north side of Cooper Chapel Rd from STA497+00 to 501+00. An aerial cable runs along the south side of Cooper Chapel Rd from STA501+00 to STA506+00. An aerial cable runs along the east side of Cedar Creek Rd from STA73+00 to 79+50. An aerial cable runs along the east-west leg of Cedar Creek Rd, crossing twice.		
Louisville Gas & Electric Company	Natural Gas-Jefferson	06/30/2026
An 8” M.P. plastic gas main runs along the east side of the road from STA72+73 on Cedar Creek Rd to STA85+31 on Cooper Chapel Rd, then along the west side of the road from STA85+39 on Cooper Chapel Rd to STA89+00 on Cooper Chapel Rd. An 8” M.P. plastic gas main tees off the main on Cooper Chapel at STA86+68 and runs to the west side of Beulah Church Rd from STA87+25 to 92+72. The 8” M.P. plastic gas main runs along the west side of Cooper Chapel Rd from STA6+00 to STA11+10. The 8” M.P. plastic gas main runs on the north side of Cooper Chapel Rd from STA500+00 to STA506+00. An 8” M.P. plastic gas main runs along the east side of Beulah Church Rd from STA100+60 to STA164+44.		
Louisville Gas & Electric Company	Electric-Jefferson	10/08/2025
Aerial Electric lines run along the east side of KY864 from STA145+46 to approximately STA123+00. Aerial Electric lines run along the west side of KY864 from STA145+45 to STA100+00. Aerial Electric lines run along the south side of Cooper Chapel Rd from STA499+64 to STA506+00. Aerial Electric lines run along the east side of KY864 from STA73+31 to 79+92. Aerial Electric lines run along the north side of Cedar Creek Rd from STA10+00 to STA14+20.		

UTILITIES AND RAIL CERTIFICATION NOTE

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THE FOLLOWING FACILITY OWNERS HAVE FACILITIES TO BE RELOCATED/ADJUSTED BY THE OWNER OR THEIR SUBCONTRACTOR AND IS TO BE COORDINATED WITH THE ROAD CONTRACT

AT&T	KY - Communication - Jefferson
All AT&T aerial lines run on LG&E electric poles. An aerial cable runs along the west side of Beulah Church Rd from STA101+00 to STA128+50 and STA135+50 to STA140+50. An aerial cable runs along the east side of Beulah Church Rd from STA137+00 to STA145+46. An aerial cable runs along the north side of Cooper Chapel Rd from STA499+00 to STA503+50. An aerial cable runs along the south side of Cooper Chapel Rd from STA501+00 to STA506+00. An aerial cable runs along the east side of Cedar Creek Rd from STA73+00 to 79+50. An aerial cable runs along the east-west leg of Cedar Creek Rd, crossing twice. AT&T relocation work is expected to be complete February 26, 2027.	
Louisville Gas and Electric Company	Electric-Jefferson
The roadway contractor will need to coordinate with LG&E Electric for temporary anchors and guying at STA77+96.38 56.06’RT and STA78+01.16. 55.31’RT. Temporary pole bracing will need to be installed at STA78+30.21 50.91RT so the guying can be removed. After final grade has been cut, work will need to be coordinated to install the permanent anchors and guying.	

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

Louisville Water Company	Water - Jefferson
Water main relocation is included in the highway contract. See included plans for relocation details.	
Metropolitan Sewer District	Sewer - Jefferson
Sanitary sewer main relocation is included in the highway contract. See included plans for relocation details.	

RAIL COMPANIES HAVE FACILITIES IN CONJUNCTION WITH THIS PROJECT AS NOTED

No Rail Involvement

UTILITIES AND RAIL CERTIFICATION NOTE

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AREA FACILITY OWNER CONTACT LIST

1. AT&T - KY - Communication
Zach Stucker - Phone: (502) 713-8602 - Email: zs3204@att.com
2. Charter Communications - Communications
Michael York - Phone: (502) 357-4376 - Email: Michael.York@charter.com
3. Louisville Gas and Electric Company - Electric
Caroline Justice - Phone: (502) 627-3708 - Email: Caroline.Justice@lge-ku.com
4. Louisville Gas & Electric Company - Natural Gas
Caroline Justice - Phone: (502) 627-3708 - Email: caroline.justice@lge-ku.com
5. Louisville Water Company - Water
Pat Howard - Phone: (502) 569-3615 - Email: phoward@louisvillewater.com
6. Metropolitan Sewer District - Sewer
Taylor Friesz - Phone: (502) 540-6163 - Email: bTaylor.Friesz@louisvillemسد.org

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. **Utility contractors may be added via addendum if KYTC is instructed to do so by the utility owner. Potential contractors must seek prequalification from the utility owner. Any revisions must be sent from the utility owner to KYTC a minimum of one week prior to bid opening.** Those utility owners with a prequalification or preapproval requirement are as follows:

The roadway contractor is required to use a utility subcontractor who is pre-qualified by Louisville Water Company to install 4" – 16" and 20" – 48" ductile iron water mains, and 4" – 16" PVC water mains.

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. In such instances, the utility subcontractor is not required to be prequalified with the KYTC Division of Construction Procurement.

IF A UTILITY SUPPLIED CONTRACTOR LIST IS NOT PROVIDED

When the above list of approved subcontractors for the utility work is not provided, the utility work can be completed by the prime contractor, or a prime contractor-chosen subcontractor. In such instances, 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.

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DIVISION 01

GENERAL REQUIREMENTS

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 ENCASEMENT 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 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) when complete.

W 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 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 LINE MARKER This item is for payment for furnishing and installing a ground level 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, 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, 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 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 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 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 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 SLEEVE 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.

SECTION 013323 – SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND RFIs

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. General: This section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples (when samples are specifically requested) and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.
- B. Refer to other Division 01 sections and other Contract Documents for Specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:
 - 1. Permits.
 - 2. Payment applications.
 - 3. Performance and payment bonds.
 - 4. Insurance certificates.
 - 5. Inspection and test reports.
 - 6. Schedule of values.
 - 7. Progress reports.
 - 8. Listing of subcontractors.
 - 9. Operating and Maintenance Manuals
- C. Engineer prefers initial submittals be in electronic media along with one paper copy for review. Engineer utilizes Newforma software and will provide Contractor with the necessary links and instructions for submittal purposes. Upon completion of the review process, Contractor shall print two copies of complete submittal, including transmittal cover page and stamp page, and deliver to Engineer.

If Contractor does not have capability to submit electronic submittals, then Contractor shall submit a request to Engineer for waiver. In the event a waiver is granted, paper submittals shall be provided as directed by the Engineer.
- D. Submittals shall be checked and reviewed by the Contractor and stamped with Contractor's review stamp before submission to the Engineer. The review of the submittals by the Engineer shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Review of such submittals will not relieve the Contractor of the responsibility for any errors which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work.
- E. All Requests for Information (RFI) to Engineer shall be submitted electronically via Engineer's Newforma software.

- F. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-01 Specification sections, apply to work of this section.
- B. Section 017823 - Operating and Maintenance Manuals.

1.3 DEFINITIONS

- A. Shop drawings are technical drawings and data that have been specially prepared for this project, including but not limited to the following items:

1. Fabrication and installation drawings.
2. Setting diagrams.
3. Shopwork manufacturing instructions.
4. Templates.
5. Patterns.
6. Coordination drawings (for use on site).
7. Schedules.
8. Design mix formulas.
9. Contractor's engineering calculations.

Standard information prepared without specific reference to a project is not considered to be shop drawings.

- B. Product data includes standard printed information on manufactured products that has not been specially-prepared for this project, including but not limited to the following items:

1. Manufacturer's product specifications and installation instructions.
2. Standard color charts.
3. Catalog cuts.
4. Roughing-in diagram and templates.
5. Standard wiring diagrams.
6. Printed performance curves.
7. Operational range diagrams.
8. Mill reports.
9. Standard product operating and maintenance manuals.

- C. Samples, where specifically required, are physical examples of work, including but not limited to the following items:

1. Partial sections of manufactured or fabricated work.
2. Small cuts or containers of materials.
3. Complete units of repetitively used materials.
4. Swatches showing color, texture and pattern.

5. Color range sets.
6. Units of work to be used for independent inspection and testing.

D. Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:

1. Specially prepared and standard printed warranties.
2. Maintenance agreements.
3. Workmanship bonds.
4. Survey data and reports.
5. Testing and certification reports.
6. Record drawings.
7. Field measurement data.

1.4 SUBMITTAL PROCEDURES

A. General: Refer to the General Conditions and Paragraph 1.1 hereinbefore for basic requirements for submittal handling.

B. Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.

1. It is the Contractor's responsibility to make such field measurements as are needed to base submittals on actual field conditions to assure proper connection, fit, function and performance of all work and equipment in the execution of the contract work.
2. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect/Engineer's need to review a related submittal. The Architect/Engineer reserves the right to withhold action on any submittal requiring coordination with other submittals until related submittals are forthcoming.

C. Coordination of Submittal Times: Prepare and transmit each submittal to the Architect/Engineer sufficiently in advance of the scheduled performance of related work and other applicable activities. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Architect/Engineer's need to review submittals concurrently for coordination.

D. Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for resubmittal, if necessary. Advise the Architect/Engineer on each submittal, as to whether processing time is critical to the progress of the work and if the work would be expedited if processing time could be shortened.

1. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Architect/Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.
2. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect/Engineer sufficiently in advance of the work.

- E. Submittal Preparation: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken.
1. Project name.
 2. Date.
 3. Name and address of Architect/Engineer.
 4. Name and address of Contractor.
 5. Name and address of subcontractor.
 6. Name and address of supplier.
 7. Name of manufacturer.
 8. Number and title of appropriate specification section.
 9. Drawing number and detail references, as appropriate.
 10. Similar definitive information as necessary.
- F. All submittals shall be referenced to the applicable item, section and division of the Specifications, and to the applicable drawing(s) or drawing schedule(s). Include only one item in a submittal.
- G. The Contractor shall review and check submittals and shall indicate their review by initials and date. Any submittal received without this evidence of review shall be returned to the Contractor without review.
- H. If the submittals deviate from the Contract Drawings and/or Specifications, the Contractor shall advise the Engineer in writing of the deviation and the reasons therefore.
- I. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect/Engineer, and to other destinations as indicated, by use of a transmittal form. Submittals received from sources other than the Contractor will be returned to the sender "without action".
- J. Electronic Submittals: If the electronic method of submittals is agreed to by Contractor, Engineer, and Owner, the format and procedures will be determined and implemented prior to any submittals. Submittals will be processed through "Newforma" software. Each item of the submittal documents shall be in .pdf format and shall be oriented so that they are read from upper left corner to lower right corner, with no rotation of said document being required after receiving it. The .pdf file shall be named so that it describes the item being submitted. All other requirements herein are part of the electronic submittal process with the exception of the duplicate copies. Contractor stamp indicating review and any comments or notes must be on the .pdf submittal.

1.5 SPECIFIC SUBMITTAL REQUIREMENTS

- A. Shop drawings shall be prepared by a qualified detailer. Details shall be identified by reference to sheet and detail numbers shown on Contract Drawings. Where applicable, show fabrication, layout, setting and erection details.

Shop drawings are defined as original drawings prepared by the Contractor, subcontractors, suppliers, or distributors performing work under this Contract. Shop drawings illustrate some

portion of the work and show fabrication, layout, setting or erection details of equipment, materials and components. The Contractor shall, except as otherwise noted, have prepared the number of reviewed copies required for their distribution plus four which will be retained by the Engineer. Shop drawings shall be folded to an approximate size of 8.5 inches by 11 inches and in such manner that the title block will be located in the lower right-hand corner of the exposed surface.

- B. Project data shall include manufacturer's standard schematic drawings modified to delete information which is not applicable to the project, and shall be supplemented to provide additional information applicable to the project. Each copy of descriptive literature shall be clearly marked to identify pertinent information as it applies to the project.
- C. Where samples are required, they shall be adequate to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged. Provide sufficient size and quantity to clearly illustrate functional characteristics of product and material, with integrally related parts and attachment devices, along with a full range of color samples.
- D. In the event the Engineer does not specifically reject the use of material or equipment at variance to that which is shown on the Drawings or specified, the Contractor shall, at no additional expense to the Owner, and using methods reviewed by the Engineer, make any changes to structures, piping, controls, electrical work, mechanical work, etc., that may be necessary to accommodate this equipment or material. Should equipment other than that on which design drawings are based be accepted by the Engineer, shop drawings shall be submitted detailing all modification work and equipment changes made necessary by the substituted item.
- E. Additional information on particular items, such as special drawings, schedules, calculations, performance curves, and material details, shall be provided when specifically requested in the technical Specifications.
- F. Submittals for all electrically operated items (including instrumentation and controls) shall include complete size, color coding, all terminations and connections, and coordination with related equipment.
- G. Equipment shop drawings shall indicate all factory or shop paint coatings applied by suppliers, manufacturers and fabricators; the Contractor shall be responsible for ensuring the compatibility of such coatings with the field-applied paint products and systems.
- H. Fastener specifications of manufacturer shall be indicated on equipment shop drawings.
- I. Where manufacturers brand names are given in the Specifications for building and construction materials and products, such as grout, bonding compounds, curing compounds, masonry cleaners, waterproofing solutions and similar products, the Contractor shall submit names and descriptive literature of such materials and products he proposes to use in this Contract.
- J. No material shall be fabricated or shipped unless the applicable drawings or submittals have been reviewed by the Engineer and returned to the Contractor.
- K. All bulletins, brochures, instructions, parts lists, and warranties package with and accompanying materials and products delivered to and installed in the project shall be saved and transmitted to the Owner through the Engineer.

1.6 REVIEW STATUS

- A. Submittals will be returned, stamped with the following classifications: "Reviewed", "Furnish as Corrected", "Revise and Resubmit", "Rejected", or "Submit Specified Item".
- B. In some instances, corrections to dimensions or clarification notations will be required, in which case the drawings will be marked "Furnish as Corrected." These shop drawings will not be required to be resubmitted for further approval. If the supplier makes additional modifications after receiving a "Furnish as Corrected" disposition, the drawings must then be resubmitted for review.
- C. If the shop drawing is returned with the notation "Revise and Resubmit", the Contractor shall promptly make the revisions indicated and repeat the submittal approval procedure.
- D. If the shop drawing is returned with the notation "Submit Specified Item", this indicates that the submittal does not meet the specification, will not be reviewed, and is unacceptable. Upon return of a drawing so marked, the Contractor shall repeat the initial approval procedure, submitting acceptable materials or equipment.
- E. The "Rejected" notation is used to indicate materials or equipment that are not acceptable and are not included in the project.

1.7 REMINDER OF CONTRACTOR RESPONSIBILITIES

- A. Verify field measurements, field construction criteria, catalog numbers, and similar data.
- B. Coordinate each submittal with requirements of work and of Contract Documents.
- C. Notify Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.
- D. Begin no work, and have no material or products fabricated or shipped which requires submittals until return of submittals with Engineer's stamp and initials or signature indicating review.
- E. Upon review and closeout of a submittal, Contractor shall print two copies of complete submittal, including transmittal cover page and stamp page, and deliver to Engineer.
- F. It is emphasized that the review of shop drawings by the Engineer is for general conformance to the Contract Drawings and Specifications, but subject to the detailed requirements of the Contract Drawings and Specifications. Although the Engineer may check submitted data in more or less detail, such checking is an effort to discover errors and omissions in the Contractor's drawings and to assist the Contractor in coordinating and expediting their work, but shall in no way relieve the Contractor of their obligation and responsibility to properly coordinate the work, and to Engineer the details of the work in such a manner, that the purpose and intent of the Contract will be achieved nor shall any such detailed checking by the Engineer be construed as placing on him or on the Owner, any responsibility for the accuracy, proper fit, functioning or performance of any phase of the work included in this contract. The Contractor is responsible for confirmation and correlation of dimensions at the job site; for information that

pertains solely to the fabrication processes or to the techniques of construction; for the coordination of the work of all trades; and for performance of their work in a safe and satisfactory manner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013323

SECTION 014500 – QUALITY CONTROL SERVICES - LINE PROJECT

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. Required inspection and testing services are intended to assist in the determination of probable compliance of the Work with requirements specified or indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the Contract Documents.
- B. Tests, inspections and certifications of materials, equipment, subcontractors or completed Work, as required by the various sections of the Specifications shall be obtained by the Contractor and all costs shall be included in the Contract Price.
- C. The Contractor shall submit to the Engineer the name of any testing laboratory to be used.
- D. Contractor shall deliver written notice to the Engineer at least 24 hours in advance of any inspections or tests to be made at the project site. All inspections or tests to be conducted at the field shall be done in the presence of the Engineer or the Engineer's representative.
- E. Certifications by independent testing laboratories may be by copy of the attest and shall give scientific procedures and results of tests. Certifications by persons having interest in the matter shall be by original attest properly sworn to and notarized.
- F. Inspections, tests and related actions specified in this section and elsewhere in the Contract Documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the Contract Documents.
- G. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification sections, apply to Work of this Section.

1.3 SUBMITTALS

- A. General: Refer to Section 013323 for the general requirements on submittals. Submit a certified written report of each inspection, test or similar service, directly to the Architect/Engineer.
- B. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:
 - 1. Name of testing agency or test laboratory.

2. Dates and locations of samples and tests or inspections.
3. Names of individuals making the inspection or test.
4. Designation of the work and test method.
5. Complete inspection or test data.
6. Test results.
7. Interpretations of test results.
8. Notation of significant ambient conditions at the time of sample-taking and testing.
9. Comments or professional opinion as to whether inspected or tested work complies with requirements of the Contract Documents.
10. Recommendations on retesting, if applicable.

1.4 RESPONSIBILITIES

- A. Contractor Responsibilities: Except where they are specifically indicated as being the Owner's responsibility, or where they are to be provided by another identified entity, inspections, tests and similar quality control services are the Contractor's responsibility; these services also include those specified to be performed by an independent agency and not directly by the Contractor. Costs for these services shall be included in the Contract Sum. The Contractor shall employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified.
- B. Retest Responsibility: Where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance of related Work with the requirements of the Contract Documents, then retests are the responsibility of the Contractor, regardless of whether the original test was the Contractor's responsibility. Retesting of work revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original Work.
- C. Responsibility for Associated Services: The Contractor is required to cooperate with the independent performing required inspections, tests and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:
 1. Providing access to the work.
 2. Taking samples or assistance with taking samples.
 3. Delivery of Samples to test laboratories.
 4. Delivery and protection of samples and test equipment at the project site.
- D. Coordination: The Contractor and each independent agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the Work. In addition, the Contractor and each independent testing agency shall coordinate their Work so as to avoid the necessity of removing and replacing Work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. Upon completion of inspection, testing, sample taking, and similar services performed on the Work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Comply with the Contract Document requirements for "Cutting and Patching". Protect Work exposed by or for quality control service activities and protect repaired work. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 014500

SECTION 017700 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4” - 20” Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Liquidated Damages: Supplemental General Conditions
- B. Cleaning: Section 017400.
- C. Project Record Documents: Section 017839.

1.3 SUBSTANTIAL COMPLETION

- A. In order to initiate project closeout procedures, the Contractor shall submit the following:
 - 1. Written certification to Engineer that project is Substantially Complete.
 - 2. List of major items to be completed or corrected.
- B. Engineer will make an inspection within 7 days after receipt of certification, together with Owner's Representative.
- C. Should Engineer consider that work is Substantially Complete:
 - 1. Contractor shall prepare, and submit to Engineer, a list of items to be completed or corrected, as determined by the inspection.
 - 2. Engineer will prepare and issue a Certificate of Substantial Completion, containing:
 - a. Date of Substantial Completion.
 - b. Contractor's list of items to be completed or corrected, verified and amended by Engineer.
 - c. The time within which Contractor shall complete or correct work of listed items.
 - d. Time and date Owner will assume possession of work or designated portion thereof.
 - e. Responsibilities of Owner and Contractor for:
 - 1) Insurance
 - 2) Utilities
 - 3) Operation of Mechanical, Electrical, and Other Systems.
 - 4) Maintenance and Cleaning.
 - 5) Security.

- f. Signatures of:
 - 1) Engineer
 - 2) Contractor
 - 3) Owner
 - 3. Owner occupancy of Project or Designated Portion of Project:
 - a. Contractor shall:
 - 1) Obtain certificate of occupancy.
 - 2) Perform final cleaning in accordance with Section 017400.
 - b. Owner will occupy Project, under provisions stated in Certificates of Substantial Completion.
 - 4. Contractor: Complete work listed for completion or correction, within designated time.
- D. Should Engineer consider that work is not Substantially Complete:
- 1. He shall immediately notify Contractor, in writing, stating reasons.
 - 2. Contractor: Complete work, and send second written Engineer, certifying that Project, or designated portion of Project is substantially complete.
 - 3. Engineer will reinspect work.
- E. Should Engineer consider that work is still not finally complete:
- 1. He shall notify Contractor, in writing, stating reasons.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send third written notice to the Engineer certifying that the work is complete.
 - 3. Engineer and Owner will reinspect work at Contractor's expense.
- 1.4 FINAL INSPECTION
- A. Contractor shall submit written certification that:
- 1. Contract Documents have been reviewed.
 - 2. Project has been inspected for compliance with Contract Documents.
 - 3. Work has been completed in accordance with Contract Documents.
 - 4. Equipment and systems have been tested in presence of Owner's Representative and are operational.
 - 5. Project is completed, and ready for final inspection.
- B. Engineer will make final inspection within seven days after receipt of certification.
- C. Should Engineer consider that work is finally complete in accordance with requirements of Contract Documents, Engineer shall request Contractor to make Project Closeout submittals.
- D. Should Engineer consider that work is not finally complete:

1. He shall notify Contractor in writing, stating reasons.
2. Contractor shall take immediate steps to remedy the stated deficiencies and send second written notice to Engineer certifying that work is complete.
3. Engineer will reinspect work.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: To requirements of Section 017839.
- B. Guarantees, Warranties and Bonds: To requirements of particular technical Specifications and Section 017834.

1.6 INSTRUCTION

- A. Instruct Owner's personnel in operation of all systems, mechanical, electrical, and other equipment.

1.7 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit final applications in accordance with requirements of General Conditions.

1.8 FINAL CERTIFICATE FOR PAYMENT

- A. Engineer will issue final certificate in accordance with provisions of general conditions.
- B. Should final completion be materially delayed through no fault of Contractor, Engineer may issue a Semi-Final Certificate for Payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 017700

SECTION 017839 – PROJECT RECORD DOCUMENTS - WATER

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4” - 20” Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 MAINTENANCE OF DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Other Modifications to Contract
- B. Store documents in approved location, apart from documents used for construction.
- C. Provide files and racks for storage of documents.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by Engineer and Owner.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Shop Drawings, Product Data, and Samples: Section 013323.

1.4 MARKING DEVICES

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

1.5 RECORDING

- A. Label each document "PROJECT RECORD" in 2-inch high printed letters.
- B. Keep record documents current.

- C. Do not permanently conceal any work until required information has been recorded.
- D. Contract Drawings: Legibly mark to record actual construction:
 - 1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 2. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 3. Field changes of dimension and detail.
 - 4. Changes made by Change Order or Field Order.
 - 5. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order or Field Order.
 - 3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents; legibly annotate shop drawings to record changes made after review. Coordinate and confirm with Engineer that electronic versions of all shop drawings have been provided to Engineer.

1.6 SUBMITTALS

- A. At completion of project, deliver record documents to Engineer.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 - 1. Date.
 - 2. Project Title and Number.
 - 3. Contractor's Name and Address.
 - 4. Title and Number of each Record Document.
 - 5. Certification that each Document as Submitted is Complete and Accurate.
 - 6. Signature of Contractor, or Their Authorized Representative.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 017839

DIVISION 02

EXISTING CONDITIONS

SECTION 024100 – DEMOLITION & SALVAGE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required for demolition as shown on the Drawings and specified herein.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4” - 20” Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 312000

1.3 PROCEDURE

- A. The procedures proposed for the accomplishment of salvage and demolition work shall be submitted for review. The procedures shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations.
- B. It is the responsibility of the Contractor to visit the site to familiarize themselves with the amount of Work that is included under this Section.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DUST CONTROL

- A. The amount of dust resulting from the demolition shall be controlled to prevent the spread of dust to occupied portions of the plant and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in or create hazardous or objectionable conditions such as ice, flooding and pollution.

3.2 DISCONNECTION OF UTILITY SERVICES

- A. Utilities shall be disconnected at the points indicated by the Owner or Engineer and left in a safe

condition.

3.3 BURNING

- A. The use of burning at the project site for the disposal of refuse and debris will not be permitted, unless authorized in writing by the Owner.

3.4 PROTECTION OF EXISTING WORK

- A. Existing work to remain shall be protected from damage. Work damaged by the Contractor shall be repaired to match existing work.

3.5 BACKFILL OF STRUCTURES

- A. All existing structures to be abandoned shall have equipment removed and walls demolished a minimum of two feet below finish grade. The portion of the demolished structures remaining below grade shall be backfilled with concrete, masonry, etc., from the demolition or any backfill material which is acceptable to the Engineer. The top 2 feet of the backfill shall be made up of topsoil and graded to match the existing ground. It shall be free of any of the demolition material. The entire backfill shall be compacted in such a manner as to prevent settlement.
- B. All existing demolished basins shall have some method of positive drainage thru the bottom slab as approved by the Engineer.
- C. It is the responsibility of the Contractor to dispose of all excess demolition material from the site as soon as practicable.

3.6 SALVAGE MATERIAL

- A. All equipment, pumps, controls, valves, piping, etc., is the property of the Owner and care shall be taken in its removal so not to damage it in any way. Such salvage material shall be removed and delivered to the Owner to a site designated by the Owner. The Owner has the right to refuse any salvage material and, in such cases, it is the responsibility of the Contractor to dispose of the unwanted material.

END OF SECTION 024100

DIVISION 03
CONCRETE

SECTION 033000 – CAST-IN-PLACE CONCRETE

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and services required to furnish and install all cast-in-place concrete specified herein for water distribution piping 24" diameter or greater only.
- B. All concrete construction shall conform to all applicable requirements of ACI 301 (latest), Specifications for Structural Concrete for Buildings, except as modified by the supplemental requirements specified herein.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 312000

1.3 SUBMITTALS

The Contractor shall submit the following data for Engineer review in accordance with Section 013323.

- A. Concrete mixture proportions, test results, and curves plotted to establish water-cementitious materials ratio if ACI 301-05 Section 4.2.3.4.b is followed.
- B. Proposed mix designs and all necessary substantiating data used to establish the proposed mix designs if ACI 301-05 Section 4.2.3.1 is followed.
- C. Mix designs shall be submitted for all mixes proposed or required to be used, including all mixes containing admixtures.
- D. A certified copy of the control records of the proposed production facility establishing the standard deviation as defined in Paragraph 4.2.3.2. of ACI 301.
- E. Submit shop drawings as specified in ACI 301. Submit shop drawing showing the location of proposed construction and control joints separate from the steel reinforcement shop drawings.
 - 1. Construction Joints
 - 2. Control Joints
 - 3. Steel Reinforcement

1.4 QUALITY ASSURANCE

The Contractor shall obtain and have available in the field office at all times, the following references:

- A. ACI 301 Specifications for Structural Concrete for Buildings ACI 301 (latest Revision).
- B. SP-15 (05) Field Reference Manual: Specifications for Structural Concrete for Buildings with selected ACI references.
Available from:

The American Concrete Institute
Publications Department
P.O. Box 9094
Farmington Hills, Michigan 48333-9094
- C. Manual of Standard Practice - CRSI. (Latest Edition).
- D. Placing Reinforcing Bars - CRSI (Latest Edition).

Available from:

Concrete Reinforcing Steel Institute
933 North Plum Grove Road
Schaumburg, Illinois 60173-4758
- E. ACI 318-08 Building Code Requirements for Structural Concrete and Commentary.
- F. ACI 347 Guide to Form Work for Concrete.

PART 2 - PRODUCTS

2.1 CLASSES OF CONCRETE AND USAGE

- A. Structural concrete of the various classes required shall be proportioned by either Method 1 or Method 2 of ACI 301 to produce the following 28-day compressive strengths:
 - 1. Selection of Proportions for Class A Concrete:
 - a. 4,500 psi compressive for strength at 28 days.
 - b. Type II cement plus supplementary cementitious materials.
 - c. Max. water-cementitious materials ratio = 0.45.
 - d. Min. cement content = 584 lbs.
 - e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max.). Walls with architectural treatment shall use No. 67 (3/4" max.).
 - f. Air content = 6% plus or minus 1% by volume.
 - g. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.
 - 2. Selection of Proportions for Class B Concrete:
 - a. 3,000 psi compressive strength at 28 days.
 - b. Type I cement plus supplementary cementitious materials.
 - c. Max. water-cementitious materials ratio = 0.45.

- d. Min. cement content = 470 lbs. (5.0 bags)/cu. yd. concrete.
- e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max). Walls with architectural treatment shall use No. 67 (3/4" max.).
- f. Air content = 6% plus or minus 1% by volume.
- g. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.

B. Concrete shall be used as follows:

- 1. Class A concrete for all concrete work except as noted below.
- 2. Class B concrete for fill concrete, thrust blocks and topping over hollow-core slabs, and where indicated on the Drawings.

C. Type II cement conforming to ASTM C 150 shall be used in all structural concrete. Cement for exposed to view concrete shall have a uniform color classification.

D. Coarse aggregate for concrete shall be size No. 57, as specified in ASTM C 33 unless a smaller size aggregate is required to conform to provisions of Section 4.2.2.3 of ACI 301. Coarse aggregate shall conform to all requirements of ASTM C 33.

E. Manufactured sand shall not be used as fine aggregate in concrete.

2.2 ADMIXTURES

A. An air entraining admixture shall be used on all concrete exposed to freezing and thawing cycles. Product shall be MB-AE 90, MB-VR or Micro Air by BASF Construction Chemicals or approved equal. A certification attesting to the percent of effective solids and compliance of the material with ASTM C 260 shall be furnished if requested.

B. Water-Reducing Admixture shall conform to ASTM C 494/C 494M Type A. Product shall be "Pozzolith" Series or "PolyHeed" Series by BASF Construction Chemicals or approved equal.

C. High-Range Water-Reducing Admixture shall conform to ASTM C 494/C 494M Type F. Product shall be Rheobuild 1000, "Glenium" Series or PS 1466 by BASF Construction Chemicals or approved equal.

D. Accelerating Admixture shall conform to ASTM C 494/C 494M Type C or E. Products shall be Pozzolith NC 534 or Pozzutec 20+ by BASF Construction Chemicals or approved equal.

E. Retarding Admixture shall conform to ASTM C 494/C 494M Type B or D. Product shall be "Pozzolith" Series or "DELVO" Series by BASF Construction Chemicals.

F. A water-reducing, set controlling admixture (nonlignin type) shall be used in all concrete. The admixture shall be a combination of polyhydroxylated polymers including catalysts and components to produce the required setting time based on job site conditions, specified early strength development, finishing characteristics required, and surface texture, as determined by the Engineer.

G. Certification shall be furnished attesting that the admixture exceeds the physical requirements of ASTM C 494, Type A, water-reducing and normal setting admixture, and when required, for

ASTM C 494, Type D, water-reducing and retarding admixture when used with local materials with which the subject concrete is composed.

- H. The admixture manufacturer, when requested, shall provide a qualified concrete technician employed by the manufacturer to assist in proportioning concrete for optimum use. He shall also be available when requested to advise on proper addition of the admixture to the concrete and on adjustment of the concrete mix proportions to meet changing job conditions.
- I. The use of admixtures to retard setting of the concrete during hot weather, to accelerate setting during cold weather, and to reduce water content without impairing workability will be permitted if the following conditions are met:
- J. The admixture shall conform to ASTM C494, except that the durability factor for concrete containing the admixture shall be at least 100 percent of control, the water content a maximum of 90 percent of control and length change shall not be greater than control, as defined in ASTM C 494.
- K. Where the Contractor finds it impractical to employ fully the recommended procedures for hot weather concreting, the Engineer may at his discretion, require the use of a set retarding admixture for mass concrete 2.5 feet or more thick for all concrete whenever the temperature at the time concrete is cast exceeds 80oF. The admixture shall be selected by the Contractor subject to the review of the Engineer. The admixture and concrete containing the admixture shall meet all the requirements of these Specifications. Preliminary tests of this concrete shall be required at the Contractor's expense.
- L. When more than one (1) admixture is used, all admixtures shall be compatible. They should preferably be by the same manufacturer.
- M. Calcium chloride will not be permitted as an admixture in any concrete.

2.3 REINFORCEMENT

- A. The minimum yield strength of the reinforcement shall be 60,000 pounds per square inch. Bar reinforcement shall conform to the requirements of ASTM A 615/A 615M. All bar reinforcement shall be deformed.
- B. Wire-mesh reinforcement shall be continuous between expansion joints. Laps shall be at least one full mesh plus 2 inches, staggered to avoid continuous lap in either direction and securely wired or clipped with standard clips.
- C. Smooth dowels shall be plain steel bars conforming to ASTM A 615/A615M, Grade 60, or steel pipe conforming to ASTM A 120, Schedule 80. Pipe, if used, shall be closed flush at each end with mortar or metal or plastic cap. Dowels shall be installed at right angles to construction joints and expansion joints. Dowels shall be accurately aligned parallel to the finished surface and shall be rigidly held in place and supported during placing of the concrete. One end of dowels shall be oiled or greased, or dowels shall be coated with high-density polyethylene with a minimum thickness of 14 mils.
- D. Reinforcement supports and other accessories in contact with the forms for members which will be exposed to view in the finished work shall be of stainless steel or shall have approved high-

density polyethylene tips so that the metal portion shall be at least 1/4 of an inch from the form or surface. Supports for reinforcement, when in contact with the ground or stone fill, shall be precast stone concrete blocks. Particular attention is directed to the requirement of Paragraph 3.3.2.4 of ACI Standard 301. These requirements apply to all reinforcement, whether in walls or other vertical elements, inclined elements or flatwork.

- E. Particular care shall be taken to bend tie wire ends away from exposed faces of beams, slabs and columns. In no case shall ends of tie wires project toward or touch formwork.

2.4 OTHER MATERIALS

- A. Anchorage items shall be of standard manufacture and of the type required to engage with the anchors to be installed therein under other sections of the Specifications and shall be subject to approval by the Engineer.

- 1. Slots shall be galvanized dovetail-type as specified in Section "Masonry Work".
- 2. Inserts shall be malleable iron or steel, and of sturdy design adequate strength for the load to be carried. All inserts shall be galvanized. Adjustable wedge inserts shall have an integral loop or strap at the back or shall be slotted to receive a special-headed bolt not smaller than 5/8-inch in diameter and of the required length and fitted with a hexagonal nut. Other inserts shall be either threaded or slotted as required by their usage. Threaded inserts shall have integral lugs to prevent running.
- 3. Concrete anchors shall be an approved expansion type conforming to Federal Specification FF-S-325, Groups I, II, III, or VIII, and shall be installed in strict accordance with the manufacturer's recommendations. Material for anchors shall be as specified in Section 05500 "Miscellaneous Metals". Anchors shall develop ultimate shear and pull-out loads of not less than the following values in Class A concrete:

Bolt Diameter (Inches)	Min. Shear (Pounds)	Min. Pull-Out Load (Pounds)
2	4,500	4,600
5/8	6,900	7,700
3/4	10,500	9,900

- B. Epoxy bonding adhesive used to bond fresh plastic concrete to sound, hardened concrete shall meet the following Specification. The contractor shall furnish a notarized certification by the manufacturer that the proposed material meets the Specification.

- 1. Material:

The epoxy material shall consist of a 2-component system whose components conform to the following requirements:

- a. Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A condensation type, containing suitable viscosity control agents and having an epoxide equivalent of 180-200.
- b. Component B - The B component shall be primarily a reaction product of one mole of an aliphatic polyamine and two moles of mono-functional epoxide containing compounds modified with 2, 4, 6 tri (dimethylaminomethyl) phenol.

- c. The component ratio of B to A by volume shall be as specified by the manufacturer.
- 2. Properties of Mixed Components:
 - a. Solids Content 100% by weight
 - b. Pot Life 25-35 min. @ 73°F.
 - c. Tack-Free Time 4-5-1/2 hrs @ (Thin Film) 73°F.
 - d. Final Cure ASTM D 695 3 days at 73°F. (75% ultimate strength)
 - e. Initial Viscosity (A+B) 2,000 cps. min at 73°F.
 - f. Color Mixed Straw
- 3. Properties of Cured Material (Neat Material):
 - a. Tensile Strength 3,000 psi min. @
ASTM D 638 14 days 73°F. cure
 - b. Tensile Elongation 2 - 2% at 14
ASTM D 638 modified days 73°F. cure
 - c. Compressive Strength 12,500 psi min. at
ASTM D 695 73° F. cure
 - d. Compressive Modules 470,000 psi min. @
ASTM D 695 28 days, 73°F cure
 - e. Compressive Strength 5,500 psi min. @
ASTM D 695 24 days 73°F cure
 - f. Water Pick-up 1.5 max.
ASTM D 570
- C. Premolded expansion-joint filler strips shall conform to ASTM D 1752 and shall be 3/8-inch thick unless otherwise shown.
- D. Joint sealants shall conform to ANSI A 116.1. The following joint sealants are acceptable:
 - 1. Colma by Sika Chemical Corporation
 - 2. Hornflex by A.C. Horn, Inc.
 - 3. Sonolastic by BASF Construction Chemicals.
- E. Nonshrink grout shall be Embeco 885 grout by BASF Construction Chemicals, Euco Firmix grout by the Euclid Chemical Company, or approved equal. The approved product shall be delivered to the site of the Work in the original sealed containers, each bearing the trade name of the material and the name of the manufacturer.
- F. Hardeners and dustproofers shall be colorless, aqueous solution of zinc or magnesium fluosilicate. Each gallon of solution used for the first application shall contain not less than one pound of crystals. Each gallon of solution used for subsequent application shall contain not less than two pounds of crystals. Materials shall be reviewed by the Engineer. Product shall be Lapidolith by BASF Construction Chemicals or approved equal.
- G. Porous fill shall be crushed rock or gravel of such size that all will pass a 1-1/2 inch screen and not more than 5 percent will pass a No. 4 screen, free from earth clay or other foreign substances.

- H. Waterstops: Waterstops shall be polyvinyl chloride, flat dumbbell shape (no center bulb), of size shown on Drawings, complete with fittings as required such as unions, vertical tees, vertical ells, flat crosses, flat ells, flat tees, etc. Waterstops shall be securely wired into place to maintain proper position during placement of fresh concrete, as shown on the Drawings. Care shall be taken in the installation of the waterstop and the placing of the concrete to avoid "folding" while concrete is being placed, and to prevent voids in the concrete surrounding the waterstop.
- I. Form Liners: Form liners for construction of fluted wall treatment shall be prefabricated plastic liners as manufactured by Greenstreak Plastic Products, Interform Company, or Symons Corporation.
 - 1. Liners shall be fiberglass or ABS (acrylonitrile - butadiene - styrene) of such configuration as to obtain the fluted pattern shown or indicated on the Drawings.
 - 2. For purposes of designating type and quality of material required, form liners shall be pattern 361 trapezoidal liners as manufactured by Greenstreak Plastic Products.
 - 3. Preparation of forming materials, sealing of joints to prevent grout leakage and form release treatment (if required) shall be in strict compliance with the manufacturer's printed instructions and recommendations.

PART 3 - EXECUTION

3.1 FINISHES

A. Exposed to Public View Concrete Surfaces:

- 1. All concrete exposed to view in the completed structure shall be produced using materials and workmanship to such a quality that only nominal finishing will be required. The provisions of paragraphs 6.2.2.1 and 6.3.6 of ACI 301 shall apply to all exterior exposed to public view concrete surfaces, including the outside surfaces of tanks.
- 2. Forms for exposed concrete surfaces shall be exterior grade, high-density overlay plywood, steel, or wood forms with smooth tempered hard-board form-liners.
- 3. Forms shall be coated with an approved release agent before initial pour and between subsequent pours, in accordance with the manufacturer's printed instructions. Form boards shall not be wet prior to placing concrete.
- 4. Recessed joints in concrete shall be formed using lacquer-coated wood battens or forms, milled to indicated profiles. Battens and corner strips shall be carefully inspected before concrete is placed and damaged pieces replaced.
- 5. Chamfer strips shall be one (1) inch radius with leg, polyvinyl chloride strips by Gateway Building Products, Saf-T-Grip Specialties Corp., Vinylex Corp., or equal.
- 6. Form panels shall be provided in the maximum size practicable in order to minimize form joints. Wherever practicable, form joints shall occur at recessed joints. All form joints in exterior exposed to view surfaces shall be carefully caulked with an approved nonstaining caulking compound. Joints shall not be taped. Form oil or other material which will impart a stain to the concrete shall not be allowed to contact concrete surfaces.
- 7. Care shall be taken to prevent chipping of corners or other damage to concrete when forms are removed. Exposed corners and other surfaces which may be damaged by ensuing operations shall be protected from damage by boxing, corner boards or other approved means until construction is completed.

8. Form ties shall remain in the walls and shall be equipped with a water seal to prevent passage of water through the walls. The minimum set back of form ties shall be 1-1/2 inches from faces of wall. The hole left by removal of tie ends shall be sealed and grouted in accordance with the procedure described hereinafter in Par. 3.01.F. Form ties will be permitted to fall within as-cast areas of architecturally treated wall surfaces; this does not apply to walls receiving decorative waterproof masonry coating.
9. All formed exposed to view concrete surfaces shall have a "smooth rubbed finish". Exterior vertical surfaces shall be rubbed to one foot below grade. Interior exposed to public view vertical surfaces of liquid containers shall be rubbed to one (1) foot below the minimum liquid level that will occur during normal operations.

B. All vertical surfaces in liquid-containing structures shall have a "smooth form" finish.

1. All "smooth form" concrete vertical surfaces shall be a true plane within 1/4 inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the surface in any direction. Abrupt irregularities shall not exceed 1/8 inch.

C. Basin, flume, conduit and tank floors shall have a "troweled" finish unless shown otherwise on Drawings.

D. Weirs and overflow surfaces shall be given a "troweled" finish.

E. Exterior platforms, steps and landings, shall be given a "broom" finish. "Broom" finish shall be applied to surfaces which have been steel-troweled to an even, smooth finish. The troweled surface shall then be broomed with a fiber-bristle brush in the direction transverse to that of the main traffic.

F. Patching of holes due to removal of tie ends and other repairable defective areas, shall be as follows: Entire contact area of hole shall be coated with two-part moisture insensitive epoxy bonding compound as specified in Par. 2.04.B. in accordance with manufacturer's specifications, and prior to placing of freshly mixed patching mortar. Patching mortar shall be mixed and placed in general accordance with ACI 301, Par. 5.3.7.5.

G. For floors and slabs in which drains occur, special care shall be exercised to slope the floors uniformly to the drains. All floors with drains shall be sloped not less than 1/8 inch per foot unless otherwise shown. In all areas where quarry tile or other materials requiring more than 1/4 inch drop are to be overlaid, the concrete base slab shall be depressed to provide a finished floor at the same elevation as surrounding areas.

3.2 TESTING

A. All testing shall be in accordance with provisions of ACI 301. Testing services listed in ACI Sections 1.6.4 shall be performed by a testing agency acceptable to the Engineer and Owner.

B. The testing services of ACI sections 1.6.4.2 and 1.6.4.3 shall be performed at the Contractor's expense. The Owner-approved third-party testing agency shall be responsible for making concrete test cylinders, storing and protecting concrete cylinders, and delivering cylinders to the Owner-approved testing laboratory.

- C. Testing services of ACI Section 1.6.4.4 shall be paid for by the Contractor. Test shall be made for each 50 cubic yards of concrete and/or each day concrete is placed.

3.3 ADDITIONAL REQUIREMENTS

- A. Unless otherwise directed by the Engineer, the vertical surfaces of footings shall be formed. Excavations and reinforcement for all footings shall have been inspected by the Engineer before any concrete is placed.
- B. The installation of underground and embedded items shall be inspected before slabs are placed. Pipes and conduits shall be installed below the concrete unless otherwise indicated. The fill required to raise the subgrade shall be placed as specified in Section 312000 "Earthwork". Porous fill not less than 6 inches in compacted thickness shall be installed under all slabs, tank bottoms, and foundations. The fill shall be leveled and uniformly compacted to a reasonably true and even surface. The surfaces shall be clean, free from frost, ice, mud and water. Waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness, or polyethylene-coated burlap shall be laid over all surfaces receiving concrete.
- C. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.
- D. Concrete Mixing
 - 1. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M and furnish batch ticket information.
 - a. When air temperature is between 85 and 90 degrees F (30 and 32 degrees C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degrees F (32 degrees C), reduce mixing and deliver time to 60 minutes.
 - 2. Project site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - a. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - b. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd.
 - c. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.
- E. If concrete is placed by pumping, no aluminum shall be used in any parts of the pumping system which contact or might contaminate the concrete. Aluminum chutes and conveyors shall not be used.

- F. All concrete surfaces shall be moist cured by the application of absorptive mats or double thicknesses of fabric kept continuously wet. Forms shall be kept continuously wet. Use of other curing methods will not be permitted unless written authorization is received from the Engineer.
- G. The unit of operation shall not exceed 30 feet for tank walls and walls exposed to weather, and 45 feet for other work in any horizontal direction and not less than 48 hours shall elapse between casting of adjoining units unless these requirements are waived by the Engineer. Provision shall be made for jointing successive units as indicated or required to be made at spacing of approximately 25 feet. Additional construction joints required to satisfy the 25-foot spacing shall be located by the Contractor subject to the review of the Engineer. The Contractor shall submit for review drawings separate from the steel reinforcing drawings, showing the location of all proposed construction joints. All construction joints shall be prepared for bonding by roughening the surface of the concrete in an acceptable manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface. Joints in walls and columns shall be maintained level. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.
- H. Formwork for beam soffits and slabs and other parts that support the weight of concrete, shall remain in place until the concrete has reached its specified 28-day strength, unless otherwise specified or permitted.
- I. Concrete Walks and Curbs:
 - 1. Subgrade shall be true and well compacted at the required grades. Spongy and otherwise unsuitable material shall have been removed and replaced with approved material. Concrete walks shall be placed upon porous fill covered with waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness or polyethylene-coated burlap.
 - 2. Concrete walks shall be not less than 4 inches in thickness. Walks shall have contraction joints every 5 linear feet in each groove in the top surface of the slab to a depth of at least one-fourth the slab thickness with a jointing tool. Transverse expansion joints shall be installed at all returns, driveways, and opposite expansion joints in adjacent curbs. Where curbs are not adjacent, transverse expansion joints shall be installed at intervals of approximately forty (40) feet. Sidewalks shall receive a "broomed" finish. Scoring shall be in a transverse direction. Edges of the sidewalks and joints shall be edged with a tool having a radius not greater than 1/6 inch. Sidewalks adjacent to curbs shall have a slope of 1/4 inch per foot toward the curb. Sidewalks not adjacent to curbs shall have a slope of 1/4 inch per foot. The surface of the concrete shall show no variation in cross section in excess of 1/4 inch in 5 feet. Concrete walks shall be reinforced with 6 x 6-W1.4xW1.4 welded wire reinforcement.
 - 3. Concrete curbs shall be constructed to the section indicated on the Standard Detail, and all horizontal and vertical curves shall be incorporated as indicated or required. Forms shall be steel as approved by the Engineer. At the option of the Contractor, the curbs may be precast or cast-in-place. Cast-in-place curbs shall be divided into sections 8 to 10 feet in length using steel divider plates. The divider plates shall extend completely through the concrete and shall be removed. Precast curbs shall be cast in lengths of 4 to 5 feet. All exposed surfaces of concrete shall be finished smooth. All sharp edges and the edges of joints and divisions shall be tooled to 1/4 inch radius. Steel reinforcement shall

be installed where the curb crosses pipe trenches or other insecure foundations. Such reinforcement shall consist of two (2) No. 4 deformed bars near the bottom of the curb and shall extend at least 24 inches beyond the insecure area. Transverse expansion joints shall be installed at all curb returns and at intervals of approximately 40 feet.

- J. Column base plates, bearing plates for beams and similar structural members, machinery and equipment bases shall, after being plumbed and properly positioned, be provided with full bearing with nonshrink grout. Concrete surfaces shall be rough, clean, free of oil, grease, and laitance and shall be moistened thoroughly immediately before grout is placed. Metal surfaces shall be clean and free of oil, grease and rust. Mixing and placing shall be in conformance with the material manufacturer's printed instructions. After the grout has set, exposed surfaces shall be cut back one (1) inch and covered with a parge coat of mortar consisting of one (1) part Portland cement, two (2) parts sand and sufficient water to make the mixture placeable. Parge coat shall have a smooth dense finish. Exposed surfaces of grout and parge coat shall be water cured with wet burlap for seven (7) days.
- K. Grout fill which is formed in place by using rotating equipment as a screen, such as clarifiers and similar types of equipment, shall be mixed in proportions and consistencies as required by the manufacturer or supplier of the equipment.
- L. Watertightness:
 - 1. The structures which are intended to contain liquids and/or will be subjected to exterior hydrostatic pressures shall be so constructed that, when completed and tested, there shall be no loss of water, and no wet spots shall show.
 - 2. As soon as practicable, after the completion of the structures, the Contractor shall fill them with water and if leakages develop or wet spots show, the Contractor shall empty such structures and correct the leakage in an approved manner. Any cracks which appear in the concrete shall be dug out and suitably repaired. Temporary bulkheads over pipe openings in walls shall be provided as required for the testing.
 - 3. After repairs, if any are required, the structures shall be tested again and further repaired, if necessary, until satisfactory results are obtained. All work in connection with these tests and repairs shall be at the expense of the Contractor.
 - 4. Waterstops shall be placed in other locations as indicated on the Drawings and as may be required to assure the watertightness of all containers of liquids. Special shop-fabricated ells, tees, and crosses shall be provided at junctions. Waterstops shall be extended at least 6 inches beyond end of placement in order to provide splice length for subsequent placement. In slabs and tank bottoms, water stops shall be turned up to be made continuous with waterstops at bottom of walls or in walls.
 - 5. Joints between pipe (except cast iron wall pipe) and cast-in-place concrete walls shall be sealed by means of a groove cast completely around the pipe; the groove shall be filled with a quick setting hydraulic compound similar and equal to "Master Seal 590" as made by BASF Construction Chemicals mixed and applied by the manufacturer's instructions.
- M. Unless otherwise shown or directed, all pumps, other equipment, and items such as lockers, motor control centers and the like, shall be installed on concrete bases. The bases shall be constructed to the dimensions shown on the plans or as required to meet plan elevations. Where no specific plan elevations are required, the bases shall be 6 inches thick and shall extend 3 inches outside the metal equipment base. In general, the concrete bases shall be placed up to 2 inches below the metal base. The equipment shall then be properly shimmed to grade and the 2- inch void filled with nonshrink grout.

- N. Concrete which, in the opinion of the Architect-Engineer, has excessive honeycomb, aggregate pockets or depressions will be rejected and the Contractor shall, at his own expense, remove the entire section containing such defects and replace it with acceptable concrete.
- O. Manhole or access steps shall be plastic, constructed of copolymer polypropylene meeting the requirements of ASTM D 2146 for Type II, Grade 16906 material. Step shall be reinforced with ASTM A 615, Grade 60, #4 deformed steel reinforcing bar, be 9 inches deep, 14 inches wide, provided with notched tread ridge, foot retainer lugs on each side of tread and penetration stops for press fit installation. Plastic steps shall be PS2-PF as manufactured by M.A. industries, Inc., Peachtree City, Georgia. Steps shall be installed by drilling 1 inch diameter holes, minimum 3-3/4 inches deep into the wall, and then driving steps into hole to the penetration stop, resulting in a press fit condition.
- P. Tank pressure relief valves shall be 6 inches diameter Neenah Foundry Company R-5001-1, American Valve & Hydrant B315.1, or equal, floor type, with outside hooks or inside self-contained lock; quantity and spacing as shown on structural drawings. No part of pressure relief valves shall project above the neat line of the tank floor to prevent fouling of scraper mechanisms where used.
- Q. All existing contact surfaces with new patch shall be coated with moisture-insensitive epoxy bonding adhesive, Sikadur Hi-Mod, Concrese LPL Liquid by BASF Construction Chemicals, or approved equal. Patch shall consist of base pour of 4,000 psi structural concrete, then a topping of non-shrink natural aggregate grout, Masterflow 713, SonogROUT by BASF Construction Chemicals, or approved equal, mixed and placed in accordance with manufacturer's instructions, to the thicknesses shown on Drawings. Coat base pour with epoxy bonding adhesive prior to placing grout course.

END OF SECTION 033000

SECTION 034000 – PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required to furnish and install all precast concrete structures and accessories appurtenances specified herein for water distribution piping 24" diameter or greater only.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.
- C. Delegated Design: Design precast concrete structures, including comprehensive engineering analysis by a qualified Professional Engineer, licensed in the state in which the project using performance requirements and design criteria indicated.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-in-Place Concrete: Section 033100
- B. Access Hatches: Section 083110

1.3 SUBMITTALS

The Contractor shall submit the following data for Engineer's review in accordance with Section 013323.

- A. Delegated Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data, calculations, and erection drawings signed and sealed by the qualified Professional Engineer responsible for their preparation.
- B. Product Data: For each type of product indicated included but not limited to standard precast units, proprietary precast units, embedded items, and accessories.
- C. Design Data: Submit calculations prepared under the direct supervision of a Professional Engineer supporting the structural design, including resistance to buoyancy with groundwater table to the top of the structure, resistance to uplift and resistance to wheel loads in accordance with requirements and references indicated. The calculations shall be sealed by a Professional Engineer licensed in the state in which the project is located.
- D. Test Reports: Submit test reports for the following:
 - 1. Material certifications and/or laboratory test reports, including mill tests and all other test data, for Portland cement, blended cement, pozzolans, ground granulated blast furnace

- slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this Project.
 2. Test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Such tests may include compressive strength, flexural strength, plastic or hardened air content, freeze thaw durability, abrasion and absorption. Clearly detail in the specifications special tests for precast concrete or cast-in items.
 3. Sufficient documentation, when the use of self-consolidating concrete (SCC) is proposed, showing a minimum of 30-days production track records demonstrating that SCC is appropriate for casting of the product.
 4. In-plant QA/QC inspection reports, upon the request of the Project Representative.
- E. Shop Drawings: Submit shop drawings for standard precast units and custom-made precast units prepared under direct supervision of a Professional Engineer licensed in the state in which the project is located. Shop drawings shall include:
1. The criteria and loads used in the design of the precast components.
 2. All materials used, their specifications and their design strengths.
 3. Layout, piece mark, dimensions, reinforcing, and connection details of each precast member, including openings.
 4. Details and instructions for lifting, rigging, erection, and installation of each precast component.
 5. Lists and descriptions of all loose accessory materials supplied.
 6. Instructions on secondary pours (in the field) when required.
 7. Professional Engineer's seal.
- F. Quality Control Procedures: Submit certificate from the NPCA QC Manual that the precast concrete structure manufacturer participates in their QA/QC program.
- G. Manufacturer's Instructions.
- 1.4 QUALITY ASSURANCE
- A. Manufacturer of precast concrete structures shall be quality certified by NCPA. Inspect manufacture of structures in accordance with ASTM C1037.
 - B. Installer of precast concrete structures shall have a record of at least three years of successful installation of similar products on similar projects.
 - C. Inspection of earthwork, compaction and backfill shall be in accordance with the earthwork specifications in Division 31.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver precast units to the site in accordance with the delivery schedule to avoid excessive build-up of units in storage at the site. Upon delivery to the jobsite, all precast concrete units will be inspected by the Project Representative for quality and final acceptance.

- B. Store units off the ground or in a manner that will minimize potential damage.
- C. Handle, transport, and store products in a manner to minimize damage. Lifting devices or holes shall be consistent with industry standards. Perform lifting with methods or devices intended for this purpose as indicated on Shop Drawings.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE STRUCTURES

- A. Circular precast vaults and structures shall conform to ASTM C478. Non-circular vaults and structures shall conform to ASTM C857. Access hatch and pipe penetrations shall be cast in the top slab and/or sides as indicated on the drawings.
- B. Manhole frames and covers shall have a clear opening of 22 inches and shall be made of cast iron conforming to ASTM A48/A48M Class 30. Casting shall be smooth, clean and free from blisters, blowholes and shrinkage. Castings shall be dipped twice in a preparation of asphalt or coal tar and oil applied at a temperature of not less than 144 degrees F and not more than 155 degrees F so as to form a tenacious coating.
- C. Structural design of precast concrete structures is hereby delegated.
- D. All precast concrete structures shall be designed to resist the lateral soil pressures and fluid pressures in accordance with ASTM C857.
- E. All precast concrete structures have integral flanges at the base to engage enough soil resistance to resist the buoyant force from full submergence.
- F. All precast concrete structures shall be designed to support HL-93 or HS25-44 wheel loads in accordance with the AASTHO HB-17 anywhere on the top surface of the structure.
- G. Joints: Joints shall be watertight and shall be sealed with one of the following:
 - 1. Rubber gaskets conforming to ASTM C443.
 - 2. Pre-formed flexible butyl type joint sealant conforming to AASHTO M198.
 - a. Hamilton Kent "Kent Seal No. 2"
 - b. K.T. Snyder Company "Rub'r Nek"
 - c. Press Seal Gasket "E Z Stik"
 - d. Concrete Sealants, Inc. "ConSeal"
- H. Corrosion Control: Follow recommendations outlined in ACPA 01-110 when hydrogen sulfide is indicated as a potential problem.
- I. External Rubber Wrap:
 - 1. Each precast concrete structure joint shall be sealed with an external rubber wrap as manufactured by Sealing Systems, Inc., or equal. The wrap shall be made of a Stretchable, Self-Shrinking, IntraCuring Halogenated Based Rubber with a minimum

thickness of 30 mils. The back side of each unit shall be coated with a cross-linked re-enforced butyl adhesive. The butyl adhesive shall be non-hardening sealant, with a minimum thickness of 30 mils. The wrap shall be designed to stretch around the substrate then overlapped creating a cross-link and fused bond between the rubber and butyl adhesive. The application shall form a continuous rubber seal that applies inward pressure on the protected area for the life of the application. The butyl adhesive and the inward pressure exerted on the substrate will prevent the intrusion of water and soil through the joint sections of a manhole.

External Rubber Wrap Specifications

Height	9 inches
Length	16 or 50 foot rolls
Thickness	60 mils
Height tolerances	9 inches +/- .188"
Length tolerances	+/- 3"
Rubber Thickness tolerances	30 mils
Butyl Adhesive Thickness	30 mils

Stretchable, Self-Shrinking, Intra-Curing Halogenated Based Rubber

Physical Properties	ASTM Test Method	Typical Value
Sheer Strength	D816	20 lb. PSI min
Tensile, PSI	D412	50 PSI
Elongation %	D412	500%
Penetration	D217	60/140 MM
Low Temperature	D746	Minus 49° F flexibility
Heat Aging	D573 7 days @ 90 degrees C	
Tensile Strength	minimum, PSI (MPa) > 100 PSI	Pass
Fusion	5/64" (0.2) max	Pass
Elongation %	minimum 300% at break	Pass
Ozone Resistance	no visible signs of cracking	Pass
Aging and Storage	300% elongation applied (10 Years)	Pass
UV Resistance	No visible signs of cracking	Pass

PART 3 - EXECUTION

3.1 FABRICATION

- A. Fabricate precast concrete structures in accordance with NPCA QC Manual.

3.2 INSTALLATION

- A. Install precast concrete structures in accordance with ASTM C891 and the manufacturer's instructions.
- B. Lift precast components at designated lifting points in accordance with the manufacturer's instructions and other applicable safety standards.
- C. Precast concrete structures shall bear on a minimum 4-inches-thick bedding / base / drainage course of free-draining granular material. See Division 31 for bedding / base / drainage course materials.
- D. Do not bear precast concrete structures on uneven subgrade or grade with high points from rock pinnacles or boulders or rock ledges.
- E. Install precast concrete structures in proper location, with the proper alignment and level.
- F. Backfill around the precast concrete structures in accordance with Division 31 specifications.

3.3 JOINTS

- A. Joints shall be sealed with an approved sealant as specified in Part 2 and shall be mortared or grouted.
- B. When making joints with mastic compound prime and seal all joints with primer supplied with the joint compound.
- C. Joints shall be watertight.
- D. Pipe Connections into Precast Structures:

1. Precast Openings:

- a. Pipe shall be sealed in the precast section pipe opening with a resilient connector meeting the requirements of ASTM C923. Resilient connector shall be "Dura-Seal III" by Dura-Tech, Dayton, Ohio; "A-Lok" by A-LOK Products, Inc.; or approved equal.
- b. Resilient connector shall be cast integrally into the wall of the precast section at the time of manufacture. There shall be no mortar placed around the connector on the outside of the manhole and no mortar shall be placed around the top half of the connector on the inside of the manhole when completing the invert work.

2. Cored Openings:

- a. Pipe shall be sealed in cored precast section pipe opening with a resilient mechanical connector meeting the requirements of ASTM C923. Resilient connector shall be "NPC Kor-N-Seal I" (with stainless steel wedge) by Trelleborg Pipe Seals Milford, Inc.; "PSX: Direct Drive" by Press-Seal Gasket Corporations; interlocking link pipe seal; or approved equal. All fasteners and hardware shall be Type 304 stainless steel.

- b. There shall be no mortar placed around the connector on the outside of the structure and no mortar shall be placed around the top half of the connector on the inside of the structure when completing the invert work.

3.4 LEAKAGE TESTING

- A. Leakage tests shall be made and observed by the Project Representative's representative for all precast structures. The test shall be the watertightness (exfiltration) test as described herein.
- B. After each structure has been assembled in place, including wall piping, all lifting holds shall be filled with an approved non-shrink, non-metallic grout. Upon completion, each precast structure shall be tested to determine watertightness. The leakage test shall be made prior to placing any fill material and prior to application of interior/exterior wall coatings if specified. If the groundwater table has been allowed to rise above the bottom of the structure, it shall be lowered for the duration of the test. All pipes and other openings into the structures shall be suitably plugged and the plugs braced to prevent blow out.
- C. The tank shall be filled with potable water to the maximum level. The test shall consist of measuring the liquid level over the next 24 hours to determine if any change has occurred. If a change is observed and exceeds the maximum allowance, the test shall be extended to a total of five days. If at the end of five days the average daily change has not exceeded the maximum allowance, the test shall be considered satisfactory.
- D. The liquid volume loss for a period of 24 hours shall not exceed one-twentieth of one percent of the tank capacity, $0.0005 \times \text{tank volume}$. If the liquid volume loss exceeds this amount, it shall be considered excessive, and the tank shall be repaired and retested.
- E. Damp spots will not be permitted at any location on the structure wall. Damp spots are defined as spots where moisture can be picked up on a dry hand. All such areas shall be repaired as necessary.
- F. Damp spots or standing water on the footing may occur upon tank filling and are permissible within the allowable volume loss. Measurable flow in this area is not permissible and must be corrected.
- G. It shall be the Contractor's responsibility to uncover the structure as necessary and to disassemble, reconstruct, or replace it as directed by the Project Representative. The structure shall then be retested.
- H. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the Contractor shall take any steps necessary to assure the Project Representative that the water table is below the bottom of the structure throughout the test.

3.5 CLEAN UP

- A. Upon completion of installation of the precast structures and appurtenances, the Contactor shall remove all debris and surplus construction materials resulting from the Work. The Contractor

shall grade the ground around and adjacent to the construction area in a uniform and neat manner to the final grade lines.

END OF SECTION 034000

DIVISION 31
EARTHWORK

SECTION 312000 – EARTHWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all materials, labor, equipment and services necessary to do all clearing and grubbing, excavation, backfilling, additional fill material and topsoil, control of surface drainage and ground water, finished site grading and erosion control required to construct the work specified herein for water distribution piping 24" diameter or greater only.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. State and local code requirements shall control the disposal of trees and shrubs.
- B. All burning shall be controlled by applicable local regulations.
- C. Excavation Support and Protection: Section 315000
- D. Erosion and Sedimentation Control: Section 312500

1.3 JOB CONDITIONS

- A. Weather: Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained on account of rain, snow, ice, drought or other adverse weather conditions.
- 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 their 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 State Department of Mines and Minerals, Division of Explosives and Blasting. 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.
- E. Dust Control: Use all means necessary to control dust on or near the project site where such dust is caused by the Contractor's operations or directly results from conditions left by the Contractor.

1.4 UTILITY LINE ACTIVITIES COVERED UNDER NATIONWIDE PERMIT # 12

All activities involving utility line construction covered under NATIONWIDE PERMIT # 12 shall meet the following conditions:

- A. The general Water Quality Certification is limited to the crossing of intermittent and perennial streams by utility lines.
- B. The construction of permanent or temporary access roads will impact less than 300 linear feet of intermittent and perennial streams and less than one acre of jurisdictional wetlands.
- C. Utility lines shall be located at least 50 feet away from a stream which appears as a blue line on a USGA 7-1/2-minute topographic map except where the utility line alignment crosses the stream. Utility lines that cross streams shall be constructed by methods that maintain normal stream flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to re-entering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the utility line excavation shall not be allowed to enter the flowing portion of the stream.
- D. The activities shall not result in any permanent changes in preconstruction elevation contours in waters or wetlands or stream dimension, pattern or profile.
- E. Utility line construction projects through jurisdictional wetlands shall not result in conversion of the area to non-wetland status.
- F. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
- G. Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access. Effective erosion and sedimentation control measures must be employed at all times during the project to prevent degradation of waters of the Commonwealth. Site regarding and reseeding will be accomplished within 14 days after disturbance.
- H. To the maximum extent practicable, all in-stream work under this certification shall be performed during low flow.
- I. 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 turbidity and disturbance to substrates and bank or riparian vegetation.

- J. 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 riprap is utilized, it is to be of such weight and size that bank stress or slump conditions will not be created because of its placement.
- K. Removal of existing riparian vegetation should be restricted to the minimum necessary for project construction.
- L. Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling (800) 928-2380.

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. The Contractor shall notify the Engineer if these soil materials are encountered.
 - 3. Subbase Material: Naturally or 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 uncrushed gravel, with 100 percent passing a 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.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

- A. Work shall consist of cutting and removing designated trees, stumps, brush, logs, removal of fences, or other loose and projecting material. Unless otherwise specified, it shall also include the grubbing of stumps, roots, and other natural obstructions which, in the opinion of the Engineer, must be removed to execute properly the construction work and operate properly the facility upon the completion of construction.
- B. Trees, bushes, and all-natural vegetation shall only be removed with the approval of the Engineer. No cleared or grubbed materials shall be used in backfills or embankment fills. All stumps, roots, and other objectionable material shall be grubbed up so that no roots larger than 3 inches in diameter remain less than 18 inches below the ground surface. All holes and

depressions left by grubbing operations shall be filled with suitable material and compacted to grade, as recommended in Paragraph 3.6.

- C. Disposal shall be by burning or other methods satisfactory to the Engineer; however, burning will be permitted only when the Contractor has obtained written permission from the local regulatory agency.
- D. The Contractor shall also remove from the site and satisfactorily dispose of all miscellaneous rubbish including, but not limited to, masonry, scrap metal, rock, pavement, etc., that is under the fill or to be removed as shown on the Drawings, specified herein, or directed by the Engineer.
- E. Existing improvements, adjacent property, utility and other facilities, and trees, plants, and brush that are not to be removed shall be protected from injury or damage resulting from the Contractor's operations.
- F. Trees and shrubs, designated to remain or that are beyond the clearing and grubbing limit, which are injured or damaged during construction operations shall be treated or replaced at the Contractor's expense by experienced tree surgery personnel.

3.2 EROSION CONTROL

- A. Temporary measures shall be applied throughout the construction period to control and to minimize siltation to adjacent properties and waterways. Such measures shall include, but not be limited to, the use of berms, silt barriers, gravel or crushed stone, mulch, slope drains and other methods.
- B. These temporary measures shall be applied to erodible material exposed by any activity associated with the construction of this project.
- C. Refer to Section 312500 - Erosion and Sedimentation Control for requirements.

3.3 EXCAVATION

- A. Excavation of every description and of whatever substances encountered within the grading limits of the project shall be performed to the lines and grades indicated on the Drawings. All excavation shall be performed in the manner and sequence as required for the work.
- B. All excavated materials that meet the requirements for fill, subgrades or backfill shall be stockpiled within the site for use as fill or backfill, or for providing the final site grades. Where practicable, suitable excavated material shall be transported directly to any place in the fill areas within the limits of the work. All excavated materials that are not suitable for fill, and any surplus of excavated material that is not required for fill shall be disposed of by the Contractor.
- C. The site shall be kept free of surface water at all times. The Contractor shall install drainage ditches, dikes and shall perform all pumping and other work necessary to divert or remove rainfall and all other accumulations of surface water from the excavations. The diversion and removal of surface water shall be performed in a manner that will prevent flooding and/or damage to other locations within the construction area where it may be detrimental. The

Contractor shall provide, install and operate sufficient trenches, sumps, pumps, hose piping, well points, deep wells, etc., necessary to depress and maintain the ground water level at least 2 feet below the base of the excavation during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained a minimum of 2 feet below the lowest excavation subgrade made until the excavation is backfilled or the structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures from natural ground water.

- D. Excavations for concrete structural slabs on grade shall extend 2 feet below the indicated bottom of slabs. The over-excavation shall be backfilled with 18 inches, compacted thickness, of over lot fill material or suitable material as herein specified. The remaining 6 inches of over-excavation shall be backfilled with porous fill material. The porous fill layer shall extend beyond the limits of the concrete slab a minimum of 2 feet on all sides as indicated on the Drawings. The porous fill shall be crushed stone or gravel and shall have the following U.S. Standard Sieve gradation:

Sieve	1-1/2	1	3/4	1/2	3/8
% Passing	Min 100	95±5	58±17	Max 15	Max 5

- E. Excavations for the construction shall be carefully made to the depths required. Bottoms for footings and grade beams shall be level, clean and clear of loose material, the lower sections true to size. Bottoms of footings and grade beams, in all locations, shall be at a minimum depth of 30 inches below adjacent exterior finished grade or 30 inches below adjacent existing grade, whichever is lower, whether so indicated or not. Footings and grade beam bottoms shall be inspected by the Engineer before any concrete is placed thereon.
- F. In excavations for structures where, in the opinion of the Engineer, the ground is spongy or otherwise unsuitable for the contemplated foundation, the Contractor shall remove such unsuitable material and replace it with suitable material properly compacted.
- G. Sheet piling and shoring shall be provided as necessary for the protection of the work and for the safety of the personnel. The clearances and types of the temporary structures, insofar as they affect the character of the finished work, will be subject to the review of the Engineer, but the Contractor shall be responsible for the adequacy of all sheet piling, bracing and cofferdamming. All shoring, bracing and sheet piling shall be removed as the excavations are backfilled in a manner such as to prevent injurious caving, or if directed by the Engineer, shall be left in place. Sheet piling left in place shall be cut off 18 inches below the surface.
- H. Excavation for structures which have been carried below the depths indicated without specific instructions shall be refilled to the proper grade with suitable material properly compacted, except that in excavation for columns, walls or footings, the concrete footings shall extend to this lower depth. All work of this nature shall be at the Contractor's expense.

3.4 FILL

- A. All existing fill below structures and paved areas must be stripped. The upper 6 inches of the natural subgrade below shall be scarified and recompacted at optimum moisture to at least 95 percent of Standard Proctor Density ASTM D 698 (latest revision).

- B. All vegetation, such as roots, brush, heavy sods, heavy growth of grass and all decayed vegetable matter, rubbish and other unsuitable material within the area upon which fill is to be placed shall be stripped or otherwise removed before the fill is started. In no case will such objectionable material be allowed to remain in or under the fill area. Existing fill from excavated areas on site shall be used as fill for open and/or planted areas. Additional fill stockpiled at the site can be used for structural fill if approved by the Engineer. Any additional material necessary for establishing the indicated grades shall be furnished by the Contractor and approved by the Engineer. All fill material shall be free from trash, roots and other organic material. The best material to be used in fills shall be reserved for backfilling pipelines and for finishing and dressing the surface. Material larger than 3 inches maximum dimension shall not be permitted in the upper 6 inches of the fill area. Fill material shall be placed in successive layers and thoroughly tamped or rolled in a manner approved by the Engineer, each layer being moistened or dried such that the specified degree of compaction shall be obtained. No fill shall be placed or compacted in a frozen condition or on top of frozen material. No fill material shall be placed when free water is standing on the surface of the area where the fill is to be placed and no compaction of fill will be permitted with free water on any point of the surface of the fill to be compacted.
- C. Where concrete slabs are placed on earth, all loam and organic or other unsuitable material shall be removed. Where fill is required to raise the subgrade for concrete slabs to the elevations as indicated on the Drawings or as required by the Engineer, such fill shall consist of suitable material and shall be placed in layers. Each layer shall be moistened or dried such that the specified degree of compaction shall be obtained. All compaction shall be accomplished in a manner and with equipment as approved by the Engineer. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for adjacent fill.

3.5 BACKFILLING

- A. After completion of footings, grade beams and other construction below the elevation of the final grades and prior to backfilling, all forms shall be removed, and the excavation shall be cleaned of all trash and debris. Material for backfilling shall be as specified for suitable material, placed and compacted as specified hereinafter. Backfill shall be placed in horizontal layers of the thickness specified and shall have a moisture content such that the required degree of compaction is obtained. Each layer shall be compacted by mechanical tampers or by other suitable equipment approved by the Engineer to the specified density. Special care shall be taken to prevent wedging action or eccentric loading upon or against the structure. Trucks and machinery used for grading shall not be allowed within 45 degrees above the bottom of the footings or grade beams.
- B. The trenches shall be backfilled following visual inspection by the Engineer and prior to pressure testing. The trenches shall be carefully backfilled with the excavated materials approved for backfilling, or other suitable materials, free from large clods of earth or stones. Each layer shall be compacted to a density at least equal to that of the surrounding earth and in such a manner as to permit the rolling and compaction of the filled trench with the adjoining earth to provide the required bearing value, so that paving, if required, can proceed immediately after backfilling is completed.

3.6 COMPACTION

- A. Suitable material as hereinbefore specified shall be placed in maximum 8-inch horizontal layers. Compaction shall be performed by rolling with approved tamping rollers, pneumatic-tired rollers, three-wheel power rollers or other approved equipment. The degree of compaction required is expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D-698. Laboratory moisture density tests shall be performed on all fill material. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction. Compaction requirements shall be as specified below:

Fill Utilized For	Required Density (%)	Maximum Permissible Lift Thickness As Compacted, Inches
Backfill & Utility Trenches Under Foundations & Pavement	95-100	8
Backfill Around Structures	95-100	8
Field and Utility Trench Backfill Under Sidewalk and Open Areas	90-100	8

- B. Field density tests shall be performed in sufficient number to ensure the specified density is being obtained. Tests shall be in accordance with ASTM Standards D 1556 or D 2922/D 3017 and shall be performed as authorized by the Engineer. Payment for field density tests shall be by the Contractor. Contractor shall provide suitable notification for coordination of testing. Delays due to the lack of adequate advance notification shall be the responsibility of the Contractor.

3.7 SITE GRADING

- A. Where indicated or directed, topsoil shall be removed without contamination with subsoil and spread on areas already graded and prepared for topsoil or transported and stockpiled convenient to areas for later application, or at locations specified. Topsoil shall be stripped to full depth and, when stored, shall be kept separate from other excavated materials and piled free of roots, stones, and other undesirable materials.
- B. Following stripping, fill areas shall be scarified to a minimum depth of 6 inches to provide bond between existing ground and the fill material. Material should be placed in successive horizontal layers not exceeding 12 inches uncompacted thickness. In general, layers shall be placed approximately parallel to the finished grade line.
- C. In general, and unless otherwise specified, the Contractor may use any type of earth moving equipment they have at their disposal, provided such equipment is in satisfactory condition and of such type and capacity that the work may be accomplished properly and the grading schedule maintained. During construction, the Contractor shall route equipment at all times, both when loaded and empty, over the layers as they are placed, and shall distribute the travel evenly over the entire area.

- D. The material in the layers shall be of the proper moisture content before rolling or tamping to obtain the prescribed compaction. Wetting or drying throughout the layer shall be required. Should the material be too wet to permit proper compaction or rolling, all work on the fill thus affected shall be delayed until the material has dried to the required moisture content. If the material is too dry, it shall be sprinkled with water and manipulated to obtain the uniform moisture content required throughout a layer before it is compacted.
- E. Each layer of the fill shall be compacted by rolling or tamping to the standard specified in Paragraph 3.6 and not less than 90 percent maximum density at optimum moisture content as determined by field density tests made by the Standard Proctor method. In general, and unless otherwise specified, the Contractor may use any type of compaction equipment such as sheepsfoot rollers, pneumatic rollers, smooth rollers and other such equipment they have at their disposal, provided such equipment is in satisfactory condition and is of such design, type, size, weight, and quantity to obtain the required density in the embankment. If at any time the required density is not being obtained with the equipment then in use by the Contractor, the Engineer may require that different and/or additional compaction equipment be obtained and placed in use at once to obtain the required compaction.
- F. The Contractor shall be responsible for the stability of all embankments and shall replace any portion which, in the opinion of the Engineer, has become displaced due to carelessness or negligence on the part of the Contractor.

3.8 TOPSOIL

- A. Provide all labor, materials, equipment and services required for furnishing and placing topsoil. Samples of topsoil shall be submitted to the Engineer for review before topsoil is placed. The material shall be good quality loam and shall be fertile, friable, mellow; free from stones larger than 1 inch, excessive gravel, junk metal, glass, wood, plastic articles, roots and shall have a liberal amount of organic matter. Light sand loam or heavy clay loam will not be acceptable.
- B. The topsoil shall be 3 inches thick in all areas to be seeded. No topsoil shall be placed until the area to be covered is excavated or filled to the required grade. Imported backfill material will be stockpiled on site for structure backfilling and top soiling.

END OF SECTION 312000

SECTION 312319 – DEWATERING

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor and equipment required to dewater all excavations.
- B. Dewatering of all excavations shall be the responsibility of the Contractor, and no additional compensation will be allowed for same unless specifically included as a bid item.
- C. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4” - 20” Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork is included in Section 312000.
- B. Erosion and Sedimentation Control is included in Section 312500.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL

- A. Dewatering equipment shall be of adequate size and quantity to ensure maintaining proper conditions for installing pipe, concrete, backfill or other material or structure in the excavation.
- B. Dewatering shall include proper removal of any and all liquid, regardless of its source, from the excavation and the use of all practical means available to prevent surface runoff from entering any excavation.
- C. The site shall be kept free of surface water at all times. The Contractor shall install drainage ditches, dikes and shall perform all pumping and other work necessary to divert or remove rainfall and all other accumulations of surface water from the excavations. The diversion and removal of surface water shall be performed in a manner that will prevent flooding and/or damage to other locations within the construction area where it may be detrimental. The Contractor shall provide, install and operate sufficient trenches, sumps, pumps, hose piping, well points, deep wells, etc., necessary to depress and maintain the groundwater level at least two (2) feet below the base of the excavation during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained a minimum of two (2) feet below the lowest excavation subgrade made until the structure has sufficient strength

and weight to withstand horizontal and vertical soil and water pressures from natural groundwater.

- D. Dewatering operations should not discharge into the sanitary sewer system, or into any ditch, pipe or other conveyance that leads to a regulated water body, except as authorized by a KPDES permit.

END OF SECTION 312319

SECTION 312500 – EROSION AND SEDIMENTATION CONTROL (Areas Less Than One Acre)

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment required for erecting, maintaining and removing temporary erosion and sedimentation controls as shown on the Drawings and as specified herein and as recommended by state and local regulatory agencies.
- B. Temporary erosion controls include, but are not limited to grassing, mulching, seeding, providing erosion control and turf reinforcement mats on all disturbed surfaces including waste area surfaces and stockpile and borrow area surfaces; scheduling work to minimize erosion and providing interceptor ditches at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits.
- C. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances on sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits.
- D. Contractor is responsible for providing and maintaining effective temporary erosion and sediment control measures prior to and during construction or until final controls become effective.
- E. The Contractor shall be responsible for placement of erosion and sedimentation controls. Prior to construction, the Contractor shall develop an erosion control plan and submit to the Engineer for review. Prior to excavation, fill or grade work, the Contractor shall place controls in locations required by the erosion control plan. If during the course of construction, the Engineer determines additional controls are required, the Contractor shall furnish, install and maintain additional mulching, blankets and/or sediment barriers to control erosion and sedimentation to the satisfaction of the Engineer.
- F. The Contractor shall notify the appropriate state agency before beginning construction and shall implement erosion control measures as may be required by state and federal agencies. If disturbed area is greater than one acre, Contractor shall submit a signed Notice of Intent form to the Division of Water at least 48 hours prior to beginning of construction activity.
- G. The Contractor shall inspect and repair all erosion and sedimentation controls every seven days and after each rainfall of 1/2 inch or greater.
- H. Bare soil areas must be seeded, mulched, or covered after 14 days if no work will be done in the area within the next seven days.
- I. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK

- A. Dewatering is included in this Division, Section 312319.
- B. Final erosion protection measures where required are included in this Section.
- C. Utility Line Stream Crossings - Division 02

PART 2 - PRODUCTS

2.1 SEED

- A. The seed mixture to be sown shall be in the following proportions:

Common Name	Proportion By Weight	% of Purity	% of Germination
Line Lawn Fescue	40	90	85
Chewings Fescue	25	90	85
Italian Rye Grass	20	90	85
Red Top	10	90	85
White Clover	5	95	90

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

2.2 FERTILIZER

- A. Just prior to the planting of turf, evenly broadcast 15 pounds per thousand square feet of fertilizer, 10-10-10 (nitrogen, phosphorus, potassium). Disc or harrow fertilizer 2 to 4 inches into the soil.
- B. Fertilizer shall be delivered to the site in the original unopened container bearing the manufacturer's guarantee analysis. Any fertilizer that becomes caked or damaged making it unsuitable for use, will not be accepted.

2.3 SOD

- A. Sod shall be at least 70 percent Bluegrass, strongly rooted and free of weeds.
- B. It shall be mowed to a height not to exceed 3 inches before lifting and shall be of uniform thickness with not over 1-1/2 inches of soil.

2.4 MULCH

- A. Mulch for seeded areas shall be Conwed Hydro Mulch, Silva-Fiber, or equal. It shall be suitable for use in a water slurry or for application with hydraulic equipment.
- B. Clean straw is acceptable as mulch. It shall be spread at the rate of one bale per 1,000 feet (approximately 2 inches loose depth).
- C. Mulch on slopes at or greater than 3:1 shall be held in place with turf reinforcement mat.
- D. Mulch on areas subject to surface water run-off or in drainage ditches shall be held in place with turf reinforcement mat.

2.5 EROSION CONTROL BLANKETS

- A. Erosion Control Blanket shall be made up of biodegradable and/or photodegradable products such as jute, wood fiber, coconut fiber, straw and degradable plastic netting. They shall degrade at a rate of approximately 6 months to 24 months.
- B. Erosion Control Blanket shall be installed on slopes less than 3:1.

2.6 TURF REINFORCEMENT MAT

- A. Where indicated on the Contract Drawings or as described in the Specifications, in all ditches and drainage channels and on all slopes equal to or greater than 3:1, Turf Reinforcement Mat shall be installed for long-term erosion control.
- B. Turf Reinforcement Mat shall consist of top- and bottom-heavy weight netting and biodegradable matrix such as coconut fiber or aspen curled wood excelsior, as manufactured by Western Excelsior Excel PP5-8 Turf Reinforcement Mat or equal. Product shall degrade at a minimum rate of 36 months.
- C. Where slope and hydraulic conditions are severe, a synthetic matrix may be used, based on manufacturer's recommendations.

2.7 SILT FENCE

- A. Temporary Silt Fence shall consist of woven geotextile fabric attached to 2-inch x 2-inch x 48-inch-tall hardwood stakes.
 - 1. Exposed Fabric shall be 36 inches, and a minimum of 4 inches shall be buried in trench as shown on the Detail Drawings.
 - 2. Stakes shall be at 6 feet centers unless stated otherwise on Contract Documents.
- B. Temporary Reinforced Silt Fence
 - 1. For areas of steep slopes and high flows, where indicated on the Contract Drawings, or as directed by state or local regulations, Reinforced Silt Fence shall be installed.

2.

Fabric shall be woven monofilament geotextile attached to 11 gauge steel fencing of 2-inch x 4-inch grid.
3.

Stakes shall be 5 feet tall steel and shall be installed on 4 foot centers.
4.

Fabric and fencing shall be buried in trench as shown on the Detail Drawings.
- C.

Spacing of Silt Fences on slopes shall be according to the following table, or as directed by state or local regulatory agencies:

Slope Angle	Soil Type		
	Silty	Clays	Sandy
Very Steep (1:1)	50 feet	75 feet	100 feet
Steep (2:1)	75 feet	100 feet	125 feet
Moderate (4:1)	100 feet	125 feet	150 feet
Slight (10:1)	125 feet	150 feet	200 feet

- D.

If runoff flows along the uphill side of the silt fence, Contractor shall install "J-hooks" every 40 feet to 80 feet. These are curved sections of silt fence above the continuous fence that serve as small dams to stop and hold the flow to allow sediment to settle.

2.8 FIBER ROLLS

- A.

On long slopes less than 10:1 and where indicated on the Contract Drawings or recommended by the regulatory agency, Fiber Rolls shall be installed.
- B.

Fiber Rolls shall be made of wood shavings, coconut fiber or other similar material encased in heavy duty netting.
- C.

Wooden stakes at 4 feet o.c. shall be used to anchor the Fiber Rolls along the contours of the slope.

2.9 AGGREGATE SILT CHECKS

- A.

Where needed to slow flow velocity, to cause ponding or to protect storm water inlet structures, Aggregate Silt Checks shall be installed.
- B.

Aggregate Silt Checks shall consist of rock of various sizes ranging from 2 inches to 6 inches contained in or placed on geotextile filter fabric. Pea-stone or gravel-filled bags are acceptable for temporary silt checks in low-flow conditions.

2.10 RIP RAP

- A.

Rip Rap shall be installed at the outlets of storm drains and on channel banks as noted on the Contract Drawings and/or recommended by state and local regulatory agencies.
- B.

Rip Rap shall have no less than 80 percent, by volume, of individual stones that range in size from 0.0247 to 1.483 cf.

2.11 CONSTRUCTION ENTRANCE PAD

- A. Contractor shall construct entrance pads at all locations where vehicles will enter or exit the site.
- B. Pad shall be a minimum of 20 feet wide, 50 feet long and 6 inches thick, and consist of No. 2 stone laid on top of filter fabric.

PART 3 - EXECUTION

3.1 GENERAL

- A. Erosion and sediment control practices shall be consistent with the requirements of the state and local regulatory agencies and in any case shall be adequate to prevent erosion of disturbed and/or regraded areas.
- B. Contractor is responsible for notifying the state regulatory agency concerning inclusion under the NPDES General Permit for Storm Water Discharges From Construction Activities.
- C. Gravity sewer lines and force mains that cross streams shall be constructed by methods that maintain normal stream flow and allow for a dry exaction. Water pumped from the excavation shall be contained and allowed to settle prior to reentering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the sewer line excavation shall not be allowed to enter the flowing portion of the stream. The provisions of this condition shall apply to all types of utility line stream crossings.
- D. Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access. Effective erosion and sedimentation control measures must be employed at all times during the project to prevent degradation of waters of the Commonwealth. Site regrading and reseeding will be accomplished with 14 days after disturbance.

3.2 SEEDING

- A. The areas to be seeded shall be thoroughly tilled to a depth of at least 4 inches by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer. After harrowing or discing, the seed bed shall be dragged and/or hand raked to finish grade.
- B. The incorporation of the fertilizer and the agricultural lime may be a part of the tillage operation and shall be applied no less than 24 hours nor more than 48 hours before the seed is to be sown.
- C. Seed shall be broadcast either by hand or approved sowing equipment at the rate of 90 lbs. per acre (2 lbs. per 1,000 sf), uniformly distributed over the area. Broadcasting seeding during high winds will not be permitted. The seed shall be drilled or raked into a depth of approximately 2 inches and the seeded areas shall be lightly raked to cover the seed and rolled. Drilling seeding shall be done with approved equipment with drills not more than 3 inches apart. All ridges shall be smoothed out, and all furrows and wheel tracks likely to develop into washes, shall be removed.

- D. After the seed has been sown, the areas so seeded shall be mulched with clean straw at the rate of one bale per 1,000 feet (approximately 2-inch loose depth). Mulch on slopes and in all ditches and drainage channels shall be held in place with erosion control blankets.
- E. Areas seeded shall be watered and protected until a uniform stand develops and then inspected periodically and maintained appropriately. Displaced mulch shall be replaced or any damage to the seeded area shall be repaired promptly, both in a manner to cause minimum disturbance to the existing stand of grass. If necessary to obtain a uniform stand, the Contractor shall refertilize, reseed and remulch as needed. Scattered bare spots up to 1 square yard in size will be allowed up to a maximum of 10 percent of any area.
- F. Payment for seeding and mulching shall be included in the Contractor's bid.

3.3 SOD

- A. To install, bring soil to final grade and clear of trash, wood, rock, and other debris. Apply topsoil, fertilizer at approximately 1000 lbs. per acre.
- B. Use sod within 36 hours of cutting. Lay sod in straight lines. Butt joints tightly, but do not overlap joints or stretch sod. Stagger joints in adjacent rows in a brickwork type pattern. Use torn or uneven pieces on the end of the row.
- C. Notch into existing grass. Anchor sod with pins or stakes if placed on slopes greater than 3:1. Roll or tamp sod after installation and water immediately. Soak to a depth of 4 inches to 6 inches. Replace sod that grows poorly. Do not cut or lay sod in extremely wet or cold weather. Do not mow regularly until sod is well established.

3.4 INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES

- A. All erosion and sediment control products and materials shall be installed per manufacturer's recommendations and in accordance with the Kentucky Erosion Prevention and Sediment Control Field Guide.
- B. Contractor shall pay special attention to the trenching-in of the bottoms of silt fence, the staking of sediment barriers, and the stapling of erosion control blankets.

3.5 MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES

- A. Erosion and sedimentation controls shall be inspected weekly and after rain events of 1/2-inch or greater. Replace silt fencing as needed, filter stone which is dislodged, erosion control blanket which is damaged, and make other necessary repairs.
- B. Remove sediment from fences and barriers when it accumulates to half the height of the barrier, or more often as needed.

3.6 CLEAN UP

- A. Upon completion of the project and/or establishment of satisfactory turf, vegetation or permanent erosion control structures, Contractor shall remove all temporary devices and properly dispose of such.

END OF SECTION 312500

SECTION 315000 – EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. This Section includes, but is not limited to, the following:
 - 1. Shoring and bracing necessary to protect existing buildings, streets, walkways, utilities, and other improvements and excavation against loss of ground or caving embankments.
 - 2. Maintenance of shoring and bracing.
 - 3. Removal of shoring and bracing, as required.
- B. Types of shoring and bracing systems include, but are not limited to, the following:
 - 1. Steel H-section (soldier) piles.
 - 2. Timber lagging.
 - 3. Steel sheet piles.
 - 4. Portable Steel Trench Box.
- C. Building excavation is specified in another Section.
- D. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Section 013323.

Layout drawings for excavation support system and other data prepared by, or under the supervision of, a qualified Professional Engineer. System design and calculations must be acceptable to local authorities having jurisdiction. This submittal is for information only. Engineer's review is not for adequacy design, but to verify that it has been designed by a licensed professional. Design of shoring is part of means and methods of construction and remains solely the responsibility of the Contractor.

1.4 QUALITY ASSURANCE

- A. Engineer Qualifications: A Professional Engineer legally authorized to practice in jurisdiction where Project is located and experienced in providing successful engineering services for excavation support systems similar in extent required for this Project.
- B. Supervision: Engage and assign supervision of excavation support system to a qualified Professional Engineer foundation consultant.
- C. Regulations: Comply with codes and ordinances of governing authorities having jurisdiction.

1.5 JOB CONDITIONS

- A. Before starting work, verify governing dimensions and elevations. Verify condition of adjoining properties. Take photographs to record any existing settlement or cracking of structures, pavements, and other improvements. Prepare a list of such damages, verified by dated photographs, and signed by Contractor and others conducting investigation.
- B. Survey adjacent structures and improvements, employing qualified Professional Engineer, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
- C. During excavation, resurvey benchmarks weekly, maintaining accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if cracks, sags, or other damage is evident.

1.6 EXISTING UTILITIES

- A. Protect existing active sewer, water, gas, electricity and other utility services and structures.
- B. Notify municipal agencies and service utility companies having jurisdiction. Comply with requirements of governing authorities and agencies for protection, relocation, removal, and discontinuing of services.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide adequate shoring and bracing materials which will support loads imposed. Materials need not be new but should be in serviceable condition.
- B. Structural Steel: ASTM A 36.
- C. Steel Sheet Piles: ASTM A 328.
- D. Timber Lagging: Any species, rough-cut, mixed hardwood, nominal 3 inches thick, unless otherwise indicated.
- E. Portable Steel Trench Box shall be OSHA approved.

PART 3 - EXECUTION

3.1 SHORING

- A. Wherever shoring is required, locate the system to clear permanent construction and to permit forming and finishing of concrete surfaces. Provide shoring system adequately anchored and braced to resist earth and hydrostatic pressures.
- B. Shoring systems retaining earth on which the support or stability of existing structures is dependent must be left in place at completion of work.

3.2 BRACING

- A. Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move a brace, install new bracing prior to removal of original brace.
- B. Do not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to Engineer.
- C. Install internal bracing, if required, to prevent spreading or distortion of braced frames.
- D. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.
- E. Remove sheeting, shoring, and bracing in stages to avoid disturbance to underlying soils and damage to structures, pavements, facilities, and utilities.
- F. Repair or replace, as acceptable to Engineer, adjacent work damaged or displaced through installation or removal of shoring and bracing work.

END OF SECTION 315000

DIVISION 33

UTILITIES

SECTION 330523 – STEEL CASING PIPE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and services required to furnish and install all bored and jacked carrier pipes in encasement pipes under railroad and highway crossings as shown on the Drawings and/or specified herein for water distribution piping 24" diameter or greater only.
- B. Where contradictions exist between the latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 312000
- B. Piping: Division 33

1.3 SUBMITTALS

- A. Descriptive literature, catalog cuts, and 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.
- 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.
- C. Comply with all requirements of Section 013323.
- D. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Carrier Pipe		X							X			
Casing Pipe		X										
Casing Spacers		X		X								
Casing End Seals		X		X								

- 1.4EXISTING CONDITIONS
- A.

The existing piping & other utilities shown on the Contract Drawings is based on the best available information. The Engineer makes no guarantee as to the accuracy of the locations or type of piping or utility depicted. All new piping which ties into existing lines must be made compatible with that piping.
- B.

So that piping conflicts may be avoided, Contractor shall locate the utility (vertically & horizontally) well ahead of the pipe laying operation to confirm exact locations of existing piping before installing any new piping.
- C.

Contractor shall provide all fittings and adapters necessary to complete all connections to existing piping.

PART 2 - PRODUCTS

- 2.1CARRIER PIPE
- A.

Carrier pipe shall be as specified in the applicable Division 33 section unless otherwise noted.
- B.

The pipe push-on joints shall be restrained by use of a rubber gasket that has stainless steel wedging segments spaced around the gasket. Restrained push-on joint rubber gasket shall be Fast-Grip by American Ductile Iron Pipe, Field Lok 350 Gasket by US Pipe, or Engineer-approved equal.
- 2.2CASING 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 at least 18 feet in length.
- 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)															
10	12	16	18	20	24	24	30	30	30	36	36	42	48	50	50

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:

Casing Pipe Nominal Diameter (Inches)								
Under 20	20 & 22	24	30	36	38	42	48	50
Casing Pipe Nominal Thickness (Inches) - Under Paved Roads Under CSX or other Railroad Right of Way if Coated or Cathodically Protected								
.250 (1/4")	.281 (9/32")	.312 (5/16")	.406 (13/32")	.469 (15/32")	.500 (1/2")	.562 (9/16")	.625 (10/16")	.656 (21/32")
Casing Pipe Nominal Thickness (Inches) - Under CSX or other Railroad Right of Way Uncoated and Cathodically Unprotected								
.312 (5/16")	.344 (11/32")	.375 (3/8")	.469 (15/32")	.532 (17/32")	.562 (9/16")	.625 (5/8")	.688 (11/16")	.719 (23/32")

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.

2.3 CASING SPACERS

- A. Casing spacers shall be installed a maximum of eight (8) feet apart along the length of the carrier pipe and within two (2) feet of each side of a pipe joint, to support the pipe barrel and the weight of its contents. 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.

2.4 CASING END SEALS

- A. The annual space between the steel casing pipe and the carrier pipe shall be sealed by use of interlocking link pipe seals. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely water-tight seal between the pipe and wall sleeve. Bolts and hardware shall be constructed of 316 stainless steel. Seals shall be "Link-Seal Model S-316 Modular Seal" as manufactured by PSI-Thunderline/Link-Seal, Houston, TX, or approved equal.
- B. The Contractor shall determine the required diameter of each casing/carrier pipe installation according to the manufacturer's recommendations before ordering and installing the seal. Carrier pipe shall be accurately centered in the casing pipe and link seals shall be sized, installed and tightened in accordance with the manufacturer's instructions or per method approved by the Engineer.

PART 3 - EXECUTION

3.1 CROSSINGS - GENERAL

- A. Where designated on the drawings, crossings beneath state-maintained roads, not to be disturbed shall be accomplished by boring and jacking a casing pipe.
- B. 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 inches from the casing pipe wall at all times. A manufacturer's recommendations may govern these requirements.
- C. 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.
- D. Wood skids are not an acceptable method of supporting the carrier pipe.

3.2 CROSSING - RAILROAD

- A. All water or sewer line crossings of railroads shall be prominently marked at railroad right-of-way lines, on both sides of the track crossing, by durable, weatherproof signs located over the

center of the water line. When possible, signs shall be located so that when standing at one sign, the other marker is visible. Signs shall show the following:

1. Name and address of Owner.
2. Contents of pipe.
3. Pressure in pipe.
4. Pipe depth below grade at point of sign.
5. Emergency telephone number in event of pipe rupture.

B. Contractor must adhere to all safety requirements of the Railway line involved in the crossing.

1. All operations shall be conducted so as to not interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. The Contractor shall provide written acknowledgment to the Railway line that the Contractor and its employees have received, read, and understood the safety rules. Operations will be subject to inspection at any and all time.
2. All cranes, lifts, or other equipment that will be operated in the vicinity of the railroad's electrification and power transmission facilities shall be electrically grounded in an approved manner.
3. At all times, while work is in progress, a field supervisor with no less than twelve (12) months' experience in the operation of the equipment being used shall be present. If boring equipment or similar machines are being used, the machine operator shall also have a minimum of twelve (12) months' experience in the operation of the equipment being used.
4. Whenever equipment or personnel are working closer than fifteen (15) feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Operations closer than fifteen (15) feet from the centerline of the track shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work.
5. Crossing the tracks at grade by equipment and personnel is prohibited except by prior arrangement with, and as directed by the railroad line. A separate permit must be obtained, by the Contractor, for any "at grade" crossing of the tracks.

C. All railroad costs incurred by the Railway line due to work associated with the crossing (inspection, flagging, track work, etc.) shall be paid by the Owner. However, it is the Contractor's responsibility to coordinate the work with the Railway.

D. Contractor shall notify the Railway line's area engineer a minimum of 14 working days prior to desired start of construction.

3.3 BORING AND JACKING

- A. The Contractor shall excavate his own pits, as he may deem necessary, and will set his own line and grade stakes 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 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.
 2. 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.
 3. The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than 2 inches. 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.
 4. The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.
 5. Any method which does not have this boring arrangement will not be permitted. The 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 coarse sand rammed in.
- 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. Insurance shall consist of comprehensive general liability and automobile liability insurance.
- E. Before award of the contract, the Contractor shall furnish a statement of his experience of such work, or if inexperienced, shall advise the Owner as to whom he will sublet the work and give a statement of the experience of the subcontractor, which shall be satisfactory to the Owner.

3.4 CONTRACTOR'S RESPONSIBILITIES

- A. Obtain a copy of the Highway Encroachment and/or Railroad Permit before beginning construction.
- B. Attend a preconstruction meeting at the construction site with the City Inspector, Railroad Inspector, Highway Inspector Engineer, and Contractor being present.

END OF SECTION 330523

PART 1 - GENERAL

- A. Provide all labor, materials, equipment and services required for furnishing and installing all piping and appurtenances specified herein for water distribution piping 24" diameter or greater only.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4" - 20" Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

A. Valves Section 331216

- A. A notarized certification shall be furnished for all pipe and fittings that verifies compliance with all applicable specifications.
- B. The requirement for this certification does not eliminate the need for shop drawings submittals in compliance with Section 013323.
- C. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Pipe and Fittings		X							X			
Couplings and Adapters		X										
Detectable UG Tape		X		X								
Tracer Wire		X		X								
Trench Baffles		X		X								
PE Tubing		X										
Corp. Stops and Fittings		X		X								

1.4 EXISTING CONDITIONS

- A. The existing piping shown on the Contract Drawings is based on the best available information. The Engineer makes no guarantee as to the accuracy of the locations or type of piping depicted. All new piping which ties into existing lines must be made compatible with that piping.
- B. So that piping conflicts may be avoided, Contractor shall open up his trench well ahead of the pipe laying operation to confirm exact locations of existing piping before installing any new piping.
- C. Contractor shall provide all fittings and adapters necessary to complete all connections to existing piping.

1.5 UTILITY LINE ACTIVITIES COVERED UNDER NATIONWIDE PERMIT # 12

- A. All activities involving utility line construction covered under the US Army Corps of Engineers NATIONWIDE PERMIT # 12 shall meet the following conditions:
 - 1. Utility Line Activities. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project. Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity.
 - 2. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.
 - 3. Notification: The permittee must submit a pre-construction notification to the US Army Corps district engineer prior to commencing the activity if any of the following criteria are met:
 - a) The activity involves mechanized land clearing in a forested wetland for the utility line right-of-way;
 - b) A section 10 permit is required;
 - c) The utility line in waters of the United States, excluding overhead lines, exceeds 500 feet;
 - d) The utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area;
 - e) Discharges that result in the loss of greater than 1/10-acre of waters of the United States;
 - f) Permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or

- g) Permanent access roads are constructed in waters of the United States with impervious materials.

B. All activities involving utility line construction covered under KENTUCKY GENERAL CERTIFICATION of Nationwide Permit # 12 shall meet the following conditions:

The general Water Quality Certification applies to surface waters of the Commonwealth as defined in 401KAR10:001 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.

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. This general water quality certification does not authorize the installation of utility lines in a linear manner within the stream channel or below the top of the stream bank.
4. For a single crossing, impacts from the construction and maintenance corridor in surface waters shall not exceed 50 feet of bank disturbance.
5. This general certification shall not apply to nationwide permits issued for individual crossings which are part of a larger utility line project where the total cumulative impacts from a single and complete linear project exceed ½ acre of wetlands or 300 linear feet of surface waters. Cumulative impacts include utility line crossings, permanent or temporary access roads, headwalls, associated bank stabilization areas, substations, pole or tower foundations, maintenance corridor, and staging areas.
6. Stream impacts under Conditions 4 and 5 of this certification are defined as the length of bank disturbed. For the utility line crossing and roads, only one bank length is used in calculation of the totals.
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. Blasting of stream channels, even under dry conditions, is not allowed under this general water quality certification.
11. Utility lines placed parallel to the stream shall be located at least 50 feet from an intermittent or perennial stream, measured from the top of the stream bank. The cabinet may allow construction within the 50-foot buffer if avoidance and minimization efforts are shown, and adequate methods are utilized to prevent soil from entering the stream.
12. Utility line stream crossings shall be constructed by methods that maintain flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to re-entering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the excavation shall not be allowed to enter the flowing portion of the stream.

13. The activities shall not result in any permanent changes in pre-construction elevation contours in surface waters or wetlands or stream dimension, pattern or profile.
14. Utility line activities which impact wetlands shall not result in conversion of the area to non-wetland status. Mechanized land clearing of forested wetlands for the installation or maintenance of utility lines is not authorized under this certification.
15. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:
 - a. 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.
 - b. 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, 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.
 - c. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
 - d. Removal of riparian vegetation shall be limited to that necessary for equipment access.
 - e. To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
 - f. 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.
 - g. 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.
 - h. 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.
 - i. Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling (800) 928-2380.
16. Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

1.6 CONSTRUCTION IN A FLOODPLAIN

- A. No material shall be placed in the stream or in the flood plain to form construction pads, coffer dams, access roads, etc. unless prior approval has been obtained from the Environmental and Public Protection Cabinet.
- B. The trench shall be backfilled as closely as possible to the original contour. All excess material from construction of the trench shall be disposed of outside the flood plain unless the applicant has received prior approval from the Cabinet to fill within the flood plain.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51, latest revision, pressure class 250, with push-on joints unless otherwise noted on Drawings.
- B. The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with ANSI/AWWA C104/A21.4, latest revision. Thickness of the lining shall be as set forth in the ANSI/AWWA C104/A21.4 specification unless otherwise directed by the Engineer. The exterior of all pipe, unless otherwise specified, shall receive either coal tar or asphalt base coating a minimum of 1 mil thick.
- C. Each piece of pipe shall bear the manufacturer's name or trademark, the year in which it was produced and the letters "DI" or the word "DUCTILE". Pipe manufacturer shall furnish notarized certificate of compliance to the above AWWA or ANSI specifications.
- D. Fittings shall be pressure class 250 ductile iron and have mechanical-joints or push-on joints in accordance with ANSI/AWWA C110/A21.10, latest revision and shall conform to the details and dimensions shown therein. Fittings shall have interior cement-mortar lining as specified hereinbefore for the pipe. Compact ductile iron fittings meeting the requirements of ANSI/AWWA C153/A21.53, latest revision, will also be acceptable.
- E. Joints for ductile iron pipe and fittings, as described hereinbefore, shall be rubber-gasket joints and be in accordance with ANSI/AWWA C111/A21.11, latest revision. Joints shall have the same pressure rating as the pipe or fitting of which they are a part. Joints shall be installed per the manufacturer's recommendations.
- F. Provide ANSI/AWWA C110/A21.10 mechanical joint plugs and locked or restrained pipe joints where indicated on Drawings. Fittings under structures shall be mechanical joint with retainer glands.

2.2 COUPLING AND ADAPTORS

- A. Flexible couplings shall be of the sleeve type with a middle ring, two wedge shaped resilient gaskets at each end, two follower rings, and a set of steel trackhead bolts. The middle ring shall be flared at each end to receive the wedge portion of the gaskets. The follower rings shall confine the outer ends of the gaskets, and tightening of the bolts shall cause the follower rings to compress the gaskets against the pipe surface, forming a leak-proof seal. Flexible couplings

shall be steel with minimum wall thickness of the middle ring or sleeve installed on pipe being 5/16-inch for pipe smaller than 10 inches, 3/8-inch for pipe 10 inches or larger. The minimum length of the middle ring shall be 5-inches for pipe sizes up to 10 inches and 7 inches for pipe 10 inches to 30 inches. The pipe stop shall be removed. Gaskets shall be suitable for 250 psi pressure rating or at rated working pressure of the connecting pipe. Couplings shall be harnessed and be designed for 250 psi.

- B. Flanged adapters shall have one end suitable for bolting to a pipe flange and the other end of flexible coupling similar to that described hereinbefore. All pressure piping with couplings or adapters shall be harnessed with full threaded rods spanning across the couplings or adapters. The adapters shall be furnished with bolts of an approved corrosion resistant steel alloy, extending to the adjacent pipe flanges. Flanges on flanged adapter (unless otherwise indicated or required) shall be faced and drilled ANSI B16.1 Class 125.
- C. Flexible couplings and flanged adapters shall be as manufactured by Dresser, Smith-Blair, or equal, per the following, unless otherwise specified and/or noted on the Drawings:
- D. Steel couplings for joining same size, plain-end, steel, cast iron, and PVC plastic pipe.

<u>Dresser</u>	<u>Smith-Blair</u>
Style 138	411

- E. Transition couplings for joining pipe of different outside diameters.

<u>Dresser</u>	<u>Smith-Blair</u>
Style 162 (4" to 12")	413 steel (2" to 24")
Style 62 (2" to 24")	415 steel (6" to 48")

- F. Flanged adapters for joining plain-end pipe to flanged pipe, fittings, valves and equipment.

<u>Dresser</u>	<u>Smith-Blair</u>
Style 127 cast (3" to 12")	912 cast (3" to 12")
Style 128 steel (3" to 48" C.I. Pipe)	913 steel (3" and larger)
Style 128 steel (2" to 96" steel pipe)	

2.3 DETECTABLE UNDERGROUND UTILITY WARNING TAPES

- A. Detectable underground utility warning tapes which can be located from the surface by a pipe detector shall be installed directly above nonmetallic (PVC, polyethylene, concrete) pipe.
- B. The tape shall consist of a minimum thickness 0.35 mils solid aluminum foil encased in a protective inert plastic jacket that is impervious to all know alkalis, acids, chemical reagents and solvents found in the soil.
- C. The minimum overall thickness of the tape shall be 5.0 mils and the width shall not be less than 2 inches with a minimum unit weight of 2-1/2 pounds/1 inch x 1,000 feet. The tape shall be color coded and imprinted with the legend as follows:

<u>Type of Utility</u>	<u>Color Code</u>	<u>Legend</u>
Water	Blue	Caution Buried Waer Line Below

- D. Detectable underground tape shall be "Detect Tape" as manufactured by Allen Systems, or equal.
- E. Installation of detectable tapes shall be per manufacturer's recommendations and shall be as close to the grade as is practical for optimum protection and detectability. Allow a minimum of 18 inches between the tape and the line.
- F. Payment for detectable tapes shall be included in the linear foot price bid of the appropriate bid item(s) unless it is listed as a separate payment item in the bid schedule.

2.4 TRACER WIRE

- A. Tracer wire shall be 12-gauge copper wire with 30-mil polyethylene jacket. Tracer wire shall be installed with all buried piping, "duct" taped to top of pipe.
- B. Split Bolt connectors are required when connecting two pieces of tracer wire. Wire and connector shall be wrapped with electrical tape.
- C. Tracer wire shall be brought up into locator boxes with grounding devices. Locator boxes shall be valve boxes with a polystyrene donut that fits around the box to serve as a termination point for tracer wire. Locator boxes shall be installed at a maximum of 3000 linear feet apart, or where shown on the Drawings.
- D. Payment for tracer wire and boxes shall be included in the linear foot price bid of the appropriate bid item(s) unless it is listed as a separate payment item in the bid schedule

2.5 CONCRETE PIPE ANCHORS, THRUST BLOCKS, CRADLE OR ENCASEMENT

- A. Where indicated on the Drawings, required by the Specifications or as directed by the Engineer, concrete pipe anchors, thrust blocks, cradles or encasements shall be installed.
- B. Concrete shall be 3000 psi, and reinforcing bars shall be installed as indicated on the details.

2.6 CONNECTION OF NEW WATER MAINS TO EXISTING SYSTEM

- A. The Contractor shall connect the new water main to existing water main where shown on the Drawings or directed by the Engineer, and shall furnish all necessary equipment and materials required to complete the connection.

PART 3 - EXECUTION

3.1 EXCAVATION FOR PIPELINE TRENCHES

- A. Unless otherwise directed by the Engineer, trenches in which pipes are to be laid shall be excavated in open cut to the depths required by field conditions or as specified by the Engineer. In general, this shall be interpreted to mean that machine excavation in earth shall not extend below an elevation permitting the pipe to be properly bedded. Installation shall be in accordance with ANSI/AWWA C600 for ductile iron and Cast Iron O.D. (AWWA) PVC pipe or ASTM F-645 for Iron Pipe O.D. (ASTM) PVC pipe except as modified herein.
- B. If the foundation is good firm earth and the machine excavation has been accomplished as set out hereinbefore, the remainder of the material shall be excavated by hand, then the earth pared or molded to give full support to the lower quadrant of the barrel of each pipe. Where bell and spigot are involved, bell holes shall be excavated during this latter operation to prevent the bells from being supported on undisturbed earth. If for any reason the machine excavation in earth is carried below an excavation that will permit the type of bedding specified above, then a layer of granular material shall be placed so that the lower quadrant of the pipe will be securely bedded in compact granular fill.
- C. Excavation may be undercut to a depth below the required invert elevation that will permit laying the pipe in a bed of granular material to provide continuous support for the bottom quadrant of the pipe. When this method is used, the bedding shall be as set out in Paragraph 3.2 hereinafter.
- D. Trenches shall be of sufficient width to provide free working space on each side of the pipe and to permit proper backfilling around the pipe, but unless specifically authorized by the Engineer, trenches shall in no case be excavated or permitted to become wider than 2 feet plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than 2 feet at the level of or below the top of the pipe, special precaution may be necessary, such as providing compacted, granular fill up to top of the pipe or providing pipe with additional crushing strength as determined by the Engineer after taking into account the actual trench loads that may result and the strength of the pipe being used. The Contractor shall bear the cost of such special precautions as are necessary.
- E. All excavated materials shall be placed a minimum of 2 feet back from the edge of the trench.
- F. Before laying the pipe, the trench shall be opened far enough ahead to reveal obstructions that may necessitate changing the line or grade of the pipeline.
- G. The trench shall be straight and uniform so as to permit laying pipe to lines and grades given by the Engineer. It shall be kept free of water during the laying of the pipe and until the pipeline has been backfilled. Removal of trench water shall be at the Contractor's expense. Dry conditions shall be maintained in the excavations until the backfill has been placed. During the excavation, the grade shall be maintained so that it will freely drain and prevent surface water from entering the excavation at all times. When directed by Owner, temporary drainage ditches shall be installed to intercept or direct surface water which may affect work. All water shall be pumped or drained from the excavation and disposed of in a suitable manner without damage to adjacent property or to other work.

- H. Minimum cover of 60 inches shall be provided for all pipelines greater than 20 inches in diameter. Minimum cover of 30 inches shall be provided for pipelines 20 inches in diameter and smaller except those located in the State Highway Right of Way. Those shall have a minimum cover of 42 inches.

3.2 PIPE BEDDING

- A. All pipe shall be supported on a bed of granular material, unless the trench has been prepared in accordance with Paragraph 3.1 B. In no case shall pipe be supported directly on rock. Bedding shall not be a separate pay item unless otherwise set out in the Detailed Specifications. Bedding shall be provided in earth bottom trenches, as well as rock bottom trenches. Bedding material shall be free from large rock, foreign material, frozen earth, and shall be acceptable to the Engineer. Bedding shall be a minimum of 6 inches below pipe barrel.
- B. In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe so that none of the load will be carried on the bells.
- C. Where flexible pipe is used, the bedding shall be placed up to at least the spring line (horizontal center line) of the pipe. The bedding material and procedures shall conform to ASTM D 2321 and any Technical Specifications set out hereinafter. If conditions warrant, the Engineer may require the bedding to be placed above the spring line of the pipe. Granular bedding shall be Size #9-m or ASTM C 33, Size #7 crushed stone, fine gravel, or sand, and is not a separate pay item.
- D. Where undercutting and granular bedding is involved, it shall be of such depth that the bottom of the bells of the pipe will be at least three inches above the bottom of the trench as excavated. Undercutting is not a separate pay item.
- E. In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective. When ordered by the Engineer, yielding and mucky materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe. Crushed stone or other such granular material, if necessary, as determined by the Engineer to replace poor subgrade material, shall be a separate pay item and classified as "Special Granular Fill". Removal of poor material is not a separate pay item.
- F. Installation shall be in accordance with ASTM D 2321 except as modified hereinafter.

3.3 SPECIAL GRANULAR FILL

- A. As noted in Paragraph 3.2 E, granular material for "Special Granular Fill" when directed by the Engineer shall be Department of Transportation crushed limestone, Size #57. Payment for "Special Granular Fill" must have approval from the Engineer prior to installation.

3.4 LAYING PIPE

- A. The laying of pipe in finished trenches shall be commenced at the lowest point so the spigot ends point in the direction of flow.
- B. All pipes shall be laid with ends abutting and true to line and grade as given by the Engineer. Supporting of pipes shall be as set out hereinbefore under "Pipe Bedding" and in no case shall the supporting of pipes on blocks be permitted.
- C. Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to ensure that it is clean. Each piece of pipe shall be lowered separately unless special permission is given otherwise by the Engineer. No piece of pipe or fitting which is known to be defective shall be laid or placed in the lines. If any defective pipe or fitting shall be discovered after the pipe is laid, it shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.
- D. Pipe shall not be laid on solid rock. A pad of granular material as specified in Paragraph 3.2 "Pipe Bedding", shall be used as a pipe bedding. Pipe bedding is not a separate pay item. Irregularities in subgrade in an earth trench shall be corrected by use of granular material.
- E. When ordered by the Engineer, unsuitable materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe.
- F. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood or fabricated plug fitted into the pipe bell, so as to exclude earth or other material, and precautions taken to prevent flotation of pipe by runoff into trench.
- G. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade, in the section laid.

3.5 BACKFILLING PIPELINE TRENCHES

- A. Backfilling of pipeline trenches shall be accomplished as shown on the Drawings and with details set forth hereinafter. Before final acceptance, the Contractor will be required to level off all trenches or to bring the trench up to grade. The Contractor shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction. In the event pavement is not placed immediately following trench backfilling in paved areas, the Contractor shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times. Under pavement, all trench backfill shall be in accordance with Method C as shown on the Detail Drawings. All other trench backfill shall be in accordance with Method A or B.
- B. Method "A" - Backfilling in Open Terrain.

Backfilling of pipeline trenches in open terrain shall be accomplished in the following manner:

- 1. The lower portion of the trench, from the pipe bedding to a point 12 inches above the top of the pipe, shall be backfilled with material free from rock and/or material acceptable to

the Engineer. This material shall be placed in a manner approved by the Engineer and shall be carefully compacted to avoid displacement of the pipe. Compaction shall be accomplished by hand-tamping or by approved mechanical methods.

2. The upper portion of the trench above the compacted portion shall be backfilled with material which is free from large rock. Incorporation of rock having a volume exceeding one-half cubic foot is prohibited. Backfilling this portion of the trench may be accomplished by any means approved by the Engineer. The trench backfill shall be heaped over or leveled as directed by the Engineer.

C. Method "B" - Backfilling Under Sidewalks & Unpaved Driveways.

Backfilling of pipeline trenches under sidewalks and unpaved driveways shall be accomplished in the following manner:

1. The lower portion of the trench, from the pipe bedding to a point 12 inches above the top of the pipe, shall be backfilled with material free from rock and/or material acceptable to the Engineer. This material shall be placed in a manner to avoid displacement of the pipe. Compaction shall be accomplished by hand-tapping or by approved mechanical methods.
2. The middle portion of the trench, from a point 12 inches above the top of the pipe to a point 6 inches below the grade line, shall be backfilled with material free from rock and/or acceptable to the Engineer. This material shall be placed and compacted in layers of approximately 6 inches. Water (puddling) may be used as required to obtain maximum compaction.
 - a. Upon approval of the Engineer, the Contractor may backfill the middle portion of the trench with crushed stone, fine gravel, or sand in lieu of materials which require compaction.
3. The upper portion of the trench shall be temporarily backfilled and maintained with crushed stone or gravel until such time as the sidewalk is constructed or the driveway surface is restored.

D. Method "C" - Backfilling Under Streets, Roads, and Paved Driveways.

Backfilling of pipeline trenches under streets, roads and paved driveways shall be accomplished in the following manner:

1. The lower portion of the trench from the pipe bedding to a point 6 inches below the bottom of the pavement or concrete sub-slab, shall be backfilled with # 9 crushed stone.
2. The upper portion of the trench, from a point 6 inches below the bottom of the pavement or concrete sub-slab to grade, shall be backfilled with a base course of dense graded aggregate. At such time that pavement replacement is accomplished, the excess base course shall be removed as required.

- E. Trenches outside existing sidewalks, driveways, streets, and highways shall be backfilled in accordance with Method "A". Trenches within the limits of sidewalk and unpaved driveways shall be backfilled in accordance with Method "B". Trenches within the paving limits of existing streets, highways and driveways shall be backfilled in accordance with Method "C". All methods are shown on the Detail Drawings. When directed by the Engineer, the Contractor shall wet backfill material to assure maximum compaction.

1. Before final acceptance, the Contractor will be required to level off all trenches or to bring the trench up to grade. The Contractor shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction.
2. In the event pavement is not placed immediately following trench backfilling in streets and highways, the Contractor shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times.

3.6 SETTLEMENT OF TRENCHES

- A. Whenever lines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these rights-of-way within two years, and restoration of structures equal to five years, from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Owner.

3.7 CONCRETE THRUST BLOCKS, CRADLE, ANCHORS OR ENCASEMENT

- A. Concrete thrust blocks, cradle, anchors or encasement shall be placed where shown on the Drawings, required by the Specifications, or as directed by the Engineer.
- B. For cradle and encasement, concrete shall be 3000 psi and shall be mixed sufficiently wet to permit it to flow under the pipe to form a continuous bed.
- C. For thrust blocks and anchors, concrete shall be 3000 psi and shall be formed or be sufficiently stiff to maintain the forms indicated on the Details.
- D. In tamping concrete, care shall be taken not to disturb the grade or line of the pipe or injure the joints. Concrete placed outside the specified limits or without authorization from the Engineer will not be subject to payment.
- E. Water mains shall have concrete thrust or "kicker" blocks at all pipe intersections and changes of direction to resist forces acting on the pipeline. All reducers (increasers) shall be anchored.

3.8 TESTING

- A. All pressure piping (lines not laid to grade) shall be given a hydrostatic test of at least 1-1/2 times the normal operating pressure of the pipe (at its lowest elevation), but not to exceed the rated working pressure of the pipe or valves. Note: Engineer shall verify test pressure. Loss of pressure during the test shall not exceed 0 psi in a four-hour period and 5 psi in a 24-hour period. Any test results that do not meet both of these requirements shall constitute a failure of the pressure test.
- B. No water leakage in pipelines, when tested under the hydrostatic test described above, shall be allowed.

- C. Contractor shall furnish a recording gauge and recording pressure charts during duration of test. Recording pressure charts shall be turned over to the Engineer at conclusion of tests. The pressure recording device shall be suitable for outside service, with a range from 0-200 psig, 24-hour clock, and shall be approved by the Engineer.
- D. Pipelines shall be tested before backfilling at joints except where otherwise required by necessity or convenience.
- E. Duration of test shall be not less than four hours where joints are exposed and not less than 24 hours where joints are covered.
- F. Where leaks are visible at exposed joints, evident on the surface where joints are covered, and/or identified by isolating a section of pipe, the joints shall be repaired and leakage must be minimized, regardless of total leakage as shown by test.
- G. All pipe, fittings, valves, and other materials found to be defective under test shall be removed and replaced at no additional expense to the Owner.
- H. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.
- I. Where nonmetallic joint compounds are used, pipelines should be held under normal operating pressure for at least three days before testing.
- J. The Owner will provide initial water for testing the pressure piping. Should the first test fail to pass, all additional water required for subsequent tests shall be furnished at the Contractor's expense.
- K. The cost of testing of pressure piping is incidental and is to be included in the Contractor's unit Contract Price.

3.9 CLEAN UP

- A. Upon completion of installation of the piping and appurtenances, the Contractor shall remove all debris and surplus construction materials resulting from the Work. The Contractor shall grade the ground along each side of pipe trenches in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line.

3.10 DISINFECTION OF POTABLE WATER LINES

- A. The new potable waterlines shall not be placed in service—either temporarily or permanently—until they have been thoroughly disinfected in accordance with AWWA Standard C651 latest edition, and to the satisfaction of the Engineer.
- B. After testing, a solution of hypochlorite using HTH or equal shall be introduced into the section of the line being disinfected sufficient to insure a chlorine dosage of at least 50 ppm in the main. While the solution is being applied, the water should be allowed to escape at the ends of the line until tests indicate that a dosage of at least 50 ppm has been obtained throughout the pipe. Open and close all valves and cocks while chlorinating agent is in the piping system. The chlorinated

water shall be allowed to remain in the pipe for 24 hours, after which a residual of at least 25 ppm shall be obtained. The disinfection shall be repeated until 25 ppm is obtained after which time the main shall be thoroughly flushed until the residual chlorine content is not greater than 1.0 ppm, and then may be connected to the system. Also, no additional payment will be allowed for providing taps for chlorine injection and/or flushing, if necessary. The Contractor is responsible for the disposal of highly chlorinated water flushed from the main, and shall follow the requirements of AWWA C655, latest edition, for dechlorinating the disinfecting water.

- C. The new water line shall not be put into service until bacteriological samples taken at the points specified herein are examined and shown to be negative after disinfection, following the requirements of "Standard Methods for Examination of Water and Wastewater". Two consecutive sets of acceptable samples, taken at least 24 hours apart shall be collected from the new line. Samples are to be taken and tested at every 1200 feet of new water line, at each branch and at each dead end.
- D. If trench water has entered the pipe, or excessive quantities of dirt or debris have entered the pipe, samples shall be taken at intervals of approximately 200 feet and the locations identified. Samples shall be taken of water that has stood in the new line for at least 16 hours after flushing is completed.
- E. If the initial disinfection does not produce satisfactory bacteriological results, the new line shall be reflushed and resampled. If samples fail, the line shall be rechlorinated by the continuous-feed or slug method until satisfactory results are obtained.
- F. All testing documentation shall be submitted to the Owner.

3.11 ALTERNATE METHOD OF INSTALLATION

- A. In lieu of traditional trenching methods for pipe installation, with the approval of the Engineer, the Contractor may choose to install the pipe utilizing the trenchless technology of horizontal directional drilling (HDD). Horizontal directional drilling shall be as specified in Section 330523.

END OF SECTION 331113

SECTION 331216 – VALVES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required to furnish and install all valves shown on the Drawings and/or specified herein for valves 24” diameter or greater only.
- B. Where contradictions exist between latest version of Louisville Water Company Technical Specifications and Standard Drawings for 4” - 20” Pipeline Construction and the specification below, the Louisville Water Specifications and drawings shall govern.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this Section.
- B. Piping is specified in Division 33 Specification sections.

1.3 SUBMITTALS

- A. Descriptive literature, catalog cuts, and 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. Comply with provisions of Section 013323.
- B. At the time of submission, the Contractor shall, in writing, call Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.
- C. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Valves	X	X			X							
Valve Boxes		X										

PART 2 - PRODUCTS

2.1 GATE VALVES

- A. Gate valves shall conform with AWWA C-509 or AWWA C-515 standard, and shall be of the resilient seat type, iron body, fully bronze mounted, non-rising stem and have a design working pressure of 250 psi. All assembly bolts shall be of not less than #304 stainless steel. Valves shall be of standard manufacturer and of the highest quality both as to materials and workmanship.
- B. All gate valves shall be furnished with mechanical joint connections, unless otherwise shown on the Drawings or specified hereinafter.
- C. An epoxy coating conforming to AWWA C-550 shall be applied to the interior and exterior ferrous surfaces of the valve except for finished or seating surfaces.
- D. All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.
- E. Gate valves 16 inches and smaller shall be installed in a vertical position. Gate valves greater than 16 inches shall have the bonnet mounted in the horizontal position and have a bevel gear actuator. Gate valves shall be provided with a 2-inch square operating nut and shall be opened by turning to the left (counterclockwise). All valve operating nuts shall be set within a cast iron valve box. There shall be a maximum 48-inch depth of valve operating nut. Contractor must use extension stems, if necessary, to raise operator nut within 48 inches of final grade.

2.2 VALVE BOXES - BURIED VALVES (EXCEPT AIR RELEASE AND SEWAGE COMBINATION VALVES)

- A. Valve boxes shall be of 5-1/4-inch standard cast iron, two-piece, screw type valve box with drop cover marked "WATER", "SEWER", "DRAIN", as applicable. Valve boxes for gate valves larger than 8 inches shall be three-piece. Valve boxes shall be accurately centered over valve operating nut and backfill thoroughly tamped about them. Valve boxes shall not rest on the valves but shall be supported on crushed stone fill. They shall be set vertically and properly cut and/or adjusted so that the tops of boxes will be at grade in any paving, walk or road surface, and in grass plots, fields, woods or other open terrain. Valve boxes and covers shall be as manufactured by Sigma Corp., Russell Pipe, Star Pipe, Tyler Union, General Foundries or equal.
- B. Wherever valve boxes fall outside of the pavement, the top of the box shall be set in a cast-in-place concrete slab 18 inches x 18 inches x 4 inches thick with the top of the slab and box flush with the top of the ground. This provision shall apply to all new and all existing valve boxes which fall within the limits of the contract, unless otherwise stated on the plans or ordered by the Engineer.

2.3 AIR RELEASE VALVES AND BOXES

- A. Air release valves and boxes shall be installed at locations to be determined in the field by the Engineer. Air release valve stems shall be connected to the main by a corporation stop and a

tapping saddle. An isolation ball valve shall be furnished and installed between the air release valve and corporation stop. Valves shall be suitable for average working water pressure of 200 psi. Valves shall be equipped with cast iron body and cove, stainless steel float, Buna-N seat and bronze linkage.

- B. Air release valves installed on water mains shall have a 1-inch inlet. All air release valves shall be APCO No. 200-A (with 5/32-inch orifice) as manufactured by Valve and Primer Corporation Schaumburg, Illinois or equal.
- C. Air release valves shall be installed at the high point of the water main and shall be connected on the main by a corporation stop with a female I.P.S. threaded outlet. The inlet pipe to the valve shall be ASTM B 43 extra strong seamless red brass pipe with I.P.S. male threaded ends.
- D. The air release valve box shall be a 4-foot diameter precast manhole barrel section with pipe cut-outs and shall be set on a concrete footer. Care shall be taken so that barrel does not rest on the pipe. The cover shall be a 22-inch diameter cast iron frame and lid.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All valves shall be installed in accordance with details on the Contract Drawings and with the manufacturer's recommendations.
- B. All valves shall be anchored in accordance with the details on the Contract Drawings.

END OF SECTION 331216

APPENDIX A

LWC TECHNICAL SPECIFICATIONS AND STANDARD DRAWINGS FOR 4" - 20" PIPELINE CONSTRUCTION

2022

**TECHNICAL SPECIFICATIONS
AND
STANDARD DRAWINGS
FOR
4" – 20" PIPELINE CONSTRUCTION**



**LOUISVILLE WATER COMPANY
LOUISVILLE, KENTUCKY**

**SPENCER W. BRUCE, P.E. – PRESIDENT
TIMOTHY KRAUS, P.E. – VICE PRESIDENT, CHIEF ENGINEER**

LOUISVILLE WATER COMPANY
TECHNICAL SPECIFICATIONS AND STANDARD DRAWINGS
4" – 20" PIPELINE CONSTRUCTION
2022

The Technical Specifications and Standard Drawings are provided as a technical resource for the construction of water projects managed and contracted by the Louisville Water Company. The Technical Specifications and Standard Drawings will apply to water projects with 4-inch through 20-inch pipeline sizes. All work shall be performed in accordance with accepted workmanship practices and the Technical Specifications and Standard Drawings.

The Technical Specifications and Standard Drawings revisions shall become effective immediately upon formal adoption by the Chief Engineer of the Louisville Water Company and shall supersede all former Technical Specifications and Standard Drawings for Pipeline Construction. Revisions are planned on a 5-year cycle. A copy of the current edition of the Technical Specifications and Standard Drawings may be obtained from the Chief Engineer at the 550 S. Third St. office, the Louisville Water Supervisor of Construction Inspection, Construction Inspection Services at the 4801 Allmond Ave. office, or at Louisville Water.com.

The Technical Specifications and Standard Drawings have been prepared under the direction of the Vice President / Chief Engineer on behalf of the Louisville Water Company and no part of the Technical Specifications and Standard Drawings may be reproduced or copied in any form without the written prior consent of the Vice President / Chief Engineer.

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TECHNICAL SPECIFICATIONS **FOR PIPELINE CONSTRUCTION**

1. GENERAL REQUIREMENTS

1.1 Pre-construction Valve Inspection

Prior to the beginning of construction, the Contractor shall be responsible for locating and inspecting all existing valves associated with the work to be done. Specific valve information and locations can be found in the **SUPPLEMENTARY SPECIFICATIONS**. Inspection work to be done on these valves shall be included in the Contractor's base bid, and shall consist of the following:

- A. Locate the valve in the field. Valve boxes that are paved over or buried shall be uncovered and made accessible.
- B. Inspect key tubes and operating nut. Key tubes shall be cleared of debris and the operating nut made accessible. Gate Keys must be placed and turned on Gate Valve Operating Nuts to ensure the functional operation of the valve. Company's Inspector must be present when operating gate valves.
- C. Valve boxes (round tops) and lids shall be raised to grade where necessary.

Any valve determined by the Company to be inoperative shall be excavated and repaired or replaced by the Contractor as deemed necessary by the Company's Project Manager. Unit costs shall be as submitted by the Contractor in the **BIDDER'S PROPOSAL** form.

Except in cases of emergency, the Contractor shall not operate any valve without the direct supervision of the Company's Project Manager or Inspector. In an emergency, the Company's Inspector and Company's Radio Room shall be immediately notified by the Contractor. The Company's Radio Room direct phone line is (502) 569-3600, ext. 2700.

1.2 Signage

1.2.1 Project Identification

The Contractor is required to install a project sign on each end of the project limits, at a minimum, unless on dead end roads where only one sign will be required. The sign shall be furnished by the Company and consist of a 4ft. x 4ft. or a 4ft. x 8ft. sheet of 1/4in. corrugated plastic board. The Contractor

shall supply the materials to install the sign using two – 4in. x 4in. posts by 10ft. in length set in concrete anchors with 18in. diameter and 3ft deep, primed and painted white, or other suitable posting method approved by the Company’s Inspector.

The Contractor shall supply the materials to mount the sign to the posts using three – 2 ½ in. galvanized lag bolts with 1in. diameter galvanized washers on each post. The Contractor must install the signs prior to beginning any work and not remove the signs until final restoration is approved. Project Identification signs may not be required on new development projects, Kentucky Transportation Cabinet projects, on non-public roadways or projects less than 500 ft. The Project Identification signs shall be returned to Allmond Avenue inspection after project completion by the Contractor.

1.2.2 Contractor Vehicle Signage

The Contractor is required to display Louisville Water Contractor magnetic signs on both sides of all licensed vehicles when performing Louisville Water project contract work. The Company’s Inspector will assign and collect magnetic signs on a project basis.

1.3 Traffic Control, Permits, and Regulations

1.3.1 Traffic Control

Wherever the excavation is in right-of-way, the Contractor shall conduct their operations so that at least one lane of traffic is always kept open, unless otherwise approved by the permitting agency. Where the excavation is performed in an intersection, the work shall be completed in one work day, including backfilling, placement of a concrete cap, or temporary bituminous pavement. Temporary paving restoration shall be adequately maintained until permanent pavement is placed.

A traffic control plan is required by the permitting agency and shall be provided by the Contractor to the Company’s Project Manager prior to the permit request. The plan shall be digitally drafted utilizing an approved software and shall be in accordance with the Kentucky Department of Highways and/or Louisville Metro Public Works regulations and templates. The traffic control plan will be prepared by the Contractor and submitted by the Company to the respective agencies with the requested permit.

Traffic control shall be in accordance with the Federal Highway Administration Part VI of the Manual on Uniform Traffic Control Devices (MUTCD) latest edition.

Traffic control on streets shall be in accordance with requirements of appropriate City or County jurisdiction.

Specific signing and traffic control are incidental to this project and shall be determined by representatives from the appropriate agencies. No extra payment will be made for placement of these traffic controls.

Specific traffic control signage referencing lane blockages, detours, flaggers, etc. shall be removed from the site or covered when not in use. Signs that provide general messages such as “Construction Ahead” shall be left in place throughout the completion of the project.

The contractor shall be responsible for establishing temporary “No Parking” zones. The zones shall be confined to the immediate work area and appropriate transition zones and shall be limited in duration to the length of time work is performed in that area.

All construction vehicles shall be legally parked. Privately owned vehicles including vehicles owned by the construction crew shall not be parked in the “No Parking” zones.

1.3.2 Encroachment Permits

A road permit will be required for work performed within the right-of-way limits. No construction work shall start until these permits are obtained and provided to the Contractor by the Company. A copy of any approved permits obtained by the Contractor shall be provided to the Company’s Project Manager and Inspector before work shall be begin.

Applicable permits shall be obtained by the Company from the appropriate agency: Louisville Metro Public Works, Louisville Metro Parks, Bullitt County Road Department, Oldham County Public Works, Kentucky Department of Highways and / or any other Jurisdictional Authority that governs the location within which work will be conducted for installing water mains in public right-of-way. The Contractor shall coordinate their time schedule for performing this work with the Company’s Project Manager in order that the appropriate authority can be notified of the progress of construction. Special attention is directed to the working hours as specified by any of these traffic control departments in their respective permit.

A minimum fourteen (14) day advanced notice of the need for a permit shall be provided to the Company’s Project Manager. Copies of the permit(s), along with the approved traffic control plan, shall be on-site, readily available, legible and displayed in construction vehicles used at the project site. The Contractor will be responsible for obtaining appropriate permits for

Joint-Bid Projects (i.e. Kentucky Transportation Cabinet (KTC) Projects, MSD Projects, or Developer Installed Projects, etc.).

The Contractor shall submit a traffic control plan to the Company's Project Manager with the request for the permit. As a minimum, the traffic control plan shall include lanes to be blocked, "No Parking" zones to be created, parking meters to be "bagged", method of controlling traffic, designated work hours, and proposed work schedule. Contractors must use certified traffic control devices and not deviate from the approved Traffic Control Plans unless directed by the Jurisdictional Authority and any such deviation shall be documented.

Unless specifically approved by the Permitting Agency, all roadways (including side roads) shall remain open, with traffic maintained in a safe manner. Outside the designated work hours, all travel lanes shall be temporarily restored and reopened to traffic, and all construction vehicles, equipment, and personnel removed from the roadway.

1.3.3 Crossing of Roads

With respect to all roadways: water main crossings, fire hydrant crossings, and/or service crossings shall be bored, jacked, or tunneled as specified within these Contract Documents. Any alteration(s) to the above shall require written approval from both the Company's Project Manager and the Jurisdictional Authority prior to the work being performed. Any additions and/or deletions in roadway bores/jacks/tunnels from those included in the project's scope of work shall require compensation adjustment in accordance with the BIDDER'S PROPOSAL form's Supplementary Unit Prices (if applicable) or with CHANGES IN THE WORK, in the TERMS AND CONDITIONS (if said Supplementary Unit Prices are not applicable).

1.3.4 Parking Meter Permit

The Contractor shall arrange for and pay for a permit as required by Louisville Metro Public Works Ordinance Title VII Traffic Code: Chapter 72: Parking Regulations for the bagging of all parking meters affected by the construction. Issuance and enforcement are administered by the Louisville Metro Public Works. Information may be obtained at the following address. All costs shall be included in the Contractor's base bid.

Louisville Metro Public Works
444 South 5th Street
Louisville, Kentucky 40202

1.3.5 Soil Erosion and Sediment Control Permit

The Contractor shall abide by and shall arrange for and pay for any and all permits involving the Kentucky Division of Water regulations pertaining to erosion and sediment control requirements as administered by the Louisville and Jefferson County Metropolitan Sewer District (MSD) or other jurisdictional authority where required. The Contractor shall comply with the applicable provisions of KRS Chapters 220 and 224 of the State Water Pollution Control Laws and other applicable statutes relating to the prevention and/or abatement of water pollution.

Projects involving disturbed areas of more than one (1) acre shall require the Contractor to submit a "Notice of Intent" Letter to the Kentucky Division of Water, as well as an "Erosion and Sediment Control" plan submitted to MSD for MSD's approval where required.

In any event, regardless of the size of the project, the Contractor shall: exercise every reasonable precaution at all times to prevent water pollution by the erosion and deposition of sediment in streams, lakes, and reservoirs; conduct and schedule operations so as to avoid or minimize the muddying or siltation of areas adjacent to the construction site including streets, storm sewers, vacant lots, etc.; and not leave partially completed areas of work in a manner that will contribute to erosion during the period in which work is suspended.

For each stream crossing (a "stream" being defined as a so-called blue-line stream, either solid or broken, as shown on the United States Geological Survey (USGS) quadrangle map), the Company shall apply for a construction permit, or for an exemption thereto, from the Kentucky Division of Water, if applicable, (see Section 1.3.6). In any event, the Contractor shall: utilize adequate and environmentally-responsible construction practices, placing silt control prior to the start of construction and maintaining it until vegetation has been established; revegetate all disturbed areas upon completion of construction; maintain at least three and one-half feet (3 ½') of cover over the top of pipe with respect to the stream bed elevation; and obtain approval from MSD where required, prior to the start of construction, of an "Erosion and Sediment Control" plan.

Louisville Water hereby gives notice to Contractors (and, Contractors are directed to provide notice to their employees, agents, assigns and Contractor's subcontractors, their employees, agents and assigns, and Contractor's suppliers, their employees, agents and assigns on the project site) that Louisville Water holds an Erosion Prevention Sediment Control Plan General Permit issued by MSD, pursuant to the Louisville/Jefferson County Metro Government Code of Ordinance No. 186, Series 2007 (amending Jefferson County Ordinance Chapter 159), Erosion Prevention

and Sediment Control, and, that certain activities require additional Individual Site Disturbance Permits, also issued by MSD, pursuant to the Louisville/Jefferson County Metro Government Code of Ordinance No. 186, Series 2007, Erosion Prevention and Sediment Control.

Pursuant to the requirements of that General Permit where required and any required individual site disturbance permits, Louisville Water further gives notice to Contractors of the County's Erosion Prevention and Sediment Control Ordinance. Louisville Water hereby expressly requires Contractors, their employees, agents, and assigns and Contractor's subcontractors, their employees, agents and assigns, and Contractor's suppliers, their employees, agents and assigns on the project site to comply with the provisions of that Ordinance and all permits, General and Individual, as part of the required compliance with "any federal, state or local government statute, ordinance, regulation and law which controls or limits in any way the actions of persons working on the project and which affects the purchase, installation, or disposition of any materials related to the project" —set out in **CONTRACTOR'S RESPONSIBILITIES**, in the **TERMS AND CONDITIONS**.

The Contractor's responsibility for compliance with the Erosion Prevention and Sediment Control Ordinance is in addition to those set out in **CONTRACTOR'S RESPONSIBILITIES**, in the **TERMS AND CONDITIONS**.

See Standard Drawing: 4501 in Appendix of Drawings.

1.3.6 Stream – Wetland Crossing Permit

The Kentucky Division of Water (KDOW) requires a General Water Quality Certification (W.Q.C.) Permit #12 for the crossing of streams or wetlands. It is not necessary to apply for an individual General Water Quality Certification (W.Q.C.) Permit #12 unless the stream is classified as an Outstanding, Exceptional, or Cold Water stream (Special Waters) by the KDOW. Listings of streams with these classifications can be found on KDOW's webpage: eec.ky.gov

For subfluvial (streams and rivers) pipe crossings, a flood plain construction permit will not be required pursuant to KRS 151.250 if the following requirements of 401 KAR 4:050 Section 2 are met:

- No material shall be placed in the stream or in the flood plain of the stream to form construction pads, coffer dams, access roads, etc. during construction of pipe crossings.
- Crossing trenches shall be backfilled as closely as possible to the

original contour.

- All excess material resulting from construction displacement in a crossing trench shall be disposed of outside the flood plain.
- For erodible channels, there must be at least three and one half (3.5) feet of backfill on top of all pipe or conduit (casing) points in the crossing.
- For non-erodible channels, pipes or conduits (casing) in the crossing shall be encased on all sides by at least six (6) inches of concrete with all pipe or conduit (casing) points in the crossing at least six (6) inches below the original contour of the channel.

For subfluvial (streams and rivers) pipe crossings greater than fifteen (15) feet in width:

- The water main shall be of special construction, having flexible, restrained, or welded watertight joints.
- Valves shall be provided at both ends of the water crossings so that the section can be isolated for testing or repair.
- Valves shall be easily accessible, not subject to flooding, and if closest to the supply source, shall have a meter vault installed with permanent taps made on each side of the valve to allow insertion of a small meter to determine leakage and for sampling purposes.

See Standard Drawings: 1608 & 4501 in Appendix of Drawings.

1.4 Project Drawings and Specifications

1.4.1 General

The Contractor shall make available a set of stamped plans and specifications at the job site at all times, including all addendums, revisions, changes, etc.

1.4.2 Combined Specification

This specification discusses the installation of ductile iron pipe, PVC (polyvinyl chloride) pipe, ductile iron appurtenances, and other project specified piping and materials.

The type of pipe to be installed is specified on the stamped plans or in the **SUPPLEMENTARY SPECIFICATIONS.**

1.5 Daily Materials Installed Form

The Contractor shall maintain the Daily Materials Installed forms supplied by the Company as a record of the pipe, fittings, and valves installed each day, and shall provide same to the Company's Inspector daily. Pipeline materials shall be listed on the form in the same sequence as installed.

1.6 Video Recording

Prior to the start of construction, the Contractor shall provide one (1) original walking, narrative continuous DVD video, or other acceptable media approved by the Company's Project Manager representative of the complete project area. The video should include narration of the video footage, verbal descriptions of the locations shown, and at a speed which clearly shows the condition of all areas which could be affected by project construction.

2. CONDUCT OF WORK

2.1 Safety

Wherever necessary, to prevent caving during the excavating of sand, gravel, sandy soil, or other unstable material, the trench shall be adequately sheeted, braced, and drained. The trench shall be maintained in accordance with OSHA regulations so that workers may work thereon safely and efficiently, and vehicular and pedestrian traffic, livestock, and animals are protected at the worksite. It is essential that trench pumps discharge into natural drainage channels or drain toward storm drains in compliance with regulatory agency requirements.

Any excavated materials to be stockpiled, shall be piled in a manner that will not endanger personnel, property, adjacent properties and pedestrians, and will not obstruct driveways, sidewalks, or thoroughfares. Drainage lines shall not be obstructed.

With respect the entry of and/or working within confined spaces, the Contractor shall abide by the KOSHA Standards referenced by 803 KAR 2:300 thru 2:320 for General Industry and 803 KAR 2:240 thru 2:423 for Construction Standards, plus any and all additional related regulations required by the Commonwealth of Kentucky.

For questions or concerns relating to this matter, the Contractor shall contact the KOSHA-Kentucky Occupational Safety & Health Program, (phone (502) 564-3070).

2.2 Jobsite / Work Area Cleanliness

The Contractor shall routinely and regularly remove all dirt and rubbish resulting from its operations and shall keep the jobsite or work area neat and tidy.

When its work is complete, it shall at once remove from the premises all tools and machinery belonging to the Contractor and all rubbish in connection with the work and render the jobsite or work area clean and free from all obstructions, delivering the work at completion whole, clean, tight, and ready for use, with the grounds in a neat and presentable condition.

2.3 Cooperation

The Contractor shall cooperate with local governing agencies, Kentucky Department of Highways, Louisville Water, other utilities, and other contractors to cause as little interference as possible, to avoid inconvenience and delay, and to facilitate prompt completion of the work.

The Contractor shall coordinate and schedule with the Company's Inspector valving off mains for each connection or change in existing mains, and will conduct the work to cause the shortest possible interruption of service.

3. SITE WORK

3.1 Utilities

3.1.1 General

The Company has endeavored to locate sub-surface obstructions from available records, and such structures are shown on the project drawings. The Company does not guarantee the accuracy of the information there shown, although it has undertaken to present available data. The project drawings do not show the size or location of services.

Wherever the Contractor deems it necessary to determine the exact location of existing pipe, valve, or other underground structures, the Contractor may make any examinations that it may determine desirable in advance of the work and no added compensation will be paid. Only in the event that the Company's Project Manager by written order directs the Contractor to make additional exploration and excavation will extra compensation be allowed.

The Contractor's attention is directed to the Kentucky 811 (811 or 1-800-752-6007), which has been established to provide accurate locations of below-ground utilities. The Contractor shall notify Kentucky 811 a minimum of two (2) business days in advance of any construction on this

project. Additional information for Kentucky 811 can be found at www.kentucky811.org.

3.1.2 Utilities in Conflict with the Pipeline

In excavating trenches and installing pipe, where any existing utilities (including water pipe, sewer pipes, inlets and drains, gas pipes, electric lines and conduits, telephone lines and conduits, cable television lines and conduits, communication – fiber optic lines and conduits, service connections from these utilities, trolley tracks used for cathodic protection, traffic signal loop detector system or street light system), cross the trench, they shall be protected, supported, and maintained in service and restored to the condition in which they were found, all at no additional cost to the Company.

Where because of location or grade, such utilities cannot be replaced to occupy their original location, they shall be changed at no additional cost to the Company and as directed by the Company's Project Manager and utility owner to accomplish their original purpose with adequate provision for drainage over or under the pipe as circumstances require.

Where any utility facility, including service connections, is touched or endangered by the work, the utility's management shall be notified by the Contractor, and the Contractor shall cooperate with the utility and pay the cost of protection and repair if damaged.

The Contractor shall protect all abandoned trolley tracks. If abandoned trolley tracks are damaged, the Contractor shall contact Pipeline Integrity Group of Louisville Gas and Electric Company at (502) 627-4427 prior to the repair of any cut or damaged rail. Repair, if required, shall be as directed by Louisville Gas and Electric Company.

3.1.3 Utilities Parallel to the Pipeline

Where utilities exist parallel to the water main and at a location which will interfere with its installation, they shall be handled as follows:

A. The affected utility shall be notified at least five days in advance, if possible, of the time necessary to do the work. The cost of temporary hook-up and any charges from the utility will be paid by the Contractor unless previously authorized by The Company.

B. Gas, sewers, telephone, or electric facilities shall be gently uncovered, and personnel from the pertinent utility must remove its facility after accomplishing a temporary hook-up to prevent loss of service. After the water main has been placed, the utility line will be reinstalled near its

original location and grade by the utility personnel, and the Contractor will complete the necessary backfill.

3.1.4 Water / Sewer Main Separation

Water mains shall be installed in accordance with Kentucky Division of Water regulations and Recommended Standards for Water Works (Ten States Standards).

Water mains shall be installed at a minimum of ten feet (10') horizontally from any existing or proposed non-storm sewer main or non-storm sewer manhole; measured from the outside diameters. ("Non-storm sewer" is defined as sanitary sewer, combined sewer, septic tank, or subsoil treatment system.)

When crossing over or under a non-storm sewer main, the water main shall maintain one and one-half feet (1.5') vertical separation with one (1) full length of the water pipe located so that both joints of the water pipe will be as far from the non-storm sewer as possible. Special structural support for the non-storm sewer and water pipes may be required.

When ten feet (10') of horizontal separation or one and one-half feet (1.5') of vertical separation cannot be maintained, the Company's Project Manager must be notified for resolution. There shall be no deviation from the above ten feet (10') horizontal and one and one-half feet (1.5') vertical separation requirements when water pipes are crossing non-storm sewer force mains. Only in the event that the Company's Project Manager directs the Contractor by written order may changes be made to these minimum separations.

3.1.5 Water Service Line Depth and Service / Non-Storm Sewer Separation

Water service lines shall be installed at the standard depth of forty-two inches (42"). Service lines crossing over or under a non-storm sewer shall maintain a minimum vertical separation of one and one-half feet (1.5').

See Standard Drawing: 1000 in Appendix of Drawings.

3.2 Laying Out the Work

The location of the work shall be defined by lines and elevations furnished by the Company's Project Manager on project drawings or specifications. The Contractor shall layout their own work, lines, measurements, bench marks, levels and grades, right-of-way and easement lines. The Contractor shall contact the Company's Project Manager prior to entering a property

on which the pipeline is being installed in an easement to ensure that the easement has been obtained.

Unless otherwise directed by the Company's Inspector or Project Manager, the Contractor shall complete each block of water main installation, or in the absence of intersecting streets, every 500 feet of water main installation in urban areas, every 1,000 feet of water main installation in suburban / residential areas, or 1,500 feet in rural areas before proceeding. This includes chlorination, pressure testing, service work, and permanent restoration of all areas affected by the construction.

The pipeline shall be installed throughout the public right-of-way or in easements as indicated on the project drawings. Generally, all work must be confined to the public right-of-way or easement provided; however, the Contractor may make arrangements for more operating room at its own expense and responsibility.

The Contractor shall obtain written permission for use of private property by the property owner and furnish an affidavit to the Company's Project Manager that proper arrangements are made prior to occupation of the property. Otherwise, the Contractor shall conduct its operations in a manner that will not interfere with adjacent property owners.

3.3 Stakes

The Contractor shall furnish and set all stakes necessary in laying out the location of lines and grades, shall protect all stakes by suitable guard stakes, and shall be responsible for maintenance of all stakes after being set.

3.4 Temporary Contractor Facilities

3.4.1 Power

The Contractor shall arrange and pay for all power required for construction purposes.

3.4.2 Heat and Enclosures

The Contractor shall furnish at its own expense, all temporary heat and/or enclosures that may be deemed necessary.

3.4.3 Light

The Contractor shall provide and pay for temporary electric light necessary for the execution of the work. This will include all necessary wiring, fixtures, and electric bulbs. Torches or other sources of light which can

cause damage by fire or smoke shall not be used.

3.4.4 Water

The Contractor may purchase water from the Company for use in construction operations. The Contractor shall include the cost of Temporary Water Service, and cost of water purchased, in the base bid.

3.4.4.1 Temporary Water Service

Water used by the Contractor or Company for disinfection, flushing, pressure testing, and leakage testing will be supplied by the Company at no cost. If water is needed for other purposes, the Contractor may obtain a temporary water service meter as outlined below. The Contractor will be responsible for fees and usage charges for the temporary water service.

To obtain a temporary water service meter, an application, with deposit, must be completed in Metering Services offices at 4801 Allmond Avenue between the hours 9:00am to 3:00pm Monday through Friday. Applications can be obtained in Metering Services or at LouisvilleWater.com.

Routine questions regarding a temporary service meter or billing concerns may be directed to our Call Center, (502) 583-6610.

Use of temporary services must comply with all Louisville Water Service Rules and Regulations found at LouisvilleWater.com. The Company prohibits the unauthorized use of fire hydrants and will work with law enforcement officials to pursue each incident to the extent allowed by law.

The Contractor is responsible to protect the fire hydrant temporary service meter and fire hydrant wrenches from loss and theft. Fire hydrant temporary service meters must be dismantled when not in use to protect from theft or freezing weather. Fire hydrant wrenches shall never be left unattended on a fire hydrant.

Fire Hydrants must be turned on completely to prevent flooding through the hydrant's weep holes. Flow shall be regulated by the temporary meter assembly valve. The Contractor must notify the Louisville Water Radio Room (569-3600, ext. 2700 or 2701) of all hydrants flowed between November 1 and March 31, or as freezing conditions dictate, so the hydrant can be winterized after use to prevent freezing.

Some fire hydrants have a locking device attached to prevent unauthorized use. The Contractor shall notify the Company's Project Manager or Inspector 48 hours in advance of the need to use such a fire hydrant, so the lock can be removed by Company personnel. The Contractor shall immediately notify the Company's Project Manager or Company

Inspector when the fire hydrant is no longer needed so the lock can be re-installed.

It is the responsibility of the Contractor to properly protect the fire hydrant temporary service meter, and to ensure that proper replacement techniques be applied, including placement of gasket to prevent water loss upstream of the meter.

3.4.4.2 Water Uses Excluded in Temporary Water Service

Any water used from a fire hydrant or blow off shall be metered or estimated. In some instances, the Company Inspector may approve non-metered water use (e.g. filling the main, flushing of hyper-chlorinated or potable water where practical.)

See Standard Drawing: 1601 in Appendix of Drawings.

3.4.5 Temporary Toilets

The Contractor shall provide in the vicinity of the work at locations satisfactory to the Company, and maintain in a sanitary condition, suitable temporary toilets for the use of the workers and Company personnel.

Upon completion of the work, the temporary toilets shall be removed, and the premises left in a sanitary condition. The temporary toilets shall be satisfactory to the governing jurisdiction's Board of Health.

3.4.6 Temporary Fencing

The Contractor shall supply and install temporary fencing when necessary to control livestock or property owner's animals requiring containment. The Contractor shall make arrangements with the property owner for removal / containment of the animals during any removal of existing fencing and placement of the temporary fencing.

3.4.7 Contractor Communications

The Contractor shall supply a 24 hour emergency contact number to allow direct communication from the project site or after working hours with the Company's Project Manager or Company Inspector.

4. PIPELINE MATERIALS

4.1 Pipe and Fittings

4.1.1 Pipe and Fittings Furnished by the Company

Pipe and fittings to be furnished by the Company shall be as specified in the Contract Documents.

4.1.2 Pipe and Fittings Furnished by the Contractor

Materials provided for “Furnish and Install” projects shall be as specified in the Contract Documents.

The Company’s Inspector shall verify that all materials meet project specifications prior to installation.

The Contractor retains ownership of all Contractor furnished materials under “Furnish and Install” contracts until the project is completed and accepted by the Company. Materials not installed cannot be returned to the Company.

4.2 Furnished to the Contractor

4.2.1 Materials

The Contractor shall requisition and haul, on appropriate vehicles, all Company supplied materials from the Company’s warehouse to the points of their respective installation.

The Contractor shall protect pipe and fittings to avoid vehicle exhaust, debris, and damage during transit from the Company’s warehouse to being installed.

As referenced in the current edition of the Company's "Process for Job Site Delivery of Line Pipe" Document, a copy of which is available from the Company’s Project Manager, pipe delivery from the pipe manufacturer to the jobsite is available if the Contractor makes arrangements as stated in said Document.

4.2.2 Requisition and Return of Materials

The Contractor shall requisition and return materials per current warehouse procedures, and shall account for or promptly return all materials so requisitioned.

Any unused materials shall be returned within five (5) working days after the date of substantial completion of the work as specified by the Company's Inspector. The cost of any unused materials not returned to the warehouse by this date shall be billed to the Contractor.

Below is a list of guidelines to draw or return materials from the Company's Allmond Avenue warehouse:

- A. Call (502) 569-3633 or email warehouse@lwcky.com to make an appointment with the Warehouse. Appointments are scheduled for 30 minutes in length. Email or fax a copy of the materials list to the warehouse at 569-0812.
- B. Appointments, including standing appointments, will be scheduled on a first-come first-served basis. Appointments are not required for emergency situations but must be approved by the Company's Project Manager.
- C. Issues and returns are considered equal in regard to scheduling.
- D. Warehouse office hours are 7:30 a.m. - 4:00 p.m., Monday thru Friday (except Company's holidays). Appointments are scheduled from 8:00 a.m. - 2:00 p.m.
- E. All returned material must be in the same condition as it was when issued - clean and with all accessories. Returns of dirty, corroded, and/or rusted material, and/or fittings missing accessories, or otherwise damaged shall not be accepted.
- F. The Contractor shall not return cut pieces of pipe to the Company's Warehouse. Contractors shall make best use of pipe, minimize cut pieces of pipe and shall not install more than two (2) pieces of cut pipe adjacent in a straight run. Only whole – uncut pipe may be returned to the Company's Warehouse and it must be clean and in good condition.

4.2.3 Loading and Unloading Procedures

Refer to **PIPE AND PIPE APPURTENANCES FURNISHED BY THE COMPANY**, in the **TERMS AND CONDITIONS**.

4.2.4 Pressure Test Pump

For pressure and leakage testing, the Company shall issue a test pump and meter kit to the Contractor. Contractors may furnish their own test pump if it is equipped with a quick-connect coupling to allow placement of the Company Inspector's pressure gauge and the test pump meter is approved

by the Company's Inspector.

The Contractor is to: notify the Gate Shop (502) 569-3600, ext. 2766, at the Warehouse at least two days in advance of the day of intended use; pick up the test pump kit between the hours to 7:30 a.m. and 3:30 p.m.; have the test pump kit for 48 hours at no charge (Saturdays and Sundays are excluded from the allowed time frame); and return the test pump kit to the Gate Shop within 48 hours of pick-up. If outstanding for more than two days, beginning on the third day, a rental fee will be charged to the Contractor; this fee shall be waived only if the Company's Inspector notifies the Warehouse Office or the Gate Shop at the Warehouse of special circumstances.

The Contractor shall be held responsible for the test pump and all test kit contents and shall be invoiced for all cleanup and/or repair costs. The Company does not loan or lease hoses and/or tools, including tapping machines.

4.3 Storage of PVC Pipe (Polyvinyl Chloride)

When storing PVC (polyvinyl chloride) pipe, caution should be exercised to avoid compression, damage, or deformation to the pipe, including the bell ends. Ensure that the weight of the upper units does not cause deformation to the lower units. All pipe shall be placed on wooden skids or other suitable material, be stored in accordance with AWWA's M23 Manual and be stored in a manner to prevent deformation and dirt, debris, foreign objects, or any other substance from entering the pipe.

5. EXCAVATION

5.1 Rock Excavation

5.1.1 Definition of Rock

Rock, for the purpose of this contract, shall mean boulders, pieces of concrete or masonry of sufficient size, and solid ledge rock (usually limestone) which, in the opinion of the Company's Project Manager, requires mechanical removal or drilling and blasting as approved by the Company's Project Manager. All rock shall be Unclassified. Unclassified rock shall mean any rock which has to be removed for construction and the cost of removal shall be included in the base bid price.

5.1.2 Trench Dimensions

Trench rock excavation shall be based on a trench width of eighteen inches (18") wider than the outside diameter of the pipe, equally spaced at nine

inches (9") on each side of the pipe and a trench depth of six inches (6") below the outside bottom of the pipe.

5.2 Rock Soundings

The Company does not know or pretend to know, nor does it undertake to state, the nature of all materials which will be necessary to excavate in order to construct the work contemplated herein. The Contractor is advised to perform rock soundings or subsurface investigations where feasible on all projects prior to bid. If rock sounding information is provided on the plans, the Contractor is advised that the rock sounding location is approximate and that the location and quality of rock can be highly variable and if the Contractor uses such data he/she does so at their own risk. The Contractor shall assume all risks arising from, or out of, the nature of all forms of materials necessary to be excavated, except as otherwise specified.

It shall be distinctly understood that reference to rock, earth, or any other material on the Plans or in the Contract, whether in numbers, words, letters, or lines, is not to be taken as a complete indication of classified rock excavation or the quantity or quality of either rock, earth, or any other material involved. The Contractor is advised to draw their own conclusions regarding the actual conditions to be encountered. The Company does not provide a guarantee as to the accuracy of the data and no claim will be considered for additional compensation when the materials encountered are not in accordance with the classification shown.

5.3 Rock Blasting Requirements

All blasting for excavations shall be conducted by a blaster licensed in the State of Kentucky in compliance with provisions of KRS 351 and KAR 803 and 805. Blasting will be permitted only after securing the approval of the Company's Project Manager and only when proper precautions are taken for the protection of persons or property. Any damage caused by blasting, including damaged or raised pavement, shall be repaired by the Contractor at their expense.

The Contractor shall abide by all Federal, State, and Local laws and regulations regarding the storage and use of blasting materials (KRS 351 and KAR 803 and 805). The hours of blasting will be fixed by the Company's Project Manager and adhere to state and federal guidelines. A blasting log must be kept, and a copy furnished to the Company.

5.4 Excavation in Streets and Parking Areas

5.4.1 Procedure

Where a specific road permit exists, it shall take precedence; otherwise, the following language shall apply.

Wherever the excavation is in paving, whether in the streets or in parking lots, the Contractor shall so conduct their operations that at least one lane of traffic is kept open at all times. Where the excavation is performed in a traveled lane, the trench shall be made safe during non-working hours by installing backfill and temporary bituminous pavement, backfill and concrete subbase, or plates (see "Plating" Section 5.4.3).

Where the excavation is performed in an intersection, the work shall be completed in one work day, including backfilling and temporary bituminous pavement. Temporary paving restoration shall be adequately maintained until permanent pavement is placed.

Traffic warning signs shall be placed and maintained on the streets being crossed, in accordance with the applicable agency as described in "Traffic Control" (Section 1.3.1).

5.4.2 Twelve-Inch (12") Cutback Requirement

The Contractor shall make two pairs of straight paving cuts of uniform width: the first pair being along the edges of the anticipated trench location, to be performed prior to excavating the pipe trench; and the second pair being along the anticipated twelve-inch (12") cutback locations, to be performed upon completion of trench backfill placement up to the subbase bottom elevation and prior to subbase placement.

Saw cuts shall be of sufficient penetration of the pavement base to ensure straight edges during pavement removal. Irregular edges shall be sawcut to provide straight edges at a uniform width.

Twelve-Inch (12") Cutback Requirement is not required when backfilling the trench with flowable fill (Controlled Low Strength Cementitious Material).

5.4.3 Plating

5.4.3.1 General

Recessed and surface mounted plates shall have a minimum thickness of one inch (1") and shall be placed on a minimum bearing area of one foot of pavement bordering the perimeter of the excavation.

All plates, whether or not in a traveled lane, are to have 45-degree beveled edges along the entire perimeter. All plates must have readily identifiable markings to reflect Contractor ownership.

If plates are unable to be recessed and must be pinned due to other utility encumbrances, the appropriate Road Maintenance Agency or property owner must be notified immediately.

5.4.3.2 Traveled Lanes

In traveled lanes, the Contractor shall provide plates recessed flush with the pavement for any excavation and trenches must be backfilled to subbase prior to placing plates. Any lane that is open to the traffic at any time during the day is defined as a traveled lane.

5.4.3.3 Non-Traveled Lanes

In non-traveled lanes, the Contractor shall also provide recessed plates where required by the Company's Project Manager and as described in the **SUPPLEMENTARY SPECIFICATIONS**. Otherwise, for non-traveled lanes and parking lots, surface mounted plates, properly secured to pavement, shall be provided, with the exception that all plates are to be recessed from November 15th thru March 31st, so as to minimize the potential hazards to snow removal vehicles, or as specified by the permitting authority.

See Standard Drawing: 4000 and 4100 in Appendix of Drawings.

5.5 Trenching

5.5.1 General

The Contractor shall make all excavations for pipe, blow-off connections, valves and vaults, etc. which may be required for this project. All excavations shall be backfilled or plated overnight with open pipe ends plugged or capped.

5.5.2 Alignment and Grade

The trench shall be excavated to the alignment and depth required and only so far in advance of pipe installation as the Company's Inspector shall permit. All pipe shall be installed and maintained to the lines and grades shown on the project drawings.

5.5.3 Trench Width

The trench width shall be as narrow as practicable to permit the pipe to be installed and jointed properly with a minimum of nine inches (9") of separation between outside of the pipe and each sidewall of the trench. Trench width must allow for the backfill to be placed and compacted around the pipe. Vertical trench sides are desired where the nature of the excavated material and depth of trench will permit.

A trench width of eighteen inches (18") plus the outside pipe diameter shall be the pay width for any items of work for which compensation is made where trench width is a factor in computing the value of work done.

5.5.4 Trench Depth

The pipe trench shall be excavated to such depth as to provide for six inches (6") of depth under and a minimum forty-two inches (42") of cover over the outside of the pipe barrel. Unless otherwise specified, the trench shall have a flat bottom conforming to this grade. Any pipe installed with more than fifty-four inches (54") or less than forty-two inches (42") of cover must have written approval from the Company's Project Manager.

Any part of the trench excavated below grade (grade being six inches (6") under the pipe) shall be backfilled to grade with the same backfill material used to bed the pipe or other material approved by the Company's Project Manager, and compacted to ninety percent of Modified Proctor as required in "BACKFILLING PROCEDURES AND TAMPING" (Section 7).

Unstable soil material shall be excavated from the trench, and the trench backfilled and compacted as described above.

Backfill greater than a depth of forty-two inches (42") shall be provided where indicated on the project drawings with no additional compensation.

The pipe trench shall not be excavated to exceed forty-eight inches (48") of cover over the outside of the pipe barrel under normal conditions unless indicated on the project drawings.

In locations where pipe is installed on a sloped surface the minimum depth of cover of forty-two inches (42") must be maintained at all points along the pipe.

Variations from these required depths will be allowed only on written authority from the Company's Project Manager.

5.5.5 Minimum Clearances

Boulders, large stones, and rock (including shale) shall be removed to provide a clearance of at least six inches (6") below the barrel of the pipe, valves, or fittings and to provide a clear width of at least nine inches (9") on each side of all pipe and appurtenances.

Bell holes of ample dimension shall be dug to permit jointing to be made properly and to ensure that the pipe is evenly supported throughout in length rather than on bells or couplings.

5.5.6 Contaminated Soil

In the event the Contractor suspects encountering contaminated soil (i.e., soils containing asbestos, PCBs, petroleum products, hazardous waste, radioactive material, and/or any other substance that presents a potential danger to persons or property exposed thereto), the Contractor shall take the following steps:

- Immediately secure the work site to prevent access by unauthorized personnel;
- Notify the Kentucky Department for Environmental Protection, if reportable, (reportable is when an actual spill or release of a hazardous material occurs or when there appears to be a threat of severe environmental harm), at (502) 564-0323;
- Immediately notify "Emergency Response" at 911;
- Immediately stop all work in the vicinity of the contaminated soil, and notify the Company's Inspector, Project Manager, and Safety Representative.
- Follow the instructions from the Kentucky Department for Environmental Protection for disposal of excavated soils which are contaminated.
- Water lines installed or replaced in areas of organic contamination or in areas within 200 feet of underground or petroleum storage tanks or petroleum pipelines require ductile iron or other non-permeable materials and shall be used in all portions of the water line installation or replacement as approved by the Company's Project Manager. These particular water lines shall also be installed with nitrile gaskets or other petroleum resistant gasket as approved by the Company's Project Manager.

- Resume work only after receiving approval by the Company's Project Manager.

5.5.7 Preservation of Landscape

See also "RESTORATION" (Section 11).

Trees and shrubs shown on the project drawings identified for protection are to be protected from any damage both above and below ground, and the property owner is to receive full remuneration for any damage. Trees at other locations shall not be damaged or removed without explicit instructions from the Company's Project Manager and owner or responsible agency. Any limbs damaged during construction shall be trimmed and pruned to the approval of the Company's Inspector.

The project drawings may call for certain shrubs and trees in private roadways or easements to be transplanted until operations are completed and replaced in their original location or replaced with new stock.

5.5.8 Preservation of Historical Construction Materials

When historical construction materials (such as cobblestones, large brick, granite blocks, limestone, or other large stone building blocks used in the course of pavement, curbs, and sidewalks) are encountered in public streets or alleys, they shall be replaced with like material. The Contractor may request a waiver when this is not possible from the Company's Project Manager for approval. Brick masonry pavers that cannot be incorporated back into the work shall be palletized and delivered to Louisville Metro Public Works for preservation and maintenance of existing brick streets and alleys – See Section 7.02 M of the latest edition of Louisville Metro Public Works & Assets' Right-Of-Way Guide & Utility Policy.

5.5.9 Preservation of Boundary Monuments

Contractors shall be responsible for the location and protection of any boundary monuments locating property lines, property corners or right-of-way lines within project limits. If any monuments are removed or disturbed during construction, the Contractor will be responsible for replacement of the monuments by a Professional Land Surveyor of the State of Kentucky.

5.5.10 Archaeological

Contractors shall immediately stop work, if during the execution of work; they encounter any archaeological artifacts, skeletal remains, abandoned cemeteries or burial grounds within the work area and immediately notify the Company's Project Manager or Inspector.

6. INSTALLATION

6.1 Handling Pipe and Appurtenances

6.1.1 General

Proper equipment, tools, and facilities satisfactory to the Company's Project Manager shall be provided and used by the Contractor for the safe and convenient progression of the work. Slings used in handling the pipe shall be made of non-abrasive materials such as nylon. Chains or any sharp abrasive material shall not be used to lift or move pipe. Pipe fittings, valves, and other accessories shall at all times be handled with care to avoid damage.

The method of handling, hauling, and placing pipe in the trench shall be such that it will not damage the ductile iron pipe and its coating or polyethylene wrap or the PVC (polyvinyl chloride) pipe, and shall be done in accordance with the latest edition of AWWA's M23 & M41 manuals. The Contractor shall pay to replace all pipe and/or appurtenances that are damaged.

In loading and unloading, pipe shall be lifted in such manner as to avoid shock. Under no circumstances shall the pipe be dropped. Forklifts' forks or other tools and equipment shall not be inserted into the barrels of pipe, valves or other fittings to lift or move them.

6.1.2 PVC Pipe (Polyvinyl Chloride)

When handling PVC (polyvinyl chloride) pipe, the Contractor shall avoid abrasion damage and gouging or cutting by metal surfaces or rocks, and any stressing of bell joints and damage of bevel ends.

Avoid severe impact, particularly in subfreezing temperatures. In subfreezing temperatures, caution is advised in handling to prevent impact damage.

6.2 Installing Pipe and Appurtenances

6.2.1 General

All pipe installation shall be done under the supervision of an experienced superintendent who will be present on the job site during all construction activities.

Full pipe lengths shall be carefully lowered into the trench, individually, installed and backfilled, in such a manner as to prevent damage.

Unless shown otherwise on the project drawings, PVC (polyvinyl chloride) and Ductile Iron pipe joints will be rubber ring gasketed bell end type.

The Contractor shall furnish all equipment and materials necessary to make all joints completely assembled, except as described in "Furnished to the Contractor" (Section 4.2).

All pipe shall require a six inch (6") undercut and a six inch (6") compacted depth layer of backfill to ensure proper bedding for the pipe. These requirements are described in the sections "Trenching" and "BACKFILLING PROCEDURES AND TAMPING" (Sections 5.5 and 7, respectively).

The interior of all pipe, fittings, and other accessories shall be kept free from dirt and foreign material at all times. All pipe shall be clean and kept clean.

The exposed ends of pipe in the trench shall be closed by a water tight plug at all times when pipe installation is not actually in progress. See Section 6.14 "Plugging Ends of Pipe."

6.2.2 PVC Pipe (Polyvinyl Chloride)

All PVC (Polyvinyl Chloride) pipe installation shall be in accordance with AWWA's Manual No. M23 "PVC Pipe - Design and Installation", unless otherwise specified herein.

Wherever either horizontal or vertical curves or angles are shown on the project drawings, or found to be needed, appropriate ductile iron bends shall be used with PVC (Polyvinyl Chloride) pipe.

Under no circumstances will the bending of PVC pipe be allowed.

Backfilling procedures and mechanical tamping of backfill material shall be strictly adhered to as specified in the "BACKFILLING PROCEDURES AND TAMPING" (Section 7) of these specifications.

When installing PVC pipe, joint deflections shall not exceed that of the manufacturer's recommendations.

6.2.3 Ductile Iron Pipe

All ductile iron pipe installation shall be in accordance with the latest editions of AWWA's Standard Specification C600, "AWWA Standard for Installation of Ductile Iron Water Main and Their Appurtenances", and

AWWA’s M41 manual, unless otherwise specified herein.

Wherever either horizontal or vertical curves or angles are shown on the project drawings, or found to be needed, appropriate ductile iron bends shall be used with ductile iron pipe.

When installing ductile iron pipe, joint deflections shall not exceed that of the manufacturer’s recommendations.

Backfilling procedures and mechanical tamping of backfill material shall be strictly adhered to as specified in the "BACKFILLING PROCEDURES AND TAMPING" (Section 7) of these specifications.

Maximum Deflection for Full Length Ductile Iron Pipe @ 3 degrees (Push on Joint Pipe)		
Pipe Size	4" - 20"	
Pipe Length	18 feet	20 feet
Maximum Offset (inches)	15 in.	12 in.
Approx. Radius of Curve Produced by Succession of Joints (feet)	255 ft.	285 ft.

6.3 Boring and Tunneling

When boring is required, the Contractor shall use a boring tool of the proper size to form a tunnel for the purpose of installing the pipe from one excavation to the other without disturbing the surface. Where such methods are used, a plug or suitable closure shall be inserted in the end of the pipe to exclude any earth from the inside of said pipe.

Where it is necessary to cut the paved surfaces to accomplish the above boring beyond the limits of the excavation necessary to make the tap, the cost of making such pavement repairs shall be borne by the Contractor.

When installing main within the dripline of any tree with a diameter of 6 inches or larger, the root system shall be free bored. All tree root systems that require boring shall be free bored a minimum of 20 feet; 10 feet either side of the tree trunk. The bore shall be located a minimum of 4 feet below the ground surface and a minimum of 5 feet from the center of the tree. If the Contractor requests to bore utilizing Horizontal Directional Drilling methods, the Contractor must make the request in writing to the Company’s Project Manager in advance. Regardless of the method selected, the cost of the tree bore shall be considered incidental to the installation of the pipeline,

and no extra compensation will be provided. The Contractor shall be responsible for the survival of the trees disturbed by the bore installation for a period of two (2) years after final contract payment for the project.

Whenever water main is to be installed through casing pipe, the water main shall be ductile iron pipe with restrained joints. Casing runners (spacers) shall be used to prevent damage during installation and to provide long term support. Pipe shall not rest on bells. Casing runners (spacers) shall provide sufficient height between bell joint and casing wall and should be fastened securely to the pipe.

Unless otherwise stated in the **BIDDER'S PROPOSAL** form and/or the **SUPPLEMENTARY SPECIFICATIONS**, there shall be three (3) casing runners (spacers) for each full pipe length, to be placed at the center and 3-foot from each end of each section of pipe. Ends of casing pipes must be grouted or End Seals installed to prevent debris and seepage from entering the casing pipe. The casing pipe shall extend a minimum of five (5) feet beyond the edge of pavement, unless otherwise noted on the project drawings.

Pipe may be installed in the casing using winch-drawn cable or jacking. Exercise care to avoid damage to the pipe, bell joints, interior and exterior coatings and polywrap.

For ease of installation, use a lubricant such as flax soap or drilling mud between casing runners and casing. Do not use petroleum products such as oil or grease.

Any rock encountered in the construction of bore pits and/or receiving pits shall be unclassified.

If voids shall develop or if the excavation is greater than the outside diameter of the casing pipe or tunnel liner by more than approximately one inch (1"), they shall be filled by pressure grouting. In the case where sections of casing pipe are field welded in order to meet the plan requirements, the Contractor shall weld the casing pipe fully around the entire circumference of the casing pipe and make the casing pipe available for weld inspection prior to installation of the water main.

All interior weld beads or slag shall not extend more than 3/32 inch from the interior pipe face.

See Standard Drawing: 1500 in Appendix of Drawings.

6.4 Mechanical and Push-on Joint Assembly

6.4.1 General

All rubber-gasket joints for Ductile Iron pipe shall be made in accordance with the current edition of AWWA’s Standard Specifications C111 "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings", as recommended by the manufacturer, and as described in the following Sections: 6.4.2; 6.4.3; and 6.4.4.

All rubber-gasket joints for PVC (polyvinyl chloride) pipe shall be made in accordance with the current edition of AWWA’s Standard Specification C900 "Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch, for Water Distribution", as recommended by the manufacturer, and as described in the following Sections: 6.4.2; 6.4.3; and 6.4.4.

6.4.2 Mechanical Joint

The inside of the bell and the outside spigot end shall be thoroughly cleaned to remove oil, dirt, grit, excess coating, and other foreign matter from the joint, and then painted with a manufacturer’s approved lubricant.

The ductile iron gland shall then be slipped on the spigot end of the pipe with the lip extension of the gland toward the joint. The rubber gasket shall be painted with the lubricant and placed on the spigot end with the thick edge toward the gland. The entire section of pipe shall be pushed forward to seat the spigot end in the bell.

The gasket shall then be pressed into place within the bell with care being taken so that the gasket shall be evenly located around the entire joint.

The ductile iron gland shall then be moved along the pipe into position for bolting, all of the bolts inserted, and the nuts screwed up tightly, with the fingers. Nuts spaced 180 degrees apart shall be tightened alternately, in order to produce an equal pressure on all parts of the gland.

The torque applied for various sizes of bolts shall be as follows, unless otherwise specified by the manufacturer:

<u>Mechanical Joint Bolt Torque Table:</u>	
5/8"	45-60 ft.-lbs
3/4"	75-90 ft.-lbs
1"	100-120 ft.-lbs
1-1/4"	120-150 ft.-lbs

Any mechanical joint restraints or gripper rings shall be retightened to Bolt Torque Table specifications no sooner than thirty (30) minutes after initial tightening, or as directed by the manufacturer.

All bolts installed above ground shall be rechecked for proper torque after placement in the excavation.

6.4.3 Push-on Joint

The inside of the bell and the outside of the spigot end shall be thoroughly cleaned to remove oil, grit, excess coating, and other foreign matter. If placement of the gasket occurs in the field, the circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell socket. A thin film of gasket lubricant shall be applied to the spigot end of the pipe.

Lubricant shall be applied evenly over the entire surface requiring lubrication, but avoid using an excessive amount. Use only lubricant approved by the pipe manufacturer. Failure to do so may promote bacterial growth or damage to the gaskets or the pipe.

Correct alignment of the pipe is essential for ease of assembly. The spigot end of the pipe shall be entered into the socket with care to keep the joint from contacting the ground.

The PVC (polyvinyl chloride) pipe shall be inserted into the bell or coupling by application of firm and steady pressure by hand or by block assembly until the spigot end slips through the gasket. The spigot end of the pipe is marked by the manufacturer to indicate the correct depth of insertion. Over-insertion (over-belling) of the pipe shall not be permitted and can cause rolled gaskets, split bells, failure of hydrostatic pressure test, and damage to previously assembled joints.

Ductile iron pipe joints shall be completed by forcing the spigot end to the bottom of the socket using a pry bar, backhoe, jack-type tool, or other device recommended by the manufacturer or approved by the Louisville Water Project Manager. When using a backhoe to home a section of pipe, a timber header should be used to protect the pipe from damage.

6.4.4 Field Cut Pipe

Field-cut ductile iron or PVC (polyvinyl chloride) pipe requires a cut perpendicular to the pipe. It is recommended that the pipe be marked around its entire circumference prior to cutting to ensure a perpendicular cut.

The end shall be beveled by using a beveling tool, rasp or grinder as appropriate to assemble the push-on joint. Round-off any sharp edges on

the leading edge of the bevel. Reinstall depth mark using original mark by manufacturer as a guide.

Mechanical Joint Assembly: When field-cut PVC (polyvinyl chloride) pipe is to be inserted into a mechanical joint end, the beveled end shall not be inserted into the MJ end. The above-stated requirements for a square cut, rounding off sharp edges, and establishing a correct-depth marker shall be performed.

6.5 Tie-ins to Existing Mains

The Contractor shall install the necessary pipe and fittings for the connections to the existing mains, as shown on the project drawings, and shall make the connections complete, ready-for-use.

It is imperative that the sequence of work involving an interruption of service be such that all operations be completed and the new pipeline ready to be connected prior to shutting off existing mains that are serving customer connections. Except for filling of the main, tie-ins shall not be accomplished until the main has passed pressure testing and disinfection.

All pipe, fittings and materials installed for tie-ins or taps not exposed to pipeline chlorination / dechlorination shall be disinfected with an adequate chlorine solution.

When tapping a main, the Contractor shall make the tap only after a hydrostatic pressure test of 125 psi is applied for fifteen (15) minutes with no leakage to the tapping sleeve and gate valve assembly. Before cutting an existing main under pressure, the Contractor shall ensure the adjacent existing valve and fittings are sufficiently secure. The Contractor shall be responsible to provide the tapping coupon to the Company's Inspector.

When connections to existing pressurized PVC water mains are to be made with a tapping sleeve and gate valve, the tapping sleeve and gate shall be installed a minimum distance of twenty-four inches (24") from any fitting end or pipe end.

The Contractor shall be responsible for a minimum advance notification of forty-eight (48) hours to the Company's Inspector to make connections to existing mains.

The Contractor shall be responsible to make up to three (3) connection attempts in situations due to circumstances outside of their control such as inoperable valves or unavailable Company assistance.

Subsequently, water mains abandoned in-place shall be capped at all open

ends as shown on the project drawings or as directed by the Company's Project Manager.

In cases where the water main must be put into service as soon as possible, very early strength concrete and mechanical joint restrained glands (gripper glands) can be specified by the Company's Project Manager for thrust restraint.

6.6 Transition of Pipe Materials (Ductile Iron Pipe and PVC Pipe)

All pipe material transitions (locations where ductile iron pipe is connected to PVC pipe, or vice versa) shall be made at a ductile iron fitting (tee, valve, coupler, sleeve, bend, reducer, etc.).

The joining of pipe ends by inserting the spigot to bell of different pipe materials will not be allowed.

6.7 Removal of Asbestos-Cement (AC or Transite) Pipe

Any required cutting or tapping of asbestos-cement pipe shall be performed by qualified Company personnel, or the Contractor as approved by the Company's Project Manager, and shall follow current Company Work Instructions for handling and cutting AC pipe. Any cutting or tapping shall be in compliance with all OSHA requirements. This work shall be coordinated by the Contractor through the Company's Inspector.

6.8 Setting Valves and Fittings

Valves, air valves, blow offs, and drains shall be assembled, and joints made up, both flanged and mechanical joint, as indicated on the project drawings. All valves and all reducers must be anchored by coated and deformed reinforcing bars, as detailed per the Company's Standard Drawing 1400, wrapped around each end of the valve or reducer, and cast in a cast-in-place concrete anchor block under each valve or reducer.

The weight of each valve shall be supported by solid pre-cast concrete bricks. Bricks should not be removed prior to concrete placement and shall not inhibit installation of polywrap. Cast-in-place concrete shall then be poured up to the bottom of the valve. In no instance shall the weight of the valve be supported by the adjacent pipe.

If PVC pipe is used with iron fittings, the weight of each fitting shall be supported by a two feet (2') x two feet (2') width x one foot (1') depth cast-in-place concrete support block; rod anchorage is required at vertical bends which require the placement of the thrust block under the fitting.

The concrete support block shall bear against undisturbed earth, as shall the

other above-mentioned types of concrete blocking. In cases where the water main must be put into service as soon as possible, very early strength concrete and mechanical joint restrained glands (gripper glands) can be specified by the Company's Project Manager for thrust restraint.

See Standard Drawing: 1400 in Appendix of Drawings.

6.9 Polyethylene Wrap for Ductile Iron Pipe and Fittings

Polyethylene wrap shall be installed in accordance with the current edition of AWWA Standard Specification C105 (ANSI A21.5) for American National Standard for Polyethylene Encasement, unless otherwise specified herein.

The Contractor shall cut the polyethylene roll in tubes 2 feet (2') longer than the standard length of pipe. Each tube shall be slipped over the length of ductile iron pipe, with centering to allow a one-foot overlap on each adjacent pipe section. After the lap is made, slack in the tubing shall be taken up for a snug fit, and the overlay shall be secured with polyethylene tape. Each length of ductile iron pipe shall receive two separate polyethylene wraps as described above.

Ductile iron pipe shall not be wrapped for more than 5 days in advance of placement into the trench. Pipe to be wrapped shall include ductile iron and ductile iron restrained-joint pipe and iron fittings. For any pipe that is wrapped prior to installation, Contractor shall use a method to lift and carry the pipe, such as canvas/nylon strapping, that will prevent damage to the wrapping.

Odd shaped appurtenances such as valves, tees, fittings, and other ferrous metal pipeline appurtenances shall be wrapped by using a flat sheet of polyethylene. Wrapping shall be done by placing the sheet under the appurtenances and bringing it up around the item to be wrapped. Seams will be made by bringing the edges together, folding twice, and taping down. Each appurtenance shall receive two separate polyethylene wraps as described above.

Care shall be taken when backfilling to prevent damage to the polyethylene wrapping. Sections of wrapping having cuts, tears, punctures, or other damage shall be repaired or replaced.

PVC (polyvinyl chloride) pipe requires no polyethylene wrap.

AWWA Standards for installing polyethylene wrap and the manufacturers' recommended methods for installing polyethylene wrap can be made available for review by the Company's Project Manager at the request of the Contractor.

See Standard Drawing: 1200 A-C in Appendix of Drawings.

6.10 Installation of Tracing Wire for PVC Pipe

The Contractor shall install tracer wire along with the PVC pipe and it shall be installed directly over the water main. For open trench installation, tracer wire shall be 12 AWG copper clad steel with a minimum of 30 mil blue HDPE or HMWPE insulation. For directional drill, boring, or other trenchless method installation, tracer wire shall be 12 AWG high strength copper clad steel with a minimum of 45 mil blue HDPE or HMWPE insulation . All tracer wire shall be rated for direct burial at 30 volts. The wire shall also be connected to each end of the water main. The tracing wire shall be wrapped once around each copper or ductile iron service line. The wire shall be stripped of insulation and connected or wrapped with each valve, and service line.

At each and every valve: the wire shall be directly connected to one of the valve joint bolts and shall extend upward along the outside of the key tube but inside the round top frame. The wire shall be looped upward along the outside of the key tube to maintain the wire continuity. This wire shall be taped securely to the top of the pipe at the midpoint and bell of each section of pipe.

6.11 Identification Ribbon

The Contractor shall install Identification Ribbon (I.D. Tape) on all PVC, Ductile Iron, and any other direct bury pipe four-inch (4") through twenty-inch (20") in diameter. Under paved or unpaved surfaces, this ribbon shall be installed at approximately eighteen inches (18") below the surface or finished grade and directly over the water main.

6.12 Frames and Covers (Lids)

The Contractor shall set all frames and covers (lids) for air valves, blow-offs, and meter vaults. These frames and covers (lids) shall be set to grade and maintained in the proper position for the duration of the period covered by this contract.

Frames and covers (lids) shall be removed on all discontinued vaults, and surfaces shall be restored in accordance with the appropriate requirements of the sections "BACKFILLING PROCEDURES AND TAMPING" and "RESTORATION" (Sections 7 and 11, respectively). All removed frames and lids shall be returned to the Allmond Avenue warehouse.

6.13 Valve Boxes

Standard valve boxes consisting of key tubes, valve extension rods, and round tops and lids shall be installed on all valves by the Contractor. The box shall be centered on the operating nuts, shall be vertical, shall be set to grade, shall be placed and maintained in the proper position, and shall be free of dirt or other matter for the duration of the period covered by this contract.

Styrofoam collars or polywrap tape may be placed around each valve round top before placement of concrete and in such a manner to allow the valve box to be raised to grade without demolishing the concrete subbase.

Valve extension rods shall be placed on gate valve operating nuts to extend to within two feet (2') and three feet (3') of ground elevation. Valve extension rods may be welded together to reach the appropriate length. Valve extension rods are available at Louisville Water's warehouse if the project is a Company Supplied project.

Round tops and lids on all valves that are to be abandoned shall be removed and returned to the Allmond Avenue warehouse. The key tube shall be filled with concrete in paved areas; with compacted stone in other areas and surfaces restored in accordance with the appropriate requirements of the sections "BACKFILLING PROCEDURES AND TAMPING" and "RESTORATION" (Sections 7 and 11, respectively).

6.14 Plugging Ends of Pipe

When work has stopped at the end of a day, a cap or plug shall be installed in place in the open end of the pipe to maintain a water tight seal. If trench water or debris enters the pipeline or trench, it shall be removed from the pipe and trench before work proceeds. Permanent plugs or caps shall be installed where shown on the project drawings and shall be securely braced as shown on the thrust anchor details included on the detail sheet of the project drawings. Permanent plugs shall not be installed on PVC mains; only mechanical joint caps will be allowed. Plastic tape over pipe ends will only be permitted on non-standard / oversized pipe with approval of the Company's Inspector.

6.15 Thrust Anchors, Counterweights, and Restrained-Joint Hardware

The Contractor shall install concrete thrust anchors or counterweights (3,500 psi concrete) at all bends, reducers, deflection couplings, tees, offsets, gate valves and plugs/caps against undisturbed soil to withstand maximum test pressure. The Contractor shall provide all labor and material to construct the thrust anchors, piers, and counterweights, for all fittings, both horizontal and vertical. These concrete thrust anchors shall have

minimum dimensions as indicated on the thrust anchor schedule shown on the detail sheet in the project drawings.

If field conditions prevent standard concrete thrust anchors placement as shown in project drawings, the Company's Project Manager must approve any modification. Concrete thrust anchors in solid rock trenches may be modified with approval of the Company's Project Manager.

The Company's Inspector may require forming (plywood or steel) in order to properly locate and position concrete thrust anchors. Restrained-joint hardware is not intended to be used in lieu of concrete thrust anchors and counterweights. Such hardware is to be used only when it is necessary to return a water main to service immediately, as when making tie-ins or at the specific instructions of the Company. The Company Inspector may require restrained joint hardware in areas where the water main may be disturbed after installation by other utility crossings or nearby excavation.

Whenever restrained-joint hardware is used to restrain fittings, the Contractor must also pour a concrete thrust block. In no instances, shall restrained-joint hardware alone be accepted as a permanent thrust restraint. Mechanical joint restraining glands (gripper glands) are not to be used on plain end fittings.

Any mechanical joint restraints or gripper glands shall be retightened to Bolt Torque Table specifications no sooner than thirty (30) minutes after initial tightening, or as directed by the manufacturer.

All bolts installed above ground shall be rechecked for proper torque after placement in the excavation.

See Standard Drawing: 1400 in Appendix of Drawings.

7. BACKFILLING PROCEDURES AND TAMPING

7.1 General

In general, trench dimensioning and backfill materials shall be as follows: six inches (6") of vertical clearance with the bottom of the trench, and the subsequent layered placement of pit run sand, DGA or manufactured sand bedding along the bottom of the pipe; nine inches (9") of horizontal clearance with each side of the trench, and the subsequent layered placement of pit run sand, DGA, or manufactured sand backfill along each side of the pipe; the layered placement of pit run sand, DGA, or manufactured sand to the elevation of twelve inches (12") above the crown of the pipe; and, if in a lawn area, the remainder of the backfill to be common (but acceptable) fill, or, if in a paved and/or a to-be-paved area,

the remainder of the backfill to be the layered placement of pit run sand, DGA, manufactured sand, #57 stone or flowable fill up to the bottom elevation of the respective pavement restoration scheme. All bedding and backfill material shall be uniform and continuous for the entire trench excavation limits.

The total depth of cover (i.e., the vertical distance from crown-of-pipe to ground/pavement surface) shall be at least forty-two inches (42"). The cost of applicable backfill material, backfilling, and required tamping shall be covered in the base bid as shown on the **BIDDER'S PROPOSAL** form.

All backfill (except flowable fill) shall be properly compacted by pneumatic, vibratory, or other approved compaction equipment. A backhoe bucket is not an approved compaction device. The compaction effort and lift thicknesses shall be performed in a uniform and consistent manner in accordance with these specifications. The Company reserves the right to conduct compaction testing and observation, and such testing or observation will not relieve the Contractor of any future warranty responsibilities. When instructed by the Company's Project Manager, the Contractor shall excavate backfilled material to a particular grade for testing. Backfilled areas which do not pass this test shall be excavated and re-compacted until they meet compaction specifications. Areas excavated for testing shall be re-compacted in accordance with this compaction specification. The cost of this work shall be included in the base bid.

Appropriate and sufficient backfill material shall be furnished by the Contractor to replace material deemed unsatisfactory by the Company's Project Manager or Inspector.

Unsatisfactory material includes unsuitable soil as described in "FINAL BACKFILLING" (Section 7.6) and frozen or exceptionally wet backfill material and may include backfill material excavated for testing purposes or backfill material excavated for failure to meet compaction requirements. See Standard Drawing: 4300 in Appendix of Drawings.

7.2 Acceptable Backfill Materials

7.2.1 Pit Run Sand (Natural Sand)

Pit Run Sand is sand resulting from the natural degradation of rock and shall meet the material and gradation requirements of Section 804 Fine Aggregates of the current edition of the Kentucky Department of Highways "Standard Specifications for Road and Bridge Construction".

7.2.2 Dense Graded Aggregate (Kentucky DGA or Indiana #73)

Dense Graded Aggregate shall meet the material and gradation requirements of Section 805 Coarse Aggregates of the current edition of the Kentucky Department of Highways “Standard Specifications for Road and Bridge Construction”.

7.2.3 Flowable Fill (Controlled Low Strength Cementitious Material)

Flowable fill, a quick-setting, cementitious, self-compacting, shrinkless fill material, may only be used with the prior written approval of the Company’s Project Manager.

The mix design must be approved prior to placement by the Company’s Project Manager. The 28-day compressive strength of said fill shall not exceed 150 psi, and the minimum strength shall be 25 psi. The mix shall include sand, cement, fly ash with water not included as part of the volume mix. Fly ash shall have a pH value of no less than 7.0 and no greater than 12.5. The pipe shall be enveloped with pit run sand, manufactured sand or dense graded aggregate and backfilled in accordance with “Initial Backfilling” (Section 7.5).

7.2.4 Manufactured Sand (Kentucky 3/8” Manufactured Sand)

Manufactured Sand shall be the material resulting from the crushing and classification by screening, or otherwise, of rock and gravel. Manufactured Sand shall be washed and contain no fine particles and or dust.

The Contractor shall be responsible for all dust control associated with the use of Manufactured Sand. Manufactured Sand shall meet the material and gradation requirements of Section 804.08 Pipe Bedding of the current edition of the Kentucky Department of Highways “Standard Specifications for Road and Bridge Construction”.

7.2.5 Kentucky #57 Stone (or Indiana #8 Stone)

Kentucky #57 Stone shall only be used for creating a firm base in undercut excavations when wet or excessively soft soil conditions are encountered. Any other use shall be approved by the Chief Engineer. Kentucky #57 stone shall not be used as bedding, initial backfilling, or for trench backfill in paved areas. Kentucky #57 Stone shall meet the material and gradation requirements of Section 805 Course Aggregates of the current edition of the Kentucky Department of Highways “Standard Specifications for Road and Bridge Construction”.

7.2.6 Kentucky #3 Stone (or Indiana #2 Stone)

Kentucky #3 Stone shall only be used for Fire Hydrant Drainage Pits. (See Section 9.2 Drainage Pit). Kentucky #3 Stone shall meet the material and gradation requirements of Section 805 Coarse Aggregates of the current edition of the Kentucky Department of Highways "Standard Specifications for Road and Bridge Construction".

7.2.7 By-Product of Trench Rock Excavator

The by-product of trench rock excavator equipment may be acceptable for pipe bedding and/or backfill material if prior written approval is granted by the Company's Project Manager.

The Company's Project Manager must review the material and be assured of the Contractor's ability to compact the material. The Contractor must wash the material thoroughly (i.e., no dust particles); and to sieve the material thoroughly so that no individual rock pieces exceed sieve size of one inch (1") (25.0mm).

7.3 Un-Acceptable Backfill Materials

Un-washed Manufactured Sand, Black Sand (coal or coke by-products), slag, or foundry by-products will not be allowed as pipe bedding and / or backfill material.

7.4 Bedding

For the entire length of the trench, the excavation shall provide a six inch (6") space below the pipe, which shall be placed and firmly compacted with approved backfill materials, pit run sand, manufactured sand, Dense Graded Aggregate, or #57 stone, as specified by the Kentucky Transportation Cabinet Department of Highways Standard Specification for Road and Bridge Construction, (latest edition) "Fine Aggregates" or "Coarse Aggregates," to form bedding for the pipe.

The bedding shall be excavated at bells, valves, and fittings so the barrel of the pipe will have bearing on the bedding for its full length.
See Standard Drawing: 4300 in Appendix of Drawings.

7.5 Initial Backfilling

Initial backfill should occur as soon as possible after the installation of pipe, so as to prevent the pipe from shifting. After the pipe has been placed on the bedding, pit run sand, manufactured sand, #57 stone, or Dense Graded Aggregate, shall be deposited in the trench by mechanical equipment and

distributed in six inch (6”) layers on both sides of the pipe for the full width of the trench, the trench width having nine inches (9”) of horizontal clearance along each side of the pipe. The initial backfill shall be tamped in six-inch (6”) layers and thoroughly compacted under the centerline and on each side of the pipe. Backfill shall be placed and tamped to a height of at least twelve inches (12”) above the top of the pipe.

See Standard Drawing: 4300 in Appendix of Drawings.

7.6 Final Backfilling

When not under paved surfaces or surfaces where paving is not intended, the remainder of the trench shall be backfilled with soil that is not excessively wet, and is free from brush or vegetative matter, rocks larger than fist-size, pieces of concrete larger than fist-size, cinders, or any other matter which could prevent proper consolidation. Place in 12-inch lifts and compact with hand-held mechanical plate compactor, rammer or a sheepsfoot roller. Use a minimum of two passes.

When under paved surfaces or surfaces where paving is intended, the remainder of the trench shall be backfilled for the full depth with pit run sand, manufactured sand, Dense Graded Aggregate, or #57 stone as specified by the Kentucky Department of Highways Standard Specification for Road and Bridge Construction, (latest edition) “Fine Aggregates” or "Coarse Aggregates." Flowable Fill may be used if approved by the Company’s Project Manager. At pavement crossings, this pavement backfill shall extend five feet (5') beyond each end of the paving or proposed paving.

The final backfill in paved areas shall be placed and compacted in accordance with the following table.

Trench Backfill and Compaction Requirements Beneath Pavements						
	Max. Loose Lift Thickness (inches)				Min. # of Passes	Example Models
	MFD* Sand	Pit Run Sand	DGA	No. 57 Stone		
Lightweight Vib. Plate Compactors (100-220lbs)	8	8	6	8	3	Wacker-Neuson WP 1540; MBW GP18
Mediumweight Vib. Plate Compactors (220-660lbs)	12	12	9	12	3	MultiQuip MVH206GH; MBW GPR77H
Heavyweight Vib. Plate Compactors (>660lbs)	18	18	12	18	3	Wacker-Neuson BPU 4045A; MBW GPR135H
Smooth Drum Vibratory Rollers	12	12	9	12	3	Wacker-Neuson RTLx with Smooth Drum Att.
Equipment Mounted Compactors	24	24	24	24	3	Allied 1000B; Caterpillar CVP 110

*MFD=Manufactured

The total depth of cover (i.e., the vertical distance from crown-of-pipe to ground/pavement surface) shall be at least forty-two inches (42”) and no more than forty-eight inches (48”) unless approved prior to installation by the Company’s Project Manager.

See Standard Drawing: 4300 in Appendix of Drawings.

8. PLACING WATER MAIN IN SERVICE

8.1 General

After a section of main has been properly installed and valved, the main shall be filled, disinfected, pig cleaned, flushed, and pressure and leakage tested before being placed in service. The Company’s Project Manager or Inspector may require for the pressure test to be performed prior to the disinfection process.

The Contractor shall provide adequate personnel to assist the Company’s Inspector on-site for placing the water main in service.

The pig shall be inserted into the pipeline at the time of installation. Pipe soap shall not be applied directly to pigs. Pipeline pigs shall be supplied by the contractor unless otherwise specified in the Supplementary Specifications.

Disinfection, cleaning, and flushing of the water main must result with subsequent water samples passing all of the Company’s water quality tests.

8.2 Filling and Disinfection of the Water Main

8.2.1 Filling of the Water Main

The main shall be chlorinated prior to beginning the pigging operation and shall be filled from downstream of the pig. Contractors must use a flushing meter assembly with check valve for filling mains to account for water usage and provide backflow prevention.

The main shall be filled with hyperchlorinated water for at least 24-hours prior to the beginning of flushing operations.

The primary method of disinfection shall be the tablet method using a tablet chlorinator supplied by the Company’s Inspector. Use of granular calcium hypochlorite (HTH or equal) must be approved by the Company’s Project Manager or Inspector only if the tablet method is not feasible. If the granular method is approved, the granular calcium hypochlorite (HTH or equal) must be applied into each section of pipe during installation and prior to filling the water main. See Section 8.2.2.

While the pipe is filling, air shall be expelled through fire hydrants, air valves, or flushing connections as directed by the Company's Inspector.

The Contractor may be instructed to install additional taps as needed to facilitate the filling or expelling of air and they shall be provided at no additional cost to the Company. Abandoned taps shall be protected by covering with concrete.

All flushing connections, fill connections, discharge connections, and check valves shall be installed by the Contractor at locations indicated on the project drawings or as directed by the Company's Project Manager or Inspector if a fire hydrant or service connection cannot be utilized.

If not specified to be furnished by the Company, particular components of flushing/discharge hardware shall be furnished by the Contractor.

8.2.2 Disinfection of the Water Main

New or relocated water mains shall be disinfected in accordance with the requirements of the Kentucky Division of Water, Natural Resources and Environmental Cabinet and AWWA Standard C651 upon completion of construction and before being placed in service.

The primary method of disinfection shall be accomplished by using a tablet chlorinator while filling. The granular method is not the preferred method and must be approved by the Company's Project Manager or Inspector. For large volumes of water, the Company's chlorination trailer may be utilized using liquid chlorine (Sodium Hypochlorite 12.5%) supplied by the Contractor.

The tablet method utilizes a tablet chlorinator supplied by the Company's Inspector. Calcium Hypochlorite disinfecting tablets (Norweco Bio-Sanitizer or equal) shall be inserted into the tablet chlorinator. The tablet chlorinator must be fed by a 2" hose with a check valve placed upstream of the chlorinator, and shall then be connected to the water main by a 2" hose. All hoses used for the feed or supply line shall be supplied by the Company. If discharge hoses are needed, they shall be supplied by the Contractor. The Contractor shall lay out the hoses for the chlorination operation at the direction of the Company's Inspector.

The granular method is not preferred, but may be used for special circumstances as approved by the Company's Project Manager or Inspector. Use of this method requires the application of chlorine or chlorine compounds (calcium hypochlorite granules - HTH or equal) to each pipe length at the time of installation. The Contractor shall supply granular calcium hypochlorite or sodium hypochlorite as needed. Granular calcium

hypochlorite shall conform to ANSI / AWWA B300 and contain a minimum of 65% available chlorine by weight and be stored in a cool, dry, and dark environment to minimize its deterioration in accordance with the manufacturer’s recommendation. Granular calcium hypochlorite must meet NSF /ANSI Standard 60 requirements.

For large volumes of water, the Company’s chlorination trailer may be utilized using liquid chlorine (sodium hypochlorite 12.5%) supplied by the Contractor. Sodium hypochlorite liquid shall conform to ANSI / AWWA B300 and contain a minimum of 12.5% available chlorine by volume and the storage conditions and time must be controlled to minimize deterioration. Sodium hypochlorite liquid (12.5%) will freeze at -10 degrees Fahrenheit (F). Sodium hypochlorite liquid must meet NSF /ANSI Standard 60 requirements.

Any other disinfection methods not listed in this specification must be in accordance with the Kentucky Division of Water, Natural Resources and Environmental Cabinet and AWWA Standard C651 and shall be approved by the Company’s Project Manager.

The chlorination method selected shall provide a concentration of at least fifty (50) ppm and a residual of at least twenty-five (25) ppm at the end of 24 hours, to be followed by thorough flushing in compliance with 401 KAR 8:150 "Disinfection, Filtration, and Recycling ", Sections 4(1) and 4(2).

The following amounts of calcium hypochlorite tablets or granules or sodium hypochlorite liquid (@ 12.5 %, per 100 linear feet of pipeline, should produce fifty (50) ppm of chlorine:

Amount of Tablet or Granular Chlorine or Sodium Hypochlorite per 100 Linear Feet of Pipeline:			
Pipe Size	Number of calcium hypochlorite Tablets	Volume of calcium hypochlorite Granules	Volume of Sodium Hypochlorite @12.5% solution
4"	1/2 tablet	1/8 cup	0.031 gallons
6"	1/2 tablet	1/4 cup	0.072 gallons
8"	1/2 tablet	3/8 cup	0.126 gallons
12"	1-1/2 tablets	7/8 cup	0.286 gallons
16"	2-1/2 tablets	1-1/2 cups	0.501 gallons
20"	3-1/2 tablets	2-1/2 cups	0.787 gallons

After the disinfection procedure has begun, the Contractor shall tag-out and not operate any valves, including those newly installed, without consent and presence of the Company’s Project Manager or Inspector.

The Contractor shall perform the chlorination under the complete control of the Company’s Project Manager or Inspector.

8.3 Pigging and Flushing the Water Main

8.3.1 Pigging the Water Main

At the beginning of the pigging operation and under the direction of the Company’s Inspector, the upstream valve (feeder valve) shall be partially opened first and adjusted as needed after the pigging operation has begun. Next, the valve downstream of the pig (outlet valve) shall be opened immediately allowing the pig to move at approximately one (1) foot per second. When pushing the pig fed by a blow-off, flushing connection, or a tap, a check valve is required. All new ductile iron and PVC pipe installations shall be pigged. Pipeline pigs shall be supplied by the Contractor unless otherwise specified in the Supplementary Specifications. Pigs shall be used one time and discarded.

At no time shall trench water be allowed to enter the pipeline during or after the pigging operation. If trench water enters the pipe, the Company’s Inspector may require the water main to be disinfected and pigged again. Hyperchlorinated water shall be discharged through the end of the pipeline from which the pig shall be removed in accordance with the requirements of Section 8.4, “DISCHARGE OF HYPERCHLORINATED WATER”.

Following are the Outside Diameters (O.D.) for the Pigs. Due to the manufacturing process these can vary, + / - , by 1/8 to 1/4 inch.

C900 PVC Pipe (Blue Pigs)

4” DR 14	Pig O.D. = 4 - 1/8”
6” DR 14	Pig O.D. = 6”
8” DR 14	Pig O.D. = 7 - 7/8”
12” DR 14	Pig O.D. = 11 - 1/2”
4” DR 18	Pig O.D. = 4 - 3/8”
6” DR 18	Pig O.D. = 6 - 1/4”
8” DR 18	Pig O.D. = 8 - 1/8”
12” DR 18	Pig O.D. = 11 - 7/8”

Ductile Iron Pipe (Red Pigs)

4" PC 350	Pig O.D. = 4 - 1/2"
6" PC 350	Pig O.D. = 6 - 5/8"
8" PC 350	Pig O.D. = 8 - 3/4"
12" PC 350	Pig O.D. = 12 - 3/4"
16" PC 350	Pig O.D. = 17"

8.3.2 Flushing the Water Main

With respect to flushing, the Company's standard operating procedure is as follows. The flushing assembly is to be checked-out from the Company's Meter Shop by the Contractor and shall be returned in same or better condition by the Contractor within 5 days of the end of the flushing operations. The Company reserves the right to bill the Contractor for unreturned materials and/or repairs.

The meter/check valve portion of the flushing assembly is not to be installed until after the completion of disinfection and pigging operations (so as to protect the meter/check valve from internal damage caused by debris). Upon the completion of pigging operations and prior to the start of flushing operations, the meter/check valve is to be installed.

The Contractor is to supply a two inch (2") minimum sized discharge hose to be used during flushing operations. The Company's Inspector shall supply the feeder hose.

No flushing device, blow-off, or air relief valve shall be directly connected to any non-storm sewer ("Non-storm sewer" is defined as a sanitary sewer, combined sewer, septic tank or subsoil treatment system), storm sewer, or storm drain, and shall be located at a distance greater than ten (10) feet from any non-storm sewer.

See Standard Drawing: 1601, 1602, and 1603 in Appendix of Drawings.

8.4 Discharge of Hyperchlorinated Water

Discharge of hyperchlorinated water can be directed to combined or sanitary sewer facilities only after the Company's Project Manager has received approval from the Permit Section Supervisor of the Louisville and Jefferson County Metropolitan Sewer District (MSD) or other jurisdictional sewer agency authority. Flushing outside the MSD service area shall be in accordance with Kentucky Division of Water requirements. All flushing operations shall be in accordance with the governing authority's requirements, including rain event requirements.

The Contractor shall provide 72 hours of notice to the Company's Project Manager of their intent to discharge hyperchlorinated water. In locations

where discharge of hyperchlorinated water is restricted, the Company's Project Manager may approve tanker truck transportation for disposal at other sites. If hyperchlorinated water cannot be discharged to a combined or sanitary sewer, the hyperchlorinated water shall be neutralized to a chlorine concentration of less than 0.019 ppm (mg/L) before discharge to a storm drain or onto the ground surface in a manner which will not violate 401 KAR 5:031 Surface Water Standards.

The Contractor shall be responsible for all chlorinated water disposal (neutralized to acceptable levels per regulations prior to release) and adherence to "LWC Best Management Practice & Procedures on Chlorinated Water Disposal" and 401 KAR 5:031 and 401 KAR 8:020. The Contractor's disposal methods must have the approval of the Company's Project Manager. The Contractor is responsible for supplying all BMP's necessary to protect all storm inlets and waterways as required per Louisville and Jefferson County Metropolitan Sewer District or the applicable jurisdictional storm water authority.

The Company shall furnish all dechlorination hardware necessary for the dechlorination operation. The Contractor will be responsible for furnishing hoses and fittings required for the flushing operation.

The Company's Project Manager or Inspector shall reserve the right to postpone the dechlorination operation in the event of an anticipated major rain event or sub-freezing temperatures.

The Company's Project Manager or Inspector shall reserve the right to dechlorinate water with calcium thiosulfate (Captor), sodium thiosulfate, or other approved method supplied by the Company. For large volumes of water when the chlorination trailer is utilized, the Contractor shall supply the calcium thiosulfate or sodium thiosulfate in liquid form.

Calcium thiosulfate (Captor) will dechlorinate water with 50 ppm chlorine at a rate of one gallon of Captor per 4,000 gallons of hyperchlorinated water.

8.5 Pressure and Leakage Test

Before the hydrostatic test is begun, the Contractor shall: backfill all pipe, provide all temporary and permanent thrust anchor blocking, and install taps for releasing air at all points of highest elevation where no fire hydrant or flushing connection has been installed. All valves within the test area shall be fully open including valves on fire hydrant supply pipes.

It shall be the Contractor's responsibility to locate and repair any and all leaks that may develop.

The water main (ductile iron and PVC) and appurtenances shall be discharged of hyperchlorinated water, flushed and filled with potable water prior to performing the pressure and leakage test, unless directed otherwise by the Company’s Project Manager or Inspector.

The water main shall then be subject to a hydrostatic pressure of 200 PSI for ductile iron pipe, 200 PSI for PVC DR-14, and 150 PSI for PVC DR-18 or at a pressure specified by the Company’s Project Manager at the lowest point along the section being tested for a period of two (2) hours with the test pressure not dropping more than 5 PSI during the test. At elevated sections of the pipeline the minimum test pressure shall be 75% of the hydrostatic test pressure. In special circumstances, such as extreme elevation differential, the pressure test may be divided into multiple sections as directed by the Company’s Inspector or Project Manager.

In conjunction with the hydrostatic test, a leakage test shall be conducted at the same pressure and for the same period of time.

The leakage allowed will be as given by the following table. All of this testing shall be accomplished in the presence of the Company’s Project Manager or Inspector.

Allowable Leakage per 1000 feet of Ductile Iron or PVC Pipeline in gallons/hour.						
Pipe Diameter	4"	6"	8"	12"	16"	20"
D.I. or PVC DR14 Leakage @ 200 PSI (gal/hour)	0.38	0.57	0.76	1.15	1.53	1.91
PVC DR 18 Leakage @ 150 PSI (gal/hour)	0.33	0.5	0.66	0.99	1.32	1.66

All pipe, fittings, and other materials found to be defective under pressure and leak testing shall be removed and replaced. These tests shall be repeated until satisfactory to the Company’s Project Manager and Inspector. All visible leaks shall be repaired regardless of the amount of leakage. The pressure test shall be voided until such visible leaks are repaired.

The required testing apparatus, consisting of a gasoline motor driven pump, valves, pressure gauge, meter, test pump hose, and connections, shall be checked-out from the Company at 4801 Allmond Ave by the Contractor and returned to same location, the day the test is to be run, and shall be returned in same or better condition. The Company reserves the right to bill the Contractor for unreturned materials and/or repairs.

The Contractor may furnish a test pump if approved by the Company's Inspector and it shall be disinfected at the direction of the Company's Inspector. The test pump must be equipped with a quick-connect coupling to allow the connection of the Company Inspector's pressure gauge.

The Contractor shall be responsible for all phases of testing the water main.

8.6 Coliform Monitoring

The water main shall be placed in service only after coliform monitoring (sampling and analysis) applicable to the water main does not show the presence of coliform. If coliform is detected, repeat flushing of the water main and coliform monitoring. If coliform is still detected, repeat disinfection and flushing as if the line has never been disinfected. Continue the described process until monitoring does not show the presence of coliform. The presence or absence of total coliform monitored by sampling and analysis as needed shall be determined for new, cleaned, repaired or relocated water main(s).

Water samples shall be taken within 1,200 feet of each connection point to existing lines, at one (1) mile intervals, and at each dead end, without omitting any branch of the new, cleaned, repaired or relocated water main(s).

Sample bottles shall be clearly identified with a unique project identification note and delivered to the Company's Water Quality Laboratory.

8.7 Air Relief Valves

Air relief valves or hydrants shall be placed at necessary high points in water mains where air can accumulate. The Contractor shall install air relief valves at all locations as identified on project plans. Additional air relief valves that may be required by the Company's Project Manager will be compensated as described in **CHANGES IN THE WORK**, in the **TERMS AND CONDITIONS**.

Corporation stops for air relief valves shall be installed with tapping saddles to minimize pig damage when pig cleaning the water main.

8.7.1 Automatic Air Relief Valves

Where practical, the open end of an air relief pipe from automatic valves shall be extended a minimum distance of one foot (1') above grade and provided with a screened, downward-facing elbow.

Automatic air relief valves shall not be installed in situations where the flooding of the manhole or chamber may occur.
See Standard Drawing: 1603 in Appendix of Drawings.

8.7.2 Manual Air Relief Valves

The open end of an air relief pipe from a manually operated valve shall be extended to the top of the pit and provided with a screened, downward-facing elbow if drainage is provided for the manhole.

Use of automatic air relief valves are recommended wherever possible.
See Standard Drawing: 1603 in Appendix of Drawings.

8.8 Leak Detection By-Pass Meter at Underwater Crossings

Leak Detection By-Pass Meters are required at all underwater crossings which are greater than fifteen feet (15') in width.

Water main valves shall be installed at both sides of the water crossing so that section can be isolated for testing or repair. The valves and meter vault shall be easily accessible and not subject to flooding. The valve closest to the supply source shall have permanent taps on each side to allow the installation of a meter to determine leakage and for sampling purposes.

See Standard Drawing: 1608 in Appendix of Drawings.

9. FIRE HYDRANT

9.1 Materials and Installation

The fire hydrant installation shall consist of the following items and shall be as shown on the project drawing's detail sheet.

The field location of fire hydrants shall be approved by the Company's Inspector prior to installation. Fire hydrants shall be installed to allow proper drainage. When fire hydrants are located on project drawings in areas of poor drainage, the Contractor shall contact the Company's Project Manager or Inspector for movement to a suitable location. The fire hydrant shall be furnished by the Company, designed for proper depth of bury, and shall be so installed that the barrel will properly drain. Effort shall be made to install the shortest hydrant possible, while complying with the requirements of this section.

The fire hydrant anchor tee and auxiliary gate valve shall be installed as the main is installed. A tapping sleeve and gate valve shall be installed if the main is in service. The auxiliary valve shall be installed at the main. Fire

hydrant supply pipe (pipe, fittings, gate valve, and fire hydrant) must be secured to the water main for proper thrust restraint. All joints in the fire hydrant supply pipe (between fire hydrant and the main to which it is connected) shall be installed using a restrained joint method. Concrete is not required on direct bolt non-friction type restrained joint fittings between the fire hydrant and the auxiliary valve.

The fire hydrant supply pipe shall be ductile iron pipe, in all cases, regardless of the type of main being connected to. The fire hydrant supply pipe shall be a minimum diameter of six (6) inches and connected to a main with a minimum diameter of six (6) inches.

The fire hydrant shall be set plumb and shall have the pumper nozzles set facing perpendicular to the curb. The bottom of the break-away flange bolts shall be located from two inches (2") to seven inches (7") above finished grade, with the center of the nozzle a minimum of eighteen inches (18") above finished grade.

The fire hydrant shall be set to established grade, with the center of the barrel two feet (2') back of the face of the curb line (eighteen inches (18") behind the back edge of the curb for rolled curbs) or as directed, or in the absence of a curb approximately five feet (5') to fifteen feet (15') from the edge of the pavement, no more than fifteen feet (15') from a hard traveled surface, in accordance with governing fire department ordinances and accessible to the fire department. The base of the fire hydrant shall be set on a precast concrete block. The back of the elbow shall be well supported against undisturbed earth by means of precast concrete blocks.

Where fire hydrants are installed along a roadway, parking within ten feet (10') will be prohibited. Fire hydrants installed in parking areas must allow ten feet (10') clear access to the hose connection side of the fire hydrant. In all locations a four feet (4') minimum clear radius around the fire hydrant is required.

Two layers of polyethylene wrapping shall be installed from the fire hydrant anchor tee to the base elbow of the fire hydrant, including the fire hydrant valve, connecting pipe, and thrust restraints. The wrapping shall not extend to the weep holes located on the hydrant elbow. Do not install polyethylene wrapping on the hydrant barrel.

Fire hydrant barrel extension kits shall not be used for new fire hydrant installations unless approved by the Chief Engineer or designee prior to requisitioning from the Company's Warehouse. No more than one (1) fire hydrant barrel extension kit shall be used on an existing fire hydrant when raising is required. All fire hydrant barrel extension kits must be installed by the Company's Fire Hydrant Crew. Unless, if approved by the

Company's Chief Engineer, the Contractor may install the extension kit in the presence of the Company's Inspector.

Fire hydrant wrenches shall never be left unattended on a fire hydrant.

When flowing a fire hydrant the operating nut must be opened completely to prevent flooding through the hydrant's weep holes. Flow shall be regulated by the temporary meter assembly valve attached to the fire hydrant's discharge nozzle. The Inspector must notify the Company's Radio Room (569-3600, ext. 2700 or 2701) of all hydrants flowed between November 1 and March 31 so the hydrant can be winterized after use to prevent freezing.

Some fire hydrants have a locking device attached to prevent unauthorized use. The Contractor shall notify the Company's Inspector 48 hours in advance of the need to use such a fire hydrant so the lock can be removed by the Company's personnel. The Contractor shall immediately notify the Company's Inspector when the fire hydrant is no longer needed so the lock can be re-installed.

The Contractor shall notify the Company's Inspector of any "Out of Service" fire hydrants. "Out of Service" fire hydrant tags shall be placed on the nozzle of all inoperable or "Out of Service" fire hydrants.

The Contractor shall paint fire hydrants after installation at the Company Inspector's request to cover scraped or chipped areas on the fire hydrant, or to match the fire hydrant color chosen by the local Fire District. Fire hydrant paint will be supplied by the Company's Warehouse. Fire hydrant attachment number labels shall not be painted over.

Fire hydrant attachment number labels shall be installed by the Company's personnel.

The Contractor shall assist the Company's Inspector in fire hydrant flow testing and perform any clean-up necessary after tests are completed.

See Standard Drawing: 2000 in Appendix of Drawings

9.2 Drainage Pit

Whenever a fire hydrant is set, a drainage pit shall be excavated for the fire hydrant. Dimensions of the pit shall be three (3) ft. long x three (3) ft. wide x four (4) ft. deep, with the pit centered about the barrel of the fire hydrant. Once the fire hydrant is installed and prior to filling the pit with washed #3 stone, the fire hydrant shall be pressurized, the weep holes flushed and then depressurized to ensure that the fire hydrant drains properly. Once the weep

holes have been flushed and proper drainage is verified, the drainage pit shall be filled compactly with washed #3 stone under and around the elbow of the fire hydrant and to a level of two feet (2') above the base of the elbow.

Before this dry well (drainage pit) is covered with backfill, the Contractor shall notify the Company's Inspector in order that each drainage system may be inspected. The top of the entire drainage pit shall be covered with geotextile fabric (four fire hydrant blankets or as many needed to cover the entire top) before backfilling.

Fire hydrant drainage pits shall not be connected to or located within ten (10) feet of non-storm sewers ("Non-storm sewers are defined as sanitary sewers, combined sewers, septic tanks and subsoil treatment systems), and where practical storm sewers or storm drains.

See Standard Drawing: 2000 in Appendix of Drawings

9.3 Removal of Fire Hydrants

Fire hydrants that are discontinued, abandoned or replaced shall be removed and returned with caps to the Allmond Avenue Warehouse. The Contractor shall be billed for any fire hydrants not returned. Surfaces shall be restored in accordance with Section 11: "RESTORATION".

9.3.1 Removal of Fire Hydrants on Active Water Mains

All discontinued fire hydrants shall be abandoned by turning off the fire hydrant's connecting valve and excavating and removing the fire hydrant and fire hydrant lead.

The hydrant's gate valve shall be turned off and a mechanical joint plug installed on the gate valve. A concrete thrust block shall be poured behind the plug. The fire hydrant gate valve's round top and lid shall be removed and the key tube filled with concrete.

9.3.2 Removal of Fire Hydrants on Abandoned Water Mains

Fire hydrants which are abandoned with the water main, in lieu of removal by excavation and with approval of the Company's Project Manager, the fire hydrant may be cut off no less than one foot (1') below finished grade, the abandoned barrel filled with concrete, the fire hydrant gate valve turned off, round top and lid removed, and key tube filled with concrete.

10. SERVICE WORK

10.1 Notification of Customers

It is the Contractor's responsibility to notify customers of upcoming interruption of service and to coordinate this notification with the Company's personnel. It is the intent of the Company not to interrupt service to existing customers, unless absolutely necessary. When it is necessary to interrupt service, all customers affected by the shut-off shall be notified in person, or in cases where the customer cannot be contacted, by a Louisville Water notification tag attached to the front door of their premises by the Contractor.

Such notification shall be made a minimum of twenty-four hours prior to shut-off and with the Company's approval, allowing sufficient time for the customer to draw and reserve an ample supply of water. Notification tags are available from the Company.

10.2 Service Installation - General

A service installation is defined to include all work necessary to install the copper tubing or pipe and all related items from the main to the property line. The installation shall include, the following: tapping of the main, installing the corporation stop or gate valve; service line tubing or pipe, meter vault, ductile or cast iron frame and lid/cover, water meter assembly, backfilling and restoring of paved and unpaved surfaces and flushing. Installation may require reconnection to existing service lines. Excavation, backfilling, and restoring paved and unpaved surfaces shall be done in accordance with these specifications.

Short services are defined as services to meters on the same side of the street as the water main to which it is connected.

Long services are defined as services to meters on the opposite side of the street of the water main to which it is connected and shall be bored or jacked under pavements unless an open cut is approved by the Company's Project Manager.

The Contractor must verify the service size with the Company's Project Manager or Inspector where any service length is greater than one hundred feet (100').

Where under pavement, tubing shall be installed continuously and in one piece without intermediate joints or couplings except at the terminals and except where the continuous length to be installed exceeds one hundred feet (100') for 3/4" and 1" sizes.

All taps in water mains shall be made by the Contractor, and corporation stops shall be inserted by means of a tapping machine in such manner that will permit continued conditions of water flow and pressure within these mains. The Contractor shall use care in inserting and tightening the corporation stop and shall reimburse the Company for any damage or expense caused by any of their activities under this contract. Wet tapping of water mains shall be required on all pipe. No service taps shall be installed on dry water mains.

10.3 Service Installation - Two Inches (2") and Smaller

During installation of corporation stops, the corporation stop shall not be turned using a pipe wrench. The corporation stop must be turned using a smooth jaw, adjustable crescent type wrench or open-end wrench. Special care shall be observed in handling the copper tubing so as not to kink, mash, or otherwise damage it. No such damaged tubing shall be installed. No bend shall be made in the tubing with a radius less than four inches (4").

All intermediate and terminal joints for 3/4" and 1" sizes of copper tubing shall be the compression type, using the proper tools for the sizes of tubing and types of fittings involved.

Service connections shall be installed so that the outlet is at an angle of 45° above the horizontal. A bend in the service line shall be provided to ensure flexibility and to accommodate the effects of loads.

The service line shall be flushed for two (2) minutes through the meter stop before connecting to the meter. Once the corporation stop has been turned on, and prior to backfilling, the corporation barrel set nut may need to be securely tightened to prevent leakage.

For Double Setter meters (where two meters are to be installed in one vault) the tail pipes of a service installation shall be installed parallel for their entire length and at least eight inches (8") apart, and in no event shall they touch or cross one another.

See Standard Drawings: 3002, 3003, 3004, 3400, 3401, 3403, 3404, 3420, 3430, 3200, and 3202 in Appendix of Drawings

10.3.1 Tapping Ductile or Cast Iron Pipe for Service Installation - Two Inches (2") and Smaller

In locations where Ductile Iron or Cast Iron Pipe will be tapped, the pipe shall be wrapped with three (3) layers of polyethylene compatible tape completely around the pipe to cover the area where the tapping machine and

chain is mounted. The tap shall install the corporation stop directly through the tape and polywrap.

After the tap is completed on mains with polyethylene wrap, the Contractor shall repair and replace the polyethylene wrap to completely cover the main and corporation stop in accordance with the details in the Appendix of Drawings.

The corporation stop and a minimum distance of three feet (3') of the copper service line shall be wrapped with polytape.

For ductile iron pipe Pressure Class 350 service outlets shall be made per the table below:

Service Installation Guide for Pressure Class 350 Ductile Iron Pipe					
Pipe Size	Tap Size				
	3/4"	1"	1-1/2"	2"	> 2"
4"	tap	saddle	saddle	saddle	requires tapping
6"	tap	tap	saddle	saddle	sleeve or fitting
8"	tap	tap	saddle	saddle	"
12"	tap	tap	saddle	saddle	"
16" & 20"	tap	tap	tap	tap	"

All direct taps require the installation of 2 to 3 layers of 3-mil thread sealant tape on the corporation stop. This guide is based on either a direct tap method or tapping saddle using an AWWA standard taper thread Corporation Stop.

See Standard Drawings: 3002, 3003, 3004, 3400, 3401, 3403, 3404, 3420, 3430, 3200, 3202 and 3804 in Appendix of Drawings

10.3.2 Tapping PVC Pipe for Service Installation - Two Inches (2”) and Smaller

For PVC (polyvinyl chloride) pipe, service outlets of three-quarter inch (3/4") through two inches (2") shall be made with a tapping saddle.

Tapping saddle bolts shall be tightened with a torque wrench according to the saddle manufacturer’s torque recommendations.

When installing a service to PVC, the Contractor shall use a shell cutter that is designed for DR14 (pressure class 200, AWWA C900) or DR18 (pressure class 150, AWWA C900) and one that will remove the material and retain the coupon. The cutting tool must be sharp and without damage. Drill

cutting tools are prohibited because they may increase the risk of causing the pipe to split longitudinally. The coupon must be delivered to the Company's Inspector.

When tapping the PVC pipe under pressure, the pipe temperature shall be between 32° and 90° F.

The taps shall be located a minimum of twenty-four inches (24") from the joint of the PVC pipe, and, if installing more than one tap in one length of PVC pipe, the taps shall be staggered and a minimum of eighteen inches (18") apart, measured longitudinally. Taps shall not be made in an area of PVC pipe that shows damage.

When a service tap is made on a PVC water main, a tracer wire shall be connected to the tracer wire on the main and then wrapped, with insulation and jacket removed, around the copper service line or affixed to the tapping saddle. When connecting the tracer wire to a tapping saddle, add two washers and a second nut to one of the bolts of the saddle. Strip a small section of the wire jacket and sandwich the bare portion of wire between the two washers and tighten the second bolt. Tracer wire must be rated for direct burial at 30 volts and be 12 AWG solid copper, copper clad steel (CCS), or high strength copper clad steel (CCS). Tracer wire shall be jacketed with blue HDPE or HMWPE insulation and designed for direct burial.

See Standard Drawings: 3002, 3003, 3004, 3400, 3401, 3403, 3404, 3420, 3430, 3200, 3202, and 3804 in Appendix of Drawings

10.4 Service Installation – Larger than Two Inches (2")

Service outlets larger than two inches (2") shall be made with a ductile iron tee or stainless steel or ductile iron tapping sleeve and gate as directed by the Company's Project Manager or Inspector on new ductile iron or PVC pipe.

When tapping a main, the Contractor shall make the tap only after a hydrostatic pressure test of 125 psi is applied for fifteen (15) minutes with no leakage to the tapping sleeve and gate valve assembly. Before cutting an existing main under pressure, the Contractor shall ensure the adjacent existing valve and fittings are sufficiently secure. The Contractor shall be responsible to provide the tapping coupon to the Company's Inspector.

The service line shall be flushed for two (2) minutes through the meter stop before connecting to the meter.

There shall be no tapping of same size on same size pipe with tapping sleeve

and gate, a tee must be installed.

10.4.1 Tapping Ductile or Cast Iron Pipe for Service Installation - Larger than Two Inches (2")

After the tap is completed on mains with polyethylene wrap, the Contractor shall repair and replace the polyethylene wrap to completely cover the main and fittings in accordance with the detail in the Appendix of Drawings.

See Standard Drawings: 3203A, 3203 and 3601 in Appendix of Drawings

10.4.2 Tapping PVC Pipe for Service Installation – Larger than Two Inches (2")

When installing a service on PVC water main, the Contractor shall use a shell cutter that is designed for DR14 (pressure class 200, AWWA C900) or DR18 (pressure class 150, AWWA C900) and one that will remove the material and retain the coupon. No twist drills will be allowed. The cutting tool must be sharp and without damage. The coupon must be delivered to the Company Inspector.

When tapping the PVC pipe under pressure, the pipe temperature shall be between 32° and 90° F. The taps shall be located a minimum of twenty-four inches (24") from the joint of the PVC pipe. Taps shall not be made in an area of PVC pipe that shows damage.

Tapping sleeves shall be assembled according to the manufacturers' instructions and must be supported independently of PVC pipe by precast concrete blocks during the tapping operation. The support shall be left in place, filling any voids such that the pad is bearing against undisturbed earth, and thrust blocks behind tapping sleeves shall be used as with other fittings.

When a service tap is made on a PVC water main, a tracer wire shall be connected to the tracer wire on the main and then wrapped, with insulation removed, around the service line gate valve and extend to the top of the key tube. Tracer wire must be rated for direct burial at 30 volts and be 12 AWG solid copper, copper clad steel (CCS), or high strength copper clad steel (CCS). Tracer wire shall be jacketed with blue HDPE or HMWPE insulation and designed for direct burial.

See Standard Drawings: 3203A, 3203 and 3601 in Appendix of Drawings

10.5 Meters

Contractor shall install or replace meters as stated on the Project Drawings or at the direction of the Company's Project Manager or Inspector. New meters shall be picked up by the Contractor at the Meter Shop located at 4801 Allmond Avenue. Old meters shall be returned in good condition to the Company's Inspector, including any lids or tags that may identify the meter number or attachment number.

10.6 Setting Meter Vaults

Meter vaults shall be set either to the existing grade, or as indicated on the service order or to the grade given by a stake card. Earth shall be firmly tamped by pneumatic, vibratory or other approved compaction device and backfilled per Section 7: "BACKFILLING PROCEDURES AND TAMPING" around the vault and cover, the lid locked in and the meter setting centered in the middle of the vault and at the proper depth below grade, as shown on the drawing in the Appendix of Drawings.

Meter vaults shall not be installed in areas subject to vehicular traffic whenever possible. When directed to be installed in areas subject to vehicular traffic, the meter vault shall be of the heavy-duty concrete type with heavy duty frame and cover.

See Standard Drawings: 3002, 3003, 3004, 3400, 3401, 3403, 3404, 3420, 3430, 3200, 3202, 3203, and 3601 in Appendix of Drawings

10.7 Pressure Regulators (Pressure Reducing Valves)

When directed by the Company's Project Manager, the Contractor shall install a pressure regulator (pressure reducing valve). The pressure regulator shall be installed on the front side (upstream) of the meter. When the pressure at the meter is 100 psi or greater, the Contractor shall install a pressure regulator as directed by the Company's Project Manager or Inspector. Pressure regulators shall be supplied by the Company unless otherwise stated in the Contract Documents. The Contractor shall perform an operability test and check for leaks after the pressure regulator has been installed.

See Standard Drawings: 3003, 3004, 3401, and 3202 in Appendix of Drawings

10.8 Leak Testing the Service

After the complete service has been installed and before any joints are covered, the corporation stop shall be opened and the entire length of the

service shall be subjected to system water pressure and each joint shall be inspected and sounded by the Contractor for leaks. The entire tailpiece shall be included in this leak check by temporarily capping the end of the tailpiece prior to connection to the customer

Any leaks so found shall be immediately repaired. After the service has been observed by the Company's Inspector to be watertight throughout its length, the meter stop shall be shut-off, and the backfilling started. The corporation barrel set nut may need to be securely tightened to prevent leakage.

The Contractor shall leave the corporation stop fully open and the meter angle stop fully closed upon completion of the testing.

10.9 Relocate Service

Relocating a service is defined to include installing a completely new service to an existing customer, including a new tail pipe, discontinuing the old service at the main (in the event the existing main is to remain active), abandoning the old meter vault, and returning the old meter, frame and lid/cover to the Company's Allmond Avenue Yard and backfilling.

Concrete meter vaults and heavy-duty frame and covers shall be used in driveways, parking lots, and other areas of vehicular traffic.

Service installation shall be done in accordance with "Service Installation – Two Inches (2") and Smaller, (Section 10.3) and Service Installation – Larger than two inches (2")", (Section 10.4). The Contractor shall discontinue the old service in accordance with "Discontinue Service" (Section 10.16). Excavation, backfilling, and restoring of surfaces shall be done in accordance with these specifications. Abandoning of the old meter vault shall be done in accordance with "Backfill Meter Vault" (Section 10.17).

When lead is encountered, refer to Section 10.11, "Lead and Galvanized Service Renewals."

Contractors shall be responsible to make at least two (2) attempts when connecting the tailpiece to a customer's galvanized service line. The second attempt shall be limited to a maximum of three feet (3') beyond the property line or to any property improvement which would require excessive restoration. If the second attempt is unsuccessful, the Contractor shall immediately contact the Company's Inspector, and provide a representative sample of the deteriorated line, at which time, the Company's Project Manager or Inspector shall arrange for a temporary service connection to the customer to be installed by others.

See Standard Drawing: 3440 in Appendix of Drawings

10.10 Renew Service

Renewing a service is defined to include installing a new copper service line from the existing main or new main to the meter stop, and a new copper tail pipe from the meter stop to the property line or the property service connection, and shall include, the following: excavation, boring or jacking of copper tubing or pipe, installing corporation stop, tapping saddle or tapping sleeve and gate valve at the main, if applicable, installing all tubing and/or pipe and all associated fittings, meter vault, frame and lid/cover, and backfilling and restoring of all surfaces.

Service installation shall be done in accordance with “Service Installation – Two Inches (2”) and Smaller, (Section 10.3) and Service Installation – Larger than two inches (2”), (Section 10.4). The Contractor shall discontinue the old service in accordance with “Discontinue Service” (Section 10.17). All lead service lines shall be renewed in accordance with “Cutting Lead Pipe” (Section 10.13) and “Flushing of Lead and Galvanized Services” (Section 10.14) unless otherwise instructed on the project drawings. Excavation, backfilling, and restoring of surfaces shall be done in accordance with these specifications.

When lead is encountered, refer to Section 10.11, “Lead and Galvanized Service Renewals.”

Contractors shall be responsible to make at least two (2) attempts when connecting the tailpiece to a customer’s galvanized service line. The second attempt shall be limited to a maximum of three feet (3’) beyond the property line or to any property improvement which would require excessive restoration. If the second attempt is unsuccessful, the Contractor shall immediately contact the Company’s Inspector, and provide a representative sample of the deteriorated line, at which time, the Company’s Project Manager or Inspector shall arrange for a temporary service connection to the customer to be installed by others.

See Standard Drawing: 3441 in Appendix of Drawings

10.11 Lead and Galvanized Service Renewals

Renewing a lead or galvanized service is defined to include installing a new copper service line from the existing main or new main to the meter stop, and a new copper tail pipe from the meter stop to the property service connection, and shall include, the following: excavation, boring or jacking of copper tubing or pipe, installing corporation stop, tapping saddle or tapping sleeve and gate valve at the main, if applicable, installing all tubing and/or pipe and all associated fittings, meter vault, frame and lid/cover, and backfilling and restoring of all surfaces.

The Contractor is required to identify the property line location and excavate the service line's tail piece to locate the property service connection. If the property service connection is not found, the Contractor shall seek permission from the property owner to excavate on private property. With permission, the Contractor shall continue to excavate up to ten feet (10') beyond the property line onto private property in an effort to locate the property service connection and determine the material of the customer's service line. The Company's Inspector shall verify the material of the customer's service line prior to cutting any pipe.

If the material of the customer's service line is not lead, the Contractor shall renew/relocate the entire service line from the main to the customer's connection.

If the material of the customer's service line is lead or galvanized pipe, the Company's Project Manager or Inspector will contact the customer to make them aware of the work to be completed by the Company and the existence of lead or galvanized pipe on the customer's side of the service line. The Company's Inspector shall also enquire if the customer is willing to replace their lead or galvanized service line.

- 1) If the customer is willing to replace their lead or galvanized service line, the Contractor shall coordinate the renewal/relocation of the Company's lead or galvanized service line with the customer's plumber.
- 2) If the customer is not willing to replace their lead or galvanized service line and the service is to be relocated or renewed, the Contractor shall replace the entire service line from the main to the customer's connection and shall install a dielectric between the end of the Company's tail piece and the customer's lead or galvanized service line. The dielectric will be composed of a 24" section of like diameter schedule 80 PVC pipe and a plastic universal transition coupling (supplied by the Company). If the customer's service line is less than 10 feet in length as measured from the customer's building to the dielectric connection, the Company's Project Manager shall be contacted prior to renewing/relocating the service to determine if a new grounding system is needed.

Service installation shall be done in accordance with "Service Installation – Two Inches (2") and Smaller, (Section 10.3) or Service Installation – Larger than two inches (2")", (Section 10.4). The Contractor shall discontinue the old service in accordance with "Discontinue Service" (Section 10.17). All lead service lines shall be renewed in accordance with "Cutting Lead Pipe" (Section 10.13) and "Flushing of Lead and Galvanized Services" (Section 10.14) unless otherwise instructed on the project drawings. Excavation, backfilling, and restoring of surfaces shall be done in accordance with these

specifications.

See Standard Drawing: 3441 in Appendix of Drawings

10.12 Lead Hazards and Safety Precautions

Pure lead (Pb) is a heavy metal that can damage the central nervous system, cardiovascular system, reproductive system, hematological system, and kidneys. Symptoms of chronic overexposure include loss of appetite, constipation, nausea, excessive tiredness, headache, fine tremors, metallic taste in the mouth, weakness, nervous irritability, hyperactivity, muscle and joint pain or soreness, anxiety, insomnia, numbness, or dizziness. Lead is most commonly absorbed into the body by inhalation. Workers can also absorb lead through the digestive system if it enters the mouth and is ingested. A significant portion of lead inhaled or ingested can enter the bloodstream. Once in the bloodstream, lead circulates through the body and is stored in various organs and body tissues. Some of this lead is filtered out of the body quickly and excreted, but some remains in the blood and tissues.

Personnel performing lead service line removal activities shall:

- Wear disposable gloves when handling lead.
- Dispose of gloves and other materials that contact lead as trash on a regular basis.
- Be careful to not touch eyes or face.
- Wash hands before eating or smoking.
- Wash work clothes regularly.
- Contact management if they feel that they have been affected by lead exposure.

Information taken from 'OSHA – Lead in Construction', OSHA 3142-12R 2004

10.13 Cutting Lead Pipe

When the cutting of pipe made of lead is required, the pipe shall be cut with a shear device, such as Reed Ratchet Shears or similar device, as approved by the Company's Project Manager. Sawing of lead pipe shall not be allowed. The Company encourages contractors to recycle any lead service pipe that is removed.

10.14 Flushing of Lead and Galvanized Services

Flushing of renewed lead services shall be conducted immediately after the renewed service is reconnected at maximum flow. Flushing shall be continued

for a minimum of sixty (60) minutes. Flushing of the service for sixty (60) minutes shall also be conducted if a copper service is renewed and it is connected to a dielectric and private lead service line. If a galvanized service that has not been previously connected to lead is renewed, it shall be flushed for a minimum of five (5) minutes. If any part of the galvanized service is connected to lead, then the service shall be flushed for a minimum of sixty (60) minutes.

The Contractor shall be responsible for supplying all hoses, fixtures, and couplings needed to perform the lead service flush.

The Contractor shall identify, on a daily basis, those services that will require renewal on the following workday. Residences requiring lead or galvanized service renewals shall be investigated to determine if an outside spigot is available and functioning properly. The Contractor shall notify the Company's Inspector when an outside spigot is not available or not properly functioning in order for the Company's Inspector to contact the customer.

Services that cannot be flushed externally by the Contractor or internally by the customer at the time of the renewal, may be renewed, but shall be left in the "off" position immediately after the renewal is completed. The Contractor shall immediately notify the Company's Inspector when any service is turned "off" in order for the Company's Inspector to leave appropriate notification with the customer and notify the Company's Radio Room.

10.15 Lead Service Renewal Notification

The Contractor shall assist the Company's Inspector with distributing customer information and notices to all properties in which a lead service is to be renewed or replaced, as directed by the Company's Inspector. Notices are supplied by the Company and typically composed of self-adhesive window hangers or door hangers.

10.16 Transfer Service

Transferring a service is defined to include installing a length of service line, as required, to reconnect an existing copper service to the existing main or new main, and shall include, the following: excavation; boring or jacking of copper tubing or pipe; installing corporation stop; tapping saddle or tapping sleeve and gate valve at the main; installing all tubing and/or pipe and all associated fittings; and backfilling and restoring of all surfaces.

Service installation shall be done in accordance with "Service Installation – Two Inches (2") and Smaller, (Section 10.3) or Service Installation – Larger than two inches (2")", (Section 10.4). The Contractor shall discontinue the old service in accordance with "Discontinue Service" (Section 10.17).

Excavation, backfilling, and restoring of surfaces shall be done in accordance with these specifications.

When lead is encountered, refer to Section 10.11, "Lead and Galvanized Service Renewals."

See Standard Drawing: 3442 in Appendix of Drawings

10.17 Discontinue Service

Discontinuing a service is defined to include excavating a service line at a water main that is to remain active, turning off the corporation stop or ferrule, disconnecting and plugging the service line, returning the old meter, frame and lid/cover to the Company's Allmond Avenue Yard, backfilling the meter vault, and restoring all surfaces.

Driven ferrules, which are not threaded onto the main, will require water main shutdown, removal, and installation of a wrap-around repair band. Driven ferrules can be expected on most lead services.

Excavating, backfilling, and restoring of surfaces shall be done in accordance with these specifications. Abandoning the old meter vaults shall be done in accordance with "Backfill Meter Vault" (Section 10.18).

See Standard Drawing: 3442 in Appendix of Drawings.

10.18 Backfill Meter Vault

Meter vaults on all discontinued or relocated services shall be abandoned by removing the old meter, frame and lid/cover, and any existing curb stop frame and lids, and filling the void to existing grade with backfill and surface material, appropriate to the type surface. Unpaved areas shall be backfilled to grade with topsoil and restored in accordance with "RESTORATION" (Section 11).

Sidewalks shall be backfilled with pit run sand or DGA and repaved in accordance with "RESTORATION" (Section 11). Parking lots, driveways, and other areas subject to vehicular traffic shall be backfilled using DGA and restored in accordance with "Twelve-Inch (12") Cutback Requirement" (Section 5.4.2), "BACKFILLING PROCEDURES AND TAMPING" (Section 7), and "RESTORATION" (Section 11) found in this specification.

All meters and frames and lids/covers shall be returned to the Allmond Avenue warehouse. The Contractor shall be responsible for all remedial work due to discontinuation of meter vaults as required in the section "WARRANTY" (Section 12).

10.19 Potential Shock Hazard

Due to electrical grounding of some electrical services to metal water service lines, the potential for electrically charged water service lines and/or water meters exists.

The Contractor shall check each service for electric potential before working on the service. Any electrically charged water service shall immediately be brought to the attention of the Company's Inspector and reported to the appropriate electric company.

11. RESTORATION

11.1 General

The Contractor shall be responsible for restoring all disturbed areas resulting from their construction or activity.

A maximum of 1,500 lineal feet may be disturbed at one time prior to final grade. Restoration of the area is required before the Contractor is permitted to proceed.

The Contractor shall work no more than two sites at a time. At least one site must be fully restored with the exception of milling and paving before the Contractor begins working on the next site. This work includes yard, sidewalk and curb restoration as well as the patching of all road cuts.

The Contractor is to take whatever measures are necessary to keep all traveled surfaces free of dirt, mud, or other material during all non-working hours. Unless otherwise approved by the Company's Project Manager, no excavated material shall be placed on the paved surface or any other areas near the trench; the excavated material shall be placed directly from the trench to the haul truck. The Contractor shall provide adequate dust control and follow all governing regulations applicable to the work.

Repaving over the completed trench shall be done by the Contractor, who shall furnish all materials required. Repaving shall match the original paving in type, shall be first class in all respects, and shall comply with specifications covering the type of paving to be restored as issued by the authority over the thoroughfare involved.

The restoration of parking lots and driveways serving commercial and/or public establishments shall comply with the specifications of the respective authority having jurisdiction over the abutting right-of-way.

Except for parking lots, driveways, and sidewalks, each individual pavement restoration shall have a Company-supplied pavement marker

installed by the Contractor.

All saw cuts shall be straight and perpendicular to the driveway / roadway. Restoration shall be made with the same type material and finish that is removed. Street restoration shall be as specified in the detail for Backfill and Pavement Restoration in accordance with the Appendix of Drawings, pending the jurisdiction of said street, included in these specifications. Permanent restoration of driveway, sidewalks, and street intersections shall be completed by the Contractor within ten working days after backfilling of trench is complete. If restorations are not completed, the Company may, at its option, have the repairs made by others and deduct those costs from the amount owed to the Contractor.

11.2 Asphalt Paved Surfaces

All Asphalt pavement cuts are to be restored in accordance with the permanent pavement restoration details as shown in the Appendix of Drawings.

Pavement cuts are to be uniform width and straight sawed edges. All asphalt pavement trench edges shall be saw cut regardless of paving restoration (full lane, complete roadway, etc.). Use of a hoe ram for cutting pavement trench edges is not allowed. An approved joint sealer is to be used to seal all joints between new and existing pavement. In the event asphalt plants have closed due to cold weather, the Contractor shall maintain all pavement cuts with recessed steel plates or temporary asphalt pavement, until it becomes possible to permanently restore the pavement. Asphalt pavement used for permanent pavement restoration shall have a minimum temperature of 225°F as measured when discharged from the truck.

Particular care is to be taken that existing pavement surfaces within the right-of-way are not scarred or otherwise damaged by equipment. Planking or other protective devices are to be used at all times to prevent damage to paved surfaces from tracked equipment.

In the event the asphalt paved surfaces are damaged or scarred by work on this project, resurfacing is to be required as follows:

- 1) If scarring or other damage is continuous, resurfacing is to be likewise continuous and is to consist of one and one-half inches (1 ½") Class A bituminous surfaces extending to the edge of damaged lane.

The edge of the damaged pavement shall be edge keyed, with the resurfaced section being flush with the undisturbed adjacent pavement surface, allowing roadway surface drainage not to be obstructed.

- 2) If scarring or other damage is determined to be intermittent, individual or paved patches may be permitted and are likewise to consist of Class A bituminous surface, extending to the edge of the damaged lane.
- 3) All damage to the edge of pavement shall require the removal of and base repair of a minimum of two feet (2') in addition to the maximum width of the damage. The longitudinal edge is to be a uniform width with straight sawed edges. The lane is then to be milled a minimum of five feet (5') in width with a two inch (2") minimum asphalt overlay.

There will be no skip milling allowed and the minimum length will be determined in the field by the Company's Inspector or Project Manager.

All joint sealant material shall be: hot-applied, non-water-based, and produced by a competent and reputable manufacturer. Sealant shall be in accordance with the permitting agency's specifications. Sand shall be placed over the joint sealant to prevent tracking.

11.3 Asphalt Paved Surface Materials and Construction Methods

The composition of the asphalt pavement and method of construction shall be in accordance with the Kentucky Transportation Cabinet Department of Highways (KYTC) Standard Specifications for Road and Bridge Construction (latest edition). A copy of these specifications is on file with the Company's Supervisor of Construction Inspection Services, 4801 Allmond Avenue.

11.4 Concrete Paved Surfaces

All concrete used for structural purposes (such as thrusts blocks, road subbase, sidewalks, etc.) shall be produced at a concrete plant, delivered by a ready-mix concrete truck or mobile mixer (metered) concrete truck. Only concrete used for miscellaneous purposes (such as vault floor pad, end plugs for mains to be abandoned-in-place, etc.) is allowed to be that of an on-site bag mix.

All cuts in concrete driveways and sidewalks are to be replaced from construction joint to construction joint, using minimum 3,500 psi concrete. When a section of sidewalk at a street intersection is to be replaced in the Louisville / Jefferson County Metro Government jurisdiction a wheel chair ramp is to be installed in accordance with the Appendix of Drawings.

For pipeline installation work, all concrete curbs or curb and gutter which are damaged are to be entirely removed and replaced in kind between existing joints. Stone base material shall be placed and compacted under any disturbed area with the curb replacement with the same type stone base

material and compaction as removed. Base material shall extend a minimum of eighteen (18) inches beyond the back of the curb. Install one-half inch (1/2"), pre-molded expansion joint material between new and existing concrete. Concrete shall be a minimum 3,500 psi concrete.

For service line installation work, concrete curbs or curb and gutter which are saw cut (typically four inch (4)" in width) are to be replaced in kind and have additional saw cutbacks one foot (1') to each side of the initial cut (4" cut). If either of the additional one foot (1') saw cutbacks fall within two feet (2') of an existing pavement joint, the entire section shall be removed and replaced to the existing joint. Stone base material shall be placed and compacted under any disturbed area with the curb replacement with the same type stone base material and compaction as removed.

Base material shall extend a minimum of eighteen (18) inches beyond the back of the curb. Install one-half inch (1/2"), pre-molded expansion joint material between new and existing concrete. Concrete shall be a minimum 3,500 psi concrete.

Particular care is to be taken that existing pavement surfaces within the right-of-way are not scarred or otherwise damaged by equipment. Planking or other protective devices are to be used at all times to prevent damage to paved surfaces from tracked equipment.

In the event the concrete paved surfaces are damaged or scarred by work on this project, repair is required as follows:

- 1) Concrete roadways shall be replaced per the permitting agency's standard specifications for the full width of the lane and to the nearest construction joint on each side of the damaged area.
- 2) All concrete driveways and aprons that are damaged by the Contractor's construction or activity, or that is specified for replacement on the plans shall be replaced in their entirety to the nearest construction joint. Concrete thickness and strength shall be per the Company's standard specifications. The style shall match the existing driveway or apron. The limits of repair, style of concrete and type of concrete for each driveway or apron shall be approved by the Company's Project Manager prior to installation. The Company's Project Manager may modify thickness, style, type and limits of repair based on field conditions and property owner consultation which shall be installed by the Contractor at no additional cost to the Company.

See Standard Drawing: 4410 in Appendix of Drawings

11.5 Concrete Paved Surface Materials and Construction Methods

All concrete used on this project and as shown on the project drawings shall have a 28-day minimum compression strength of 3,500 pounds per square inch (psi). The proportions and construction requirements for the concrete shall be as listed in the Kentucky Transportation Cabinet Department of Highways (KYTC) Standard Specifications for Road and Bridge Construction (latest edition).

See Standard Drawings: 4000, 4100 and 4400 in Appendix of Drawings

11.6 Unpaved Surfaces

All drainage structures (such as pipe, head or wing walls, channels, flumes, and culverts), fences, signs, etc., public or private, which are damaged or removed by this Contractor, shall be repaired or replaced in kind to the satisfaction of the owner. All open ditches shall be restored to their present cross sections, depths, and slopes, and dressed and graded to provide permanent adequate drainage to present connecting ditches or culverts equal to the original drainage systems except where specifically indicated on the project drawings.

The Contractor shall replace all surface material including landscaping, shrubbery, fences, or other disturbed surfaces, to a condition at least equal to that which existed before the work began, furnishing all labor and materials.

The grassed area disturbed by the work under this contract, whether by the Contractor or by any subcontractor, within or adjacent to the right-of-way of any state, county, city or other thoroughfare, public or private (except as required below), now in grass shall be shaped, seeded, and mulched in accordance with KYTC Standard Specifications for Road and Bridge Construction (latest edition).

Seed mixture shall be Mixture No. 1 as described in Seed Mixtures for Permanent Seeding. Acceptance of Seeding Section shall be amended to disallow compensations for any corrective seeding required by the Company's Project Manager.

All work fronting residential lots now in grass shall be shaped and seeded in accordance with KTCDOH Standard Specifications for Road and Bridge Construction (latest edition), but shall be amended to include removal of all rock from the sod bed. A minimum of six inches (6") of top soil being free of rock shall be placed prior to final restoration.

Reseeded areas that are located within ditches or on other sloped ground of 2:1 slopes or greater shall be covered with erosion control netting secured

with pins or stakes, or prefabricated matting containing mulch, seed and fertilizer. All ditch lines in residential lots shall be covered with erosion control netting secured with pins or stakes, or prefabricated matting containing mulch, seed and fertilizer.

A maximum of 1,500 lineal feet may be disturbed at one time prior to final grade. Restoration of the area is required before the Contractor is permitted to proceed.

Certain areas as approved by the Company's Project Manager or shown on the project drawings shall be sodded. Unless otherwise approved by the Company's Project Manager, no excavated material shall be placed on any paved roadway surface.

See Standard Drawing: 4300 in Appendix of Drawings.

11.7 Site Clean Up

Surplus pipeline materials, equipment, tools, and temporary structures shall be removed by the Contractor, and all dirt, rubbish and excess earth from excavations shall be hauled and disposed by the Contractor, all in a manner satisfactory to the Company.

The Contractor shall leave the site in presentable shape and in a condition at least equal to that which existed before the work began and in compliance with all restoration provisions of this specification.

12. WARRANTY

The provisions governing work covered by warranty are contained in **WARRANTIES** section in the **TERMS AND CONDITIONS**.

13. ADDITIONAL CONTRACT DEFINITIONS, ABBREVIATIONS, and TECHNICAL REFERENCES

13.1 Additional Contract Definitions

Right-of-Way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to a street, highway, or other public improvement.

Service Line – Any pipe, line, or conduit used or to be used to provide water service from a water main to the property line joint. A water service line shall be owned and maintained by the Company from the tap at the water main to the property line connection.

Non-storm sewers – Sanitary sewer, combined sewer, septic tank, or subsoil

treatment system.

Stone Classifications: Equivalencies:

Kentucky # 3 = Indiana # 2

Kentucky # 57 = Indiana # 8

Kentucky # 9 = Indiana # 3/8 pea

Kentucky D.G.A. = Indiana # 73

Structures – Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, end walls, sewers, service pipes, septic tanks, lateral fields, foundation drains, fences, swimming pools, and other features which may be encountered in the work and not classified herein.

Underground Facility – means any item which shall be buried or placed below ground for use in connection with the storage or conveyance of water, sewage, electronic, telephone or telegraph communications, electric energy, oil, gas or other substances, and shall include pipes, sewers, conduits, cables, valves, lines, wires, manholes, appurtenances, attachments and those portions of poles and their attachments below ground.

Utility – Pipe lines, conduits, ducts, transmission lines, overhead or underground wires, railroads, storm drains, sanitary sewers, irrigation facilities, street lighting, traffic signals, and fire alarm systems, and appurtenances of public utilities and those of private industry, businesses or individuals solely for their own use or use of their customers which are operated or maintained in, on, under, over or across public right-of-way or public or private easement.

13.2 Abbreviations:

AC – Asbestos Cement Pipe

ANSI – American National Standards Institute

ASTM – American Society of Testing Materials

AWWA – American Water Works Association

C – Temperature in degree Celsius

CFS – Cubic Feet Per Second

CI – Cast Iron Pipe

CL – Cement Lined Cast Iron Pipe

DEG - ° - Degree

DGA – Dense Graded Aggregate

DI – Ductile Iron Pipe

DIPS – Ductile Iron Pipe Size

DIW – Ductile Iron Pipe, Wrapped

DPW – Ductile Iron Pipe, Pressure Class 350, Wrapped

DR – Dimension Ratio

DVD – Digital Versatile Disc

SDR – Standard Dimension Ratio

F – Temperature in degree Fahrenheit
FPS – Feet Per Second
FT – ‘ – Feet
HDPE – High Density Polyethylene Pipe
HTH – Dry Chlorine (Calcium Hypochlorite)
IN – “ – Inch
IPS – Iron Pipe Size
KAR – Kentucky Administrative Regulations
KDOW – Kentucky Division of Water
KOSHA – Kentucky Occupational Safety and Health Association
KRS – Kentucky Revised Statutes
KTC – Kentucky Transportation Cabinet
KTCDOH - Kentucky Transportation Cabinet Department of Highways
MJ – Mechanical Joint
MSD – Louisville and Jefferson County Metropolitan Sewer District
MUTCD – Manual on Uniform Traffic Control Devices for Streets and Highways
NFPA – National Fire Protection Association
OSHA – Occupational Safety and Health Administration
PCB – Polychlorinated Biphenyls (toxic chemicals)
PPM – Parts per Million
PSF – Pounds per Square Foot
PSI – Pounds per Square Inch
PVC – Polyvinyl Chloride Pipe
USGS – United States Geological Survey
WQC – Water Quality Certification
% - per cent
@ - at
/ - per
= - equals

13.3 Technical References

Section:

- 1.6.1 Federal Highway Administration, Part VI (6) of the Manual on Uniform Traffic Control Devices (MUTCD).
- 1.6.4 Louisville / Jefferson County Metro Government Ordinance: Title VII (7), Traffic Code: Chapter 72 Parking Regulations.
- 1.6.5 KRS-220, 224 Soil Erosion and Sediment Control
Jefferson County Ordinance, Chapter 159, Erosion Prevention and Sediment Control
- 1.6.6 Kentucky Division of Water- General Water Quality Certification, Permit #12.
- 2.2 KOSHA – 803 KAR 2:300 – 2:320; 803 KAR 2:240 – 2:423
- 3.2.4 Recommended Standards for Water Works (Ten States Standards)

- Latest Edition
- 5.3 Blasting Regulations: KRS 351 and KAR 805.
 - 6.2.2 PVC Pipe – Design and Installation AWWA Manual No. M-23
 - 6.2.3 AWWA Standard Specification C 600 – Installation of Ductile Iron Water Mains and Their Appurtenances.
 - 6.4.1 AWWA Standard Specification C 111 – Rubber–Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
AWWA Standard Specification C 900 – Polyvinyl Chloride (PVC) Pressure Pipe, 4”-12” for Water Distribution.
 - 6.7.1 AWWA Standard Specification C 105 – Polyethylene Encasement for Ductile-Iron Pipe Systems.
 - 7.1. ASTM D-1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 7.4 Kentucky Transportation Cabinet Department of Highways Standard Specification for Road and Bridge Construction.
 - 8.2.2 401 KAR 8:150 –sections 4 (1) and 4 (2) Disinfection and Filtration.
 - 8.4 Louisville Water Company Best Management Practice and Procedures on Chlorinated Water Disposal, December 2001.

14. TECHNICAL DESIGN AND CONSTRUCTION STANDARDS

1 GENERAL DESIGN REQUIREMENTS

- 1.1 The Utility shall establish and maintain Technical Design and Construction Standards for all water main projects reviewed and constructed under the KDOW Plans Review Agreed Order.
- 1.2 The Utility shall ensure that the plans and specifications for each project meet or exceed all Technical Design and Construction Standards.
- 1.3 The Professional Engineer of Record shall ensure the plans and specifications for each project meet or exceed these Technical Design and Construction Standards.
- 1.4 **Hydraulics**
 - 1.4.1 The utility shall define existing and potential customer peak demand in the hydraulic analysis.
 - 1.4.2 The hydraulics analysis shall demonstrate the proposed water main projects can be flushed at least two and one half (2.5) feet per second (fps), while keeping system pressure above twenty (20) pounds per square inch (psi) within the pressure zone of the proposed project.

- 1.4.3 The hydraulic analysis shall demonstrate the proposed water main project maintains thirty (30) psi under peak demand.
- 1.4.4 The hydraulic analysis shall demonstrate that the proposed water main project does not drop ground level pressure in any part of the pressure zone below twenty (20) psi under all conditions of flow.
- 1.4.5 Pressure greater than or equal to thirty (30) psi shall be available on the discharge side of all water meters.

1.5 **Hydrants**

- 1.5.1 Fire hydrants shall only be installed on new or existing water mains designed to carry fire flows. The water main supplying the hydrant must have a diameter greater than or equal to six (6) inches and provide sufficient capacity to meet the required fire flow. (Louisville Water Technical Specifications Section 9.1)
- 1.5.2 An auxiliary valve shall be installed in all hydrant supply pipes. (Louisville Water Technical Specifications Section 9.1)
- 1.5.3 Hydrant drains shall not be connected to any sanitary sewer, combined sewer, septic tank or subsoil treatment system (hereinafter “non-storm sewer”) or any storm sewer or storm drain, and shall be located at a distance greater than ten (10) feet from any non-storm sewer. (Louisville Water Technical Specifications Section 9.2)

1.6 **Water Main Valves**

- 1.6.1 Water mains shall have a sufficient quantity of valves so that customer inconvenience and sanitary hazards will be minimized during repairs.
- 1.6.2 Urban areas as determined by the Utility shall include a valve spacing distance of less than or equal to five hundred feet (500') for commercial service areas and less than or equal to one thousand feet (1,000') for residential service areas. Valves should be located at roadway intersections where practical.
- 1.6.3 Rural areas as determined by the Utility shall include a valve spacing distance of less than one (1) mile. Valves should be located at roadway intersections where practical.

1.7 Blow-Off or Flushing Connections

1.7.1 For water mains that dead end, a fire hydrant or blow-off shall be required at the end of each six (6) inch or larger diameter water main and a flush hydrant or blow-off shall be required at the end of each water main that is less than six (6) inches in diameter.

1.7.2 Each blow-off, fire hydrant, or flush hydrant shall be sized so that velocity of greater than or equal to two and one half (2.5) feet per second (fps) can be achieved in the water main served by the blow-off or hydrant during flushing.

1.7.3 Flushing devices, blow-offs, or air relief valve shall not be connected to any non-storm sewer or any storm sewer or storm drain, and shall be located at a distance greater than ten (10) feet from any non-storm sewer. Chambers, pits, or manholes containing valves, blow-offs, meters, or other such appurtenances shall not be directly connected to any non-storm sewer or any storm sewer or storm drain. Such chambers, pits, or manholes shall be drained to absorption pits underground or to the surface of the ground where they are not subject to flooding by surface water. (Louisville Water Technical Specifications Section 8.3.2)

1.8 Air Relief Valves

1.8.1 Air relief valves or hydrants shall be installed at high points in water mains, where air can accumulate. Automatic air relief valves shall not be used in situations where manhole or chamber flooding may occur. (Louisville Water Technical Specifications Section 8.7, 8.7.1 & 8.7.2)

1.8.2 The open end of an air relief pipe from automatic valves shall be extended a distance of greater than or equal to one (1) foot above grade and provided with a screened, downward facing elbow or shall be an equivalent standard as determined by the best professional judgment of the Utility. The pipe from a manually operated valve shall be extended to the top of the pit. (Louisville Water Technical Specifications Section 8.7.1 & 8.7.2)

1.9 Bedding and Backfill

A continuous and uniform bedding shall be provided in the trench for all buried pipe. Backfill material shall be tamped in layers

around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe. Stones found in the trench shall be removed for a depth greater than or equal to six (6) inches below the bottom of the pipe. (Louisville Water Technical Specifications Section 7.1)

1.10 **Minimum Depth**

All water mains shall be covered to a depth equal to or greater than forty-two (42) inches to prevent freezing. (Louisville Water Technical Specifications Section 7.1)

1.11 **Thrust Blocks**

All valves, tees, bends, plugs, and hydrants shall be provided with reaction blocking, tie rods, or joints designed to prevent movement. (Louisville Water Technical Specifications Section 6.14 & 9.1)

1.12 **Disinfection and Coliform Monitoring**

1.12.1 New or relocated water mains shall be thoroughly disinfected in accordance with 401 KAR Chapter 8:150 Section 4 (1) upon completion of construction and before being placed into service. To disinfect the new or relocated water mains, the Utility shall use chlorine or chlorine compounds (disinfectants) in such amounts as to produce an initial disinfectant concentration of at least fifty (50) ppm and a residual disinfection of greater than or equal to twenty-five (25) ppm at the end of twenty-four (24) hours. Follow the water main disinfection with thorough flushing and place the water main into service if, and only if, coliform monitoring applicable to the water main does not show the presence of coliform. If coliform is detected, repeat flushing of the water main and coliform monitoring. If coliform is still detected, repeat disinfection and flushing as if the water main has never been disinfected. Continue the described process until monitoring does not show the presence of coliform. (Louisville Water Technical Specifications Section 8.2.2 & 8.6)

1.12.2 The presence or absence of total coliform monitored by sampling and analysis shall be determined for the new or relocated water main(s) as needed. Take samples at connection points to existing water mains at one (1) mile intervals and at dead ends, without omitting any branch of the new or relocated water main. Sample bottles shall be clearly

identified as “special” construction tests. (Louisville Water Technical Specifications Section 8.6)

1.12.3 For new construction projects, the distribution system, using the most expedient method, shall maintain coliform test results. (Louisville Water Technical Specifications Section 8.6)

1.12.4 Chlorinated water resulting from disinfection of project components shall be disposed in a manner which will not violate 401 KAR 5:031. (Louisville Water Technical Specifications Section 8.4)

1.13 **Pressure Testing and Leak Detection**

The presence or absence of leaks monitored by physical testing shall be determined in all types of installed pipe as needed. Pressure testing and leakage testing shall be in accordance with the latest edition of AWWA Standard C600. (Louisville Water Technical Specifications Section 8.5)

1.14 **Water Main Construction and Material Standards**

1.14.1 Installation of water mains and appurtenances shall meet or exceed AWWA standards or manufacturer recommendations.

1.14.2 Pipes, fittings, valves, fire hydrants, and appurtenances shall meet or exceed the latest standards issued by the AWWA, ASTM, or NSF (if such standards exist). PVC and Polyethylene piping used must be certified to ANSI/NSF Standard 61.

1.15 **Sewer Crossings and Separation**

1.15.1 For the purpose of this standard, “non-storm sewer” is defined as any of the following: sanitary sewer, combined sewer, septic tank, or subsoil treatment system. (Louisville Water Technical Specifications Section 3.1.4)

1.15.2 Water mains shall be laid a horizontal distance of greater than or equal to ten (10) feet horizontally from any existing or proposed non-storm sewer. The horizontal distance shall be measured from outside diameter of the water main to outside diameter of the non-storm sewer. (Louisville Water Technical Specifications Section 3.1.4)

1.15.3 In cases where the Utility determines it is not practical to maintain a ten (10) foot separation, water mains may be installed closer to a non-storm sewer provided that a variance is obtained from the Cabinet's Division of Water and maintained with the project records. (Louisville Water Technical Specifications Section 3.1.4)

1.15.4 No deviation from the ten (10) foot separation is allowed if the non-storm sewer is a force main (sewer under pressure). (Louisville Water Technical Specifications Section 3.1.4)

1.15.5 When water mains and non-storm sewers cross:

1.15.5.1 Water mains shall be laid such that there shall be a vertical distance of greater than or equal to eighteen (18) inches between the water main and non-storm sewer. The vertical distance shall be measured from the outside diameter of the water main to the outside diameter of the non-storm sewer line. (Louisville Water Technical Specifications Section 3.1.4)

1.15.5.2 One (1) full length of the water pipe shall be located so that both joints of the water pipe will be as far from the non-storm sewer as practical as determined by the Utility. (Louisville Water Technical Specifications Section 3.1.4)

1.15.5.3 Special structural support for the water and non-storm sewer may be required. (Louisville Water Technical Specifications Section 3.1.4)

1.15.6 No water pipe shall pass through or come in contact with any part of a non-storm sewer manhole. (Louisville Water Technical Specifications Section 3.1.4)

1.16 **Water Mains Near Areas with Organic Contamination**

If water mains are installed or replaced in areas of organic contamination or in areas within two hundred (200) feet of underground or petroleum storage tanks, ductile iron or other non-permeable materials shall be used in all portions of the water main installation or replacement. (Louisville Water Technical Specifications Section 5.5.6)

1.17 **Asbestos-Cement Pipe (Transite Pipe)**

If the existing water main to be tapped is asbestos-cement pipe, then

the contractor shall conform to OSHA regulations governing the handling of hazardous waste during the process of tapping the asbestos-cement pipe. Pieces of asbestos-cement pipe resulting from the tap shall be double bagged, placed in a rigid container, and disposed of in an approved landfill. (Louisville Water Technical Specifications Section 6.7)

1.18 Subfluvial Pipe Crossings

1.18.1 For subfluvial pipe crossings, a floodplain construction permit will not be required pursuant to KRS 151.250 if the following requirements of 401 KAR 4:050 Section 2 are met:

1.18.1.1 No material may be placed in the stream or in the flood plain of the stream to form construction pads, coffer dams, access roads, etc. during construction of pipe crossings.

1.18.1.2 Crossing trenches shall be backfilled as closely as possible to the original contour.

1.18.1.3 All excess material resulting from construction displacement in a crossing trench shall be disposed of outside the flood plain.

1.18.1.4 For erodible channels, there shall be at least thirty (30) inches of backfill on top of all pipe or conduit points in the crossing.

1.18.1.5 For nonerodible channels, pipes or conduits in the crossing shall be encased on all sides by at least six (6) inches of concrete with all pipe or conduit points in the crossing at least six (6) inches below the original contour of the channel.

(Louisville Water Technical Specifications Section 1.3.6)

1.18.2 For subfluvial pipe crossings greater than fifteen (15) feet in width:

1.18.2.1 The pipe shall be of special construction having flexible, restrained, or welded watertight joints, and

1.18.2.2 Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair. Valves shall be easily accessible and not be subject to flooding.

1.18.2.3 Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples shall be made on each side of the valve closest to the supply source. (Louisville Water Technical Specifications Section 1.3.6)

1.19 Cross Connections

Cross connections shall not be allowed in accordance with 401 KAR 8:020. 401 KAR 8:020 (2) Cross-connections prohibited. All cross-connections shall be prohibited. The use of automatic devices, such as reduced pressure zone back flow preventers and vacuum breakers, may be approved by the cabinet in lieu of proper air gap separation. A combination of air gap separation and automatic devices shall be required if determined by the cabinet to be necessary due to the degree of hazard to public health. Every public water system shall determine if or where cross-connections exist and shall immediately eliminate them.

1.20 Project Approvals, Record Retention and Management requirements and stipulations under this Agreed Order are as follows:

- 1.20.1.1 All water main projects reviewed by the Utility require the preparation of plans and specifications stamped by a licensed Kentucky Professional Engineer (P.E.) who shall be the Engineer of Record for an individual project.
- 1.20.1.2 All water main projects submitted to the Utility for review shall be documented as reviewed and approved or denied by the Utility's Designated Plans Reviewer for the project.
- 1.20.1.3 All water main projects that the Utility designs internally or has designed by a contractor shall include plans and specifications stamped by a licensed Kentucky Professional Engineer (P.E.) who shall be the Engineer of Record for an individual project, and shall be reviewed and approved or denied by the Utility's Designated Plans Reviewer for the project.
- 1.20.1.4 All revisions to water main project plans previously approved by the Utility under the coverage of this Agreed Order shall be reviewed and approved or denied by the Utility's Designated Plans Reviewer for the project.

- 1.20.1.5 During construction, a set of Utility approved plans and specifications shall be available at the job site at all times. All work shall be performed in accordance with the Utility approved plans and specifications.
- 1.20.1.6 The Utility shall certify the water main projects has been constructed and tested in accordance with the approved plans and specifications. The Utility shall document and maintain a record of the certification of the project consistent with the recordkeeping requirements as stated in the Agreed Order.
- 1.20.1.7 The Utility shall define a project approval period not to exceed twelve (12) months, during which time the project construction shall begin.
- 1.20.1.8 Coverage under this Agreed Order does not relieve the Utility from the responsibility of obtaining any other approvals, permits, licenses required by the Cabinet and other state, federal and local agencies.
- 1.20.1.9 Project files and documentation, including water main project plans, location map, engineering calculations, and hydraulic information demonstrating regulatory compliance shall be retained for a period of not less than five (5) years from the completion of the project (in-service date).

2 Qualifications for Cabinet's Division of Water Agreed Order Projects

- 2.1 The Cabinet's Division of Water Agreed Order Projects will be limited to projects that meet the criteria identified in this section. Projects not meeting these qualifications shall be submitted to the Cabinet's Division of Water for review and approval.
 - 2.1.1 The water system shall have a valid Agreed Order.
 - 2.1.2 Projects with an overall length less than ten thousand (10,000) contiguous feet shall qualify. Two (2) or more adjoining projects shall be considered one (1) project for the purposes of this requirement.
 - 2.1.3 Projects consisting of water mains greater than or equal to three (3) inches in diameter or less than or equal to twelve (12) inches in diameter shall qualify. Additionally, circulating two (2) inch water main projects of less than five hundred (500) feet shall qualify if future extension from the line will

not occur and if the Utility determines that the two (2) inch line will benefit the overall system hydraulics and / or drinking water quality.

- 2.1.4 Projects qualifying for review and approval by the Utility may include water main projects with valves and / or hydrants as part of the design. However, projects, including those less than ten thousand (10,000) total linear feet, that include new construction or installation of treatment plants, storage tanks, chemical or pressure booster pumping stations, shall be reviewed by the Cabinet for final determination.
- 2.1.5 The water demand for the project shall not cause the Utility to exceed eighty-five (85) % of its rated or operational design capacity.
- 2.1.6 Projects funded in part or in full by the State Revolving Fund (SRF) or Congressional Special Appropriation Grants (SPAP) shall not qualify for review and approval by the Utility under the terms and conditions of this Agreed Order.
- 2.1.7 Projects under the jurisdiction of any regulating agency or funding agency other than the Kentucky Division of Water (external agencies), which in any way conflict with any regulatory process or funding process of these external agencies, shall not qualify for review and approval by the Utility under the terms and conditions of this Agreed Order.
- 2.1.8 The Utility is not authorized to approve any project that impacts any outstanding state resource water, outstanding national resource water, exceptional water, or cold water aquatic habitat as specified by 401 KAR Chapter 10.
- 2.1.9 Upon completion, projects shall meet all drinking water quality standards as set forth in 401 KAR Chapter 8.
- 2.1.10 The project meets all of the Technical Design and Construction Standards of the Cabinet's Division of Water Agreed Order and does not require any variances or deviations from the Technical Design and Construction Standards of the Cabinet's Division of Water Agreed Order.

**APPENDIX OF STANDARD DRAWINGS
FOR 4” – 20” PIPELINE CONSTRUCTION**

Standard
Drawing
Number

Section 1: General Requirements

4501 Creek Crossings with Concrete Cap (Sect. 1.3.5)

Section 3: Site

1000 Typical Utility Location Profiles (Sect.3.1)

3600 Typical Temporary Service from Fire Hydrant (Sect. 3.4.4 & 3.4.4.1)

Section 6: Installation

1500 Steel Casing Pipe and Casing Runners (Sect. 6.3)

1400 Typical Cast-in-Place Thrust Anchors (Sect.6.8 & 6.15)

1200 A-C Methods for Installing and Restoring Polyethylene Wrap (Sect. 6.9)

Section 7: Backfilling Procedures and Tamping

4300 Common Backfill and Lawn Restoration (Sect. 7.1, 7.4, 7.5, 7.6 & 11.6)

Section 8: Placing Water Main In Service

1601 Typical 2" Blow-off and Flushing Connection (Sect. 8.3.2)

1602 Typical 1" Manual Air Valve (For mains up to 20") (Sect. 8.3.2, 8.7 & 8.7.2)

1603 Typical Combined 2" Automatic and Manual Air Valve
(For mains 16" and larger) (Sect. 8.3.2, 8.7 & 8.7.1)

1608 Leak Detection By-Pass Meter for Underwater Crossings (Sect. 1.3.6 & 8.8)

Section 9: Fire Hydrant

2000 Typical Fire Hydrant Installation (Sect. 9)

Section 10: Service Work

3804 Method for Tapping Polyethylene Encased Pipe (Sect. 10.3.1)

3002 Typical Copper Service 1" and Smaller (Sect.10.3, 10.3.1, 10.3.2 & 10.6)

3003 Typical 1" Copper Service with Pressure Reducing Valve (Sect.10.3, 10.3.1,
10.3.2, 10.5 & 10.7)

3004 Typical 3/4" Copper Service with Pressure Reducing Valve (Sect.10.3, 10.3.1,
10.3.2, 10.6 & 10.7)

3400 Typical Double 1" Domestic/Irrigation Copper Service (Sect. 10.3, 10.3.1,
10.3.2)

3401 Typical Double Domestic/Irrigation 1" Copper Service With Pressure
Reducing Valve (Sect. 10.3, 10.3.1, 10.3.2, 10.6 & 10.7)

3403 Typical ¾" Irrigation Retro Fit Copper Service (Sect. 10.3, 10.3.1, 10.3.2, &
10.6)

3404 Typical 1" Tandem 2-Way Domestic Copper Service (Sect. 10.3, 10.3.1,
10.3.2, & 10.6)

3420 Typical 1" 3-Way Domestic Copper Service (Sect. 10.3, 10.3.1, 10.3.2, &
10.6)

- 3430 Typical 1” 4-Way Domestic Copper Service (Sect. 10.3, 10.3.1, 10.3.2, & 10.6)
- 3200 Typical 1-1/2" or 2" Copper Service (Sect. 10.3, 10.3.1, 10.3.2, & 10.6)
- 3202 Typical 1-1/2" or 2" Copper Service with Pressure Reducing Valve (Sect. 10.3, 10.3.1, 10.3.2, 10.6 & 10.7)
- 3203A Typical Ductile Iron Domestic Service 4"x3” (Sect. 10.4, 10.4.1, 10.4.2, & 10.6)
- 3203 Typical Ductile Iron Domestic Service 4" and Larger (Sect. 10.4, 10.4.1, 10.4.2, & 10.6)
- 3601 Typical Fire Protection Service 4" and Larger (Sect. 10.4, 10.4.1, 10.4.2, & 10.6)
- 3440 Relocate Service (Sect.10.9)
- 3441 Renew Service (Sect. 10.10, 10.11)
- 3442 Transfer Service (Sect.10.16) and Discontinue Service (Sect.10.17)
- 3805 Service Sleeve Installation Detail (Sect.10)

Section 11: Restoration

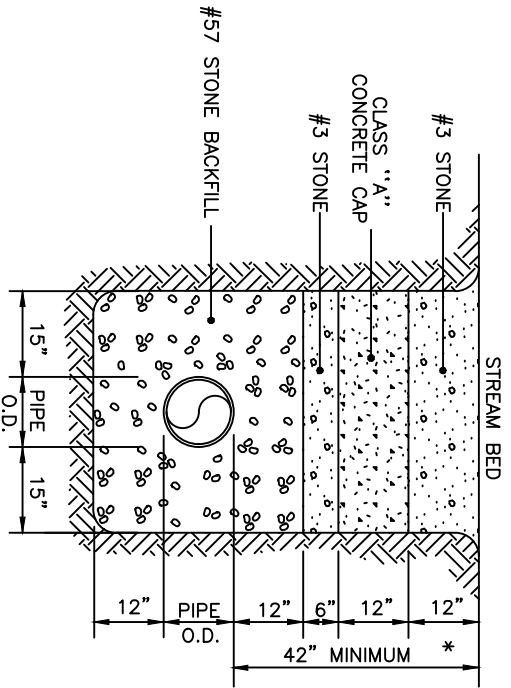
- 4000 State of Kentucky Backfill and Paving Restoration (Sect. 11)
- 4100 Metro Louisville/Jefferson County Backfill and Paving Restoration (Sect. 11)
- 4400 Sidewalk/Backfill Detail (Sect. 11)
- 4410 Concrete Curb and Gutter Restoration Detail (Sect. 11.4)

Other:

- 4600 Typical Master Meter Detail
- 5005 Valve Status Marker

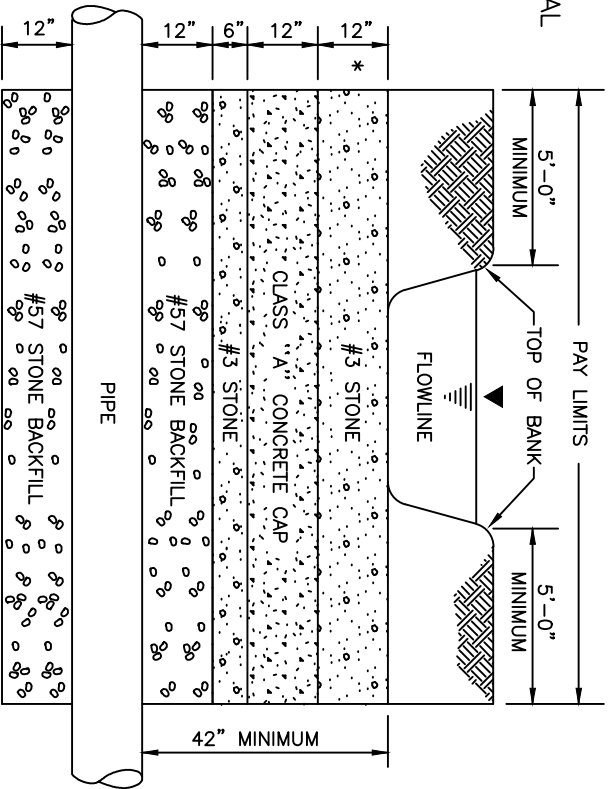
*THE TOP 12" TO BE #3 STONE OR OTHER SELECT MATERIAL
APPROVED BY THE KENTUCKY DIVISION OF WATER.

TYPICAL SECTION



STREAM CROSSING CONDITIONS

1. COMPLY WITH SECTION 1.3.5, SOIL EROSION AND SEDIMENT CONTROL.
2. THIS DETAIL APPLIES ONLY TO BLUE-LINE STREAMS, AS SHOWN ON THE PERTINENT USGS QUADRANGLE MAP.
3. BEST MANAGEMENT CONSTRUCTION PRACTICES MUST BE USED AT ALL TIMES DURING CONSTRUCTION. ADEQUATE SILT CONTROL MUST BE PLACED PRIOR TO THE START OF CONSTRUCTION AND MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
4. REVEGETATE ALL DISTURBED GRASSY AREAS ON THE STREAM SLOPES. SOD STAKES MAY BE REQUIRED TO SECURE SOD ON THE STREAM BANKS.
5. MAINTAIN AT LEAST 3.5' OF BACKFILL AT THE STREAM CROSSING FROM THE TOP OF PIPE TO THE ORIGINAL STREAM BED ELEVATION.
6. OBTAIN APPROVAL FROM THE METROPOLITAN SEWER DISTRICT PRIOR TO THE START OF THE STREAM CROSSING WHEN CONSTRUCTION IS UNDER THEIR JURISDICTION.
7. THRUST BLOCKING SHALL BE CONSTRUCTED AT ALL BENDS.

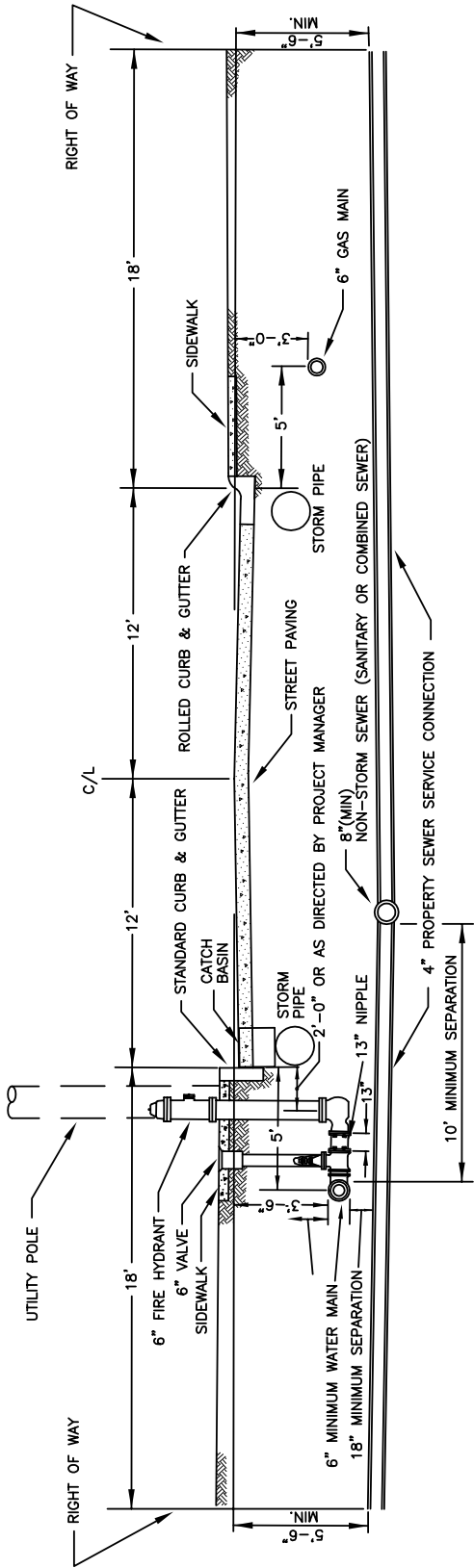


TYPICAL PROFILE

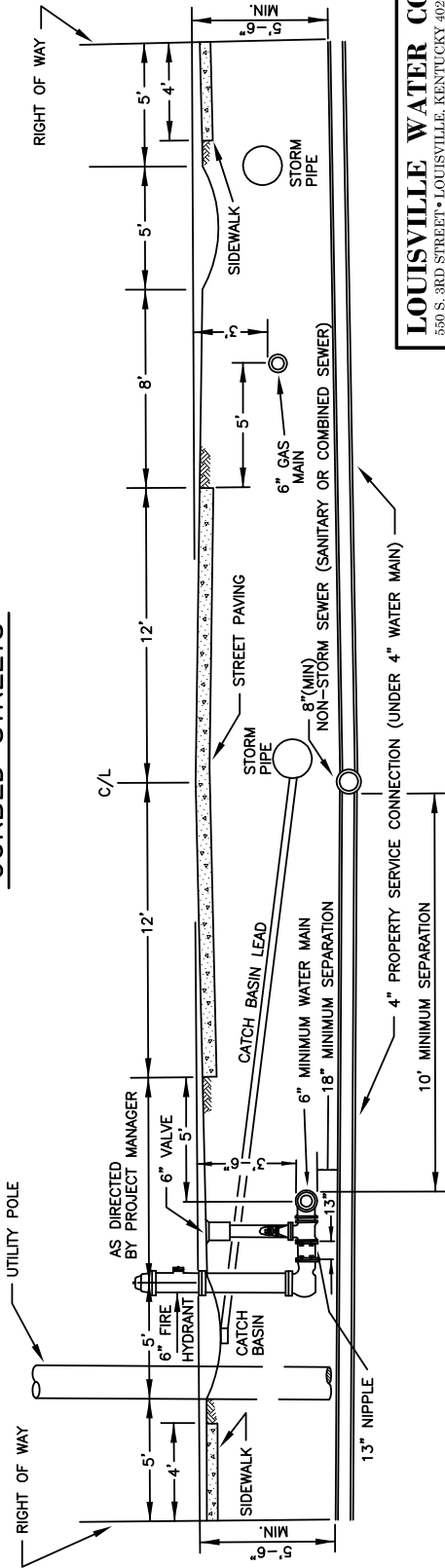
STANDARD DRAWING
CREEK CROSSING
WITH CONCRETE CAP

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DATE	MAY 2021	SCALE	NONE
DRAWING NO.	4501	SHEET	1 OF 1



UTILITY LOCATIONS
CURBED STREETS



UTILITY LOCATIONS
WITHOUT CURBED STREETS

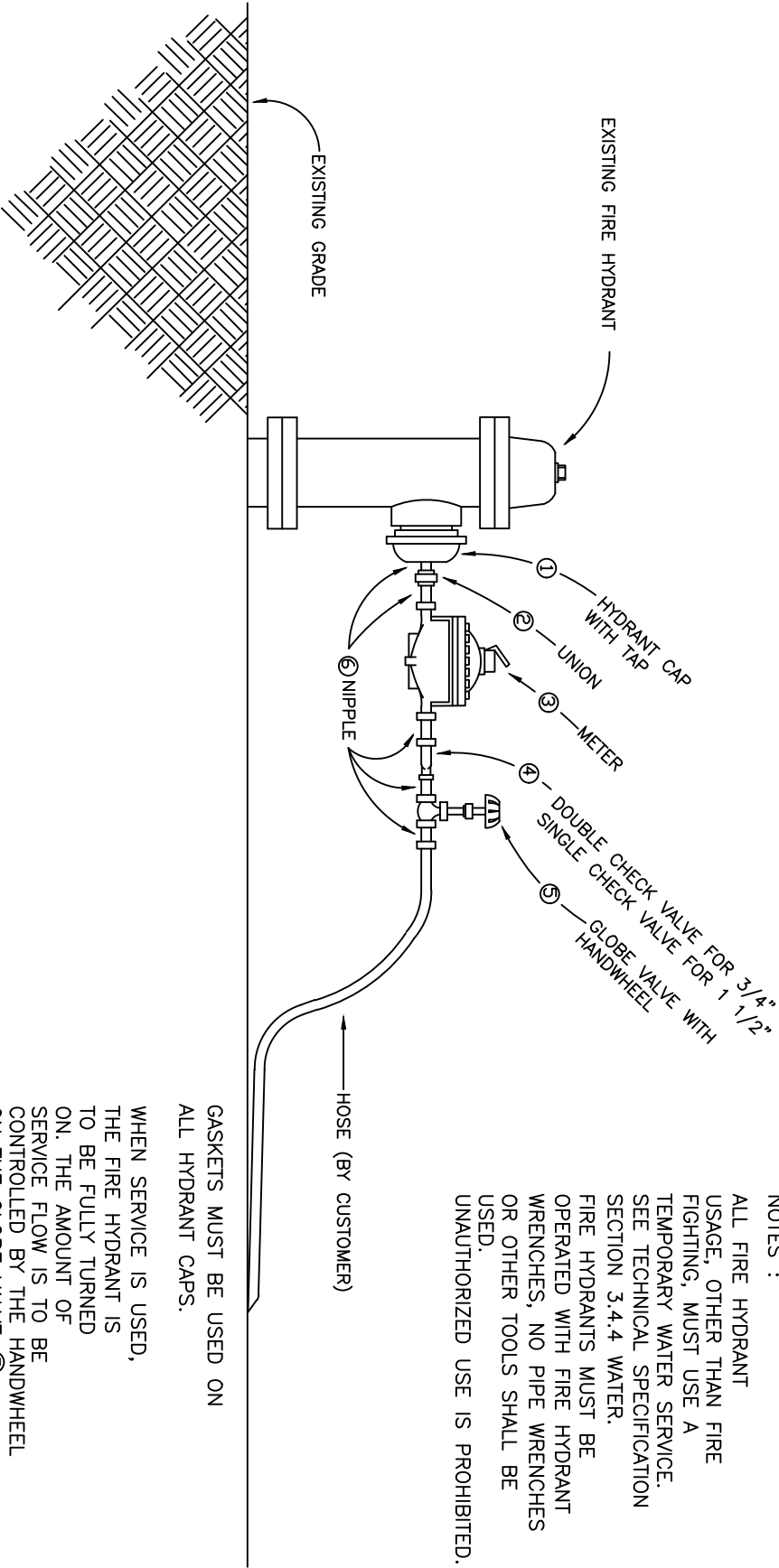
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STANDARD DRAWING			
TYPICAL			
UTILITY LOCATION PROFILES			
DATE	AUGUST 2018	SCALE	NONE
DRAWING NO.	1000	SHEET	1 OF 1

NO.	QUANTITY	FITTING	JOINT	SERVICE SIZES	
①	1	Hydrant Cap w/Gasket & Tap	Female Threaded	$\frac{3}{4}$ "	$1\frac{1}{2}$ "
②	1	Union	Female Threaded	$\frac{3}{4}$ "	$1\frac{1}{2}$ "
③	1	Meter	Female Threaded	$\frac{3}{4}$ "	$1\frac{1}{2}$ "
④	1	Check Valve	Flanged with Adapter	$\frac{3}{4}$ "	$1\frac{1}{2}$ "
⑤	1	Globe Valve w/Handwheel	Female Threaded	$\frac{3}{4}$ "	$1\frac{1}{2}$ "
⑥	5	Nipple	Inlet—Male Threaded Outlet—Male Threaded	$\frac{3}{4}$ "	$1\frac{1}{2}$ "

GASKETS MUST BE USED ON ALL HYDRANT CAPS.

WHEN SERVICE IS USED, THE FIRE HYDRANT IS TO BE FULLY TURNED ON. THE AMOUNT OF SERVICE FLOW IS TO BE CONTROLLED BY THE HANDWHEEL ON THE GLOBE VALVE ⑤.



NOTES :

ALL FIRE HYDRANT USAGE, OTHER THAN FIRE FIGHTING, MUST USE A TEMPORARY WATER SERVICE. SEE TECHNICAL SPECIFICATION SECTION 3.4.4 WATER.

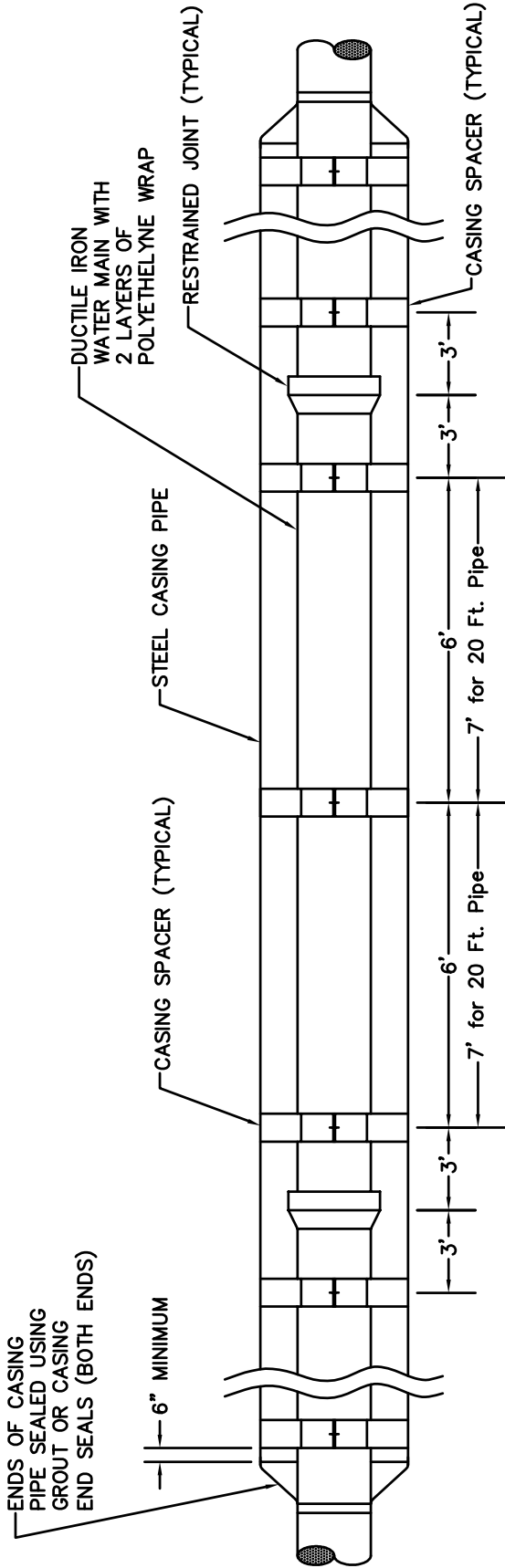
FIRE HYDRANTS MUST BE OPERATED WITH FIRE HYDRANT WRENCHES, NO PIPE WRENCHES OR OTHER TOOLS SHALL BE USED.

UNAUTHORIZED USE IS PROHIBITED.

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STANDARD DRAWING
TYPICAL TEMPORARY SERVICE
FROM FIRE HYDRANT
3/4" OR 1-1/2"

DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3600	SHEET	1 OF 1



TYPICAL SPACER SPACING
(PER 18 FT. PIPE LENGTH)

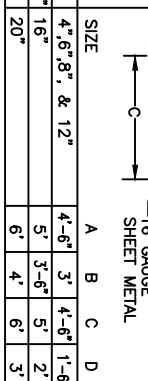
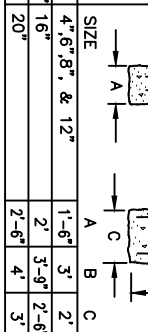
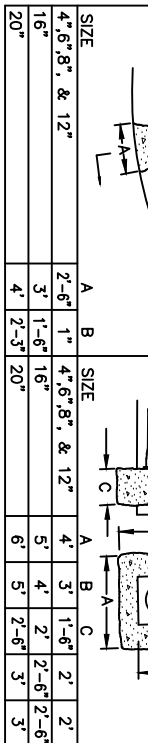
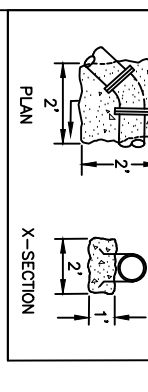
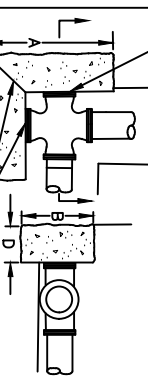
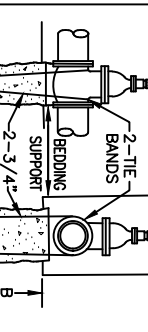
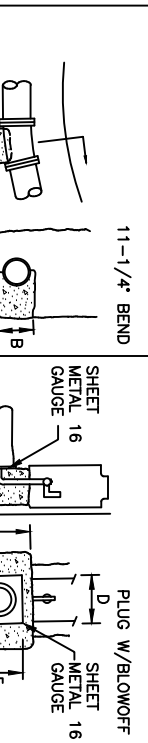
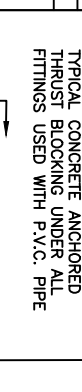
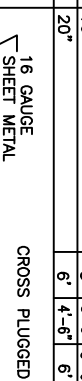
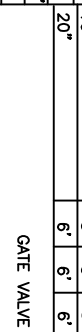
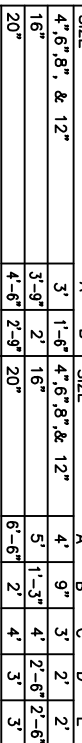
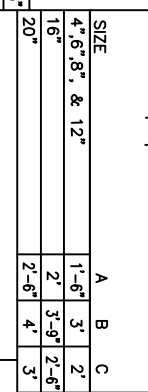
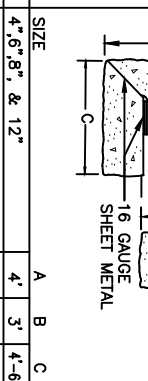
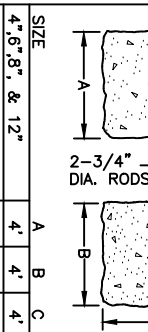
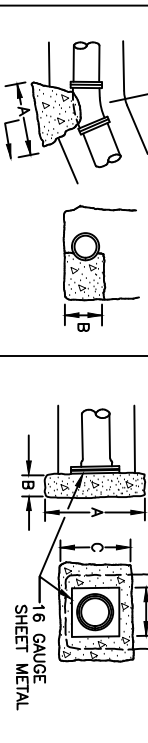
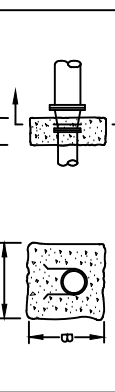
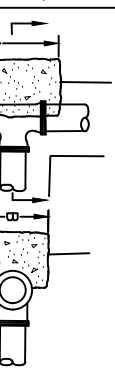
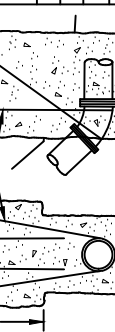
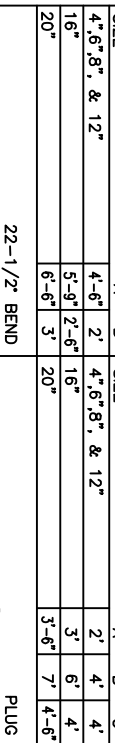
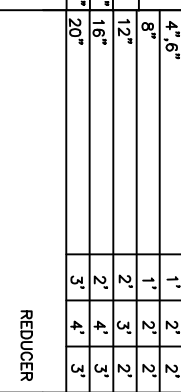
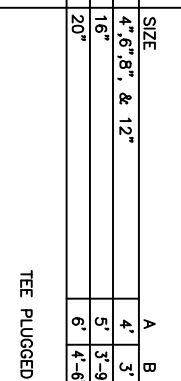
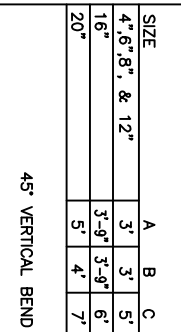
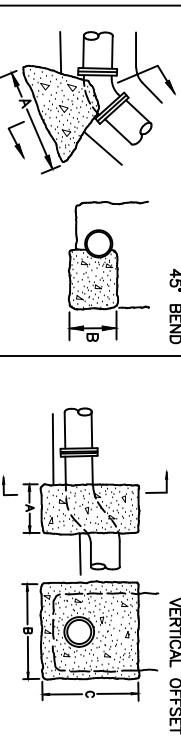
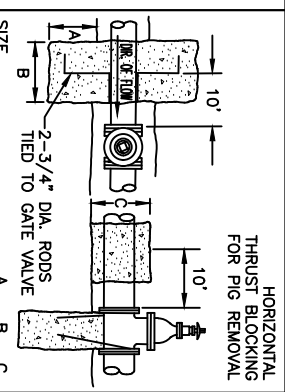
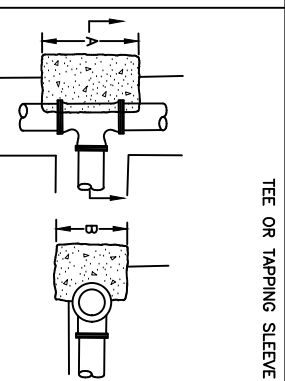
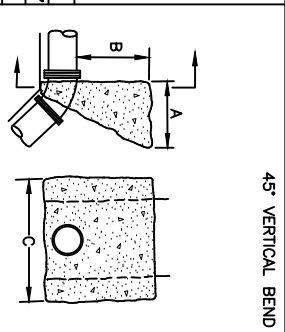
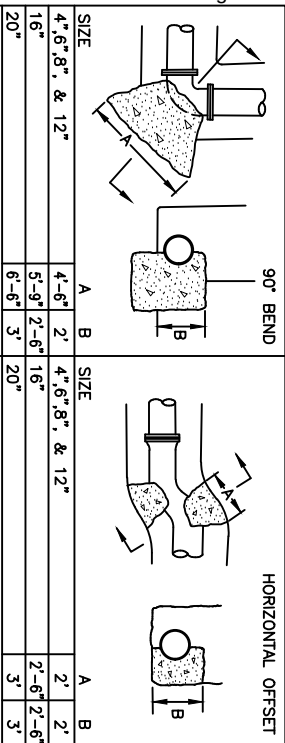
- NOTES:
- 1) STEEL CASING TO EXTEND A MINIMUM OF FIVE (5) FEET BEYOND THE EDGE OF PAVEMENT.
 - 2) THREE (3) CASING SPACERS PER EACH PIPE LENGTH (MINIMUM). WITH ONE CASING SPACER WITHIN 3 FT. OF EACH PIPE END.
 - 3) WATER MAIN SHALL HAVE RESTRAINED JOINTS WITHIN CASING PIPE. (SEE SECT. 6.3)

CASING PIPE SIZES		
WATER MAIN PIPE SIZE (INCHES)	CASING PIPE SIZE (INCHES)	CASING THICKNESS (INCHES)
4	12	0.375
6	16	0.375
8	16	0.375
12	24	0.375
16	30	0.500
20	36	0.500

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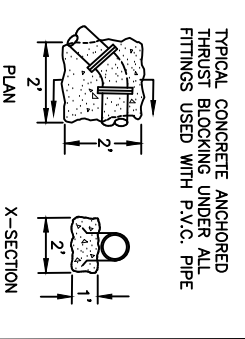
STANDARD DRAWING
STEEL CASING PIPE
AND CASING SPACERS

DATE	AUGUST 2018	SCALE	NONE
DRAWING NO.	1500	SHEET	1 OF 1



NOTE:

1. ALL DUCTILE AND GRAY IRON PIPE AND APPURTEANCES SHALL BE DOUBLE POLYWRAPPED.
2. CARE SHALL BE TAKEN TO AVOID DAMAGING POLYWRAP. ANY DAMAGE OR TORN POLYETHYLENE WRAP MUST BE REPAIRED WITH POLYETHYLENE TAPE AND ADDITIONAL POLYETHYLENE WRAP IF NECESSARY TO PROVIDE TWO (2) LAYERS OF PROTECTION.
3. CONCRETE THRUST BLOCKING MUST BE ALLOWED TO CURE OR PROTECTED AS APPROVED BY THE PROJECT MANAGER, BEFORE BACKFILLING.
4. ALL CONCRETE SHALL BE 3,500 PSI. FROM A COMMERCIAL PLANT, OR SHALL BE AN ON-SITE MIXTURE PREVIOUSLY APPROVED BY THE PROJECT MANAGER.
5. ALL FITTINGS INVOLVED WITH PVC PIPE SHALL HAVE A CONCRETE SUPPORT BLOCK, IN ADDITION TO THE PERMITTENT THRUST BLOCK.
6. SIZING OF THRUST BLOCKING ASSUME AN ALLOWABLE SOIL BEARING CAPACITY OF 3,000 PSF.
7. REINFORCING STEEL ANCHORS USED IN THRUST BLOCKING SHALL BE GRADE 60 AND EPOXY COATED.
8. CONCRETE FOR THRUST BLOCKING MUST EXTEND TO AND BE PLACED AGAINST UNDISTURBED EARTH UNLESS DIRECTED OTHERWISE BY THE COMPANY'S PROJECT MANAGER OR INSPECTOR.
9. RODS USED FOR THRUST RESTRAINT ARE TO BE USED ONLY AS TEMPORARY THRUST RESTRAINT. THRUST ANCHORS MUST BE POURED FOR ALL FITTINGS AS DETAILED IN THIS DRAWING. MECHANICAL RESTRAINT MAY BE USED IN PLACE OF RODS AT THE DISCRETION OF THE COMPANY'S PROJECT MANAGER.



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STANDARD DRAWING

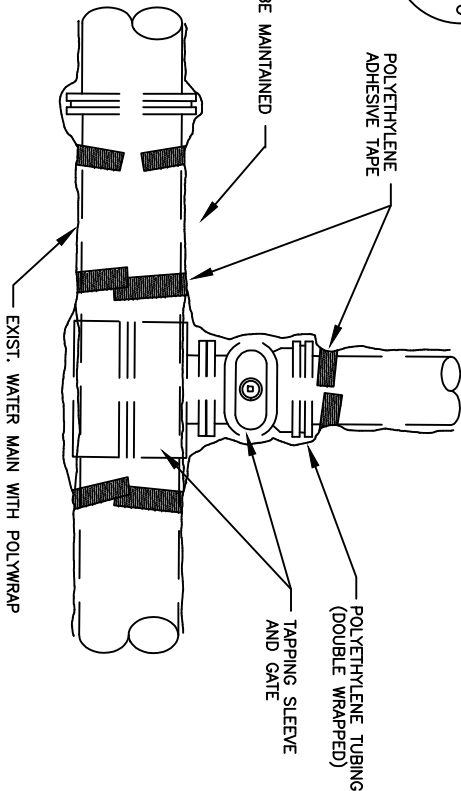
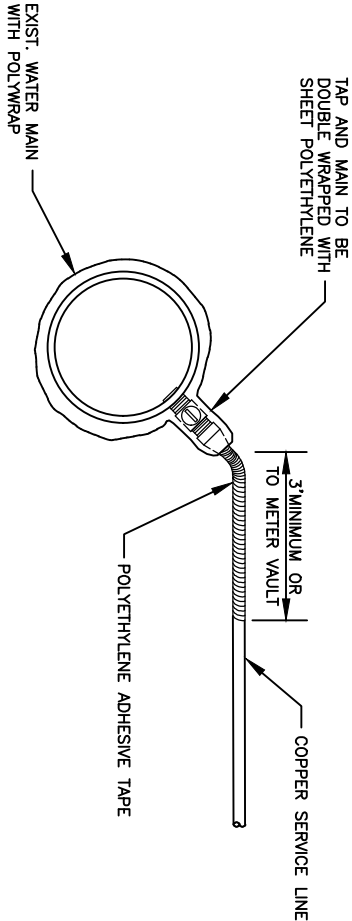
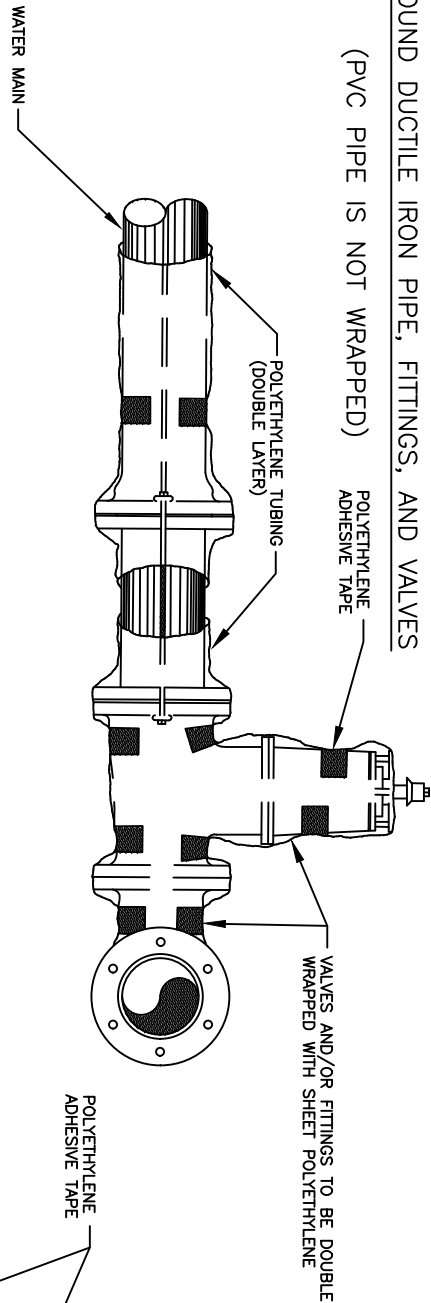
TYPICAL CAST-IN-PLACE
CONCRETE THRUST BLOCKING

DATE	SCALE	SHEET
JULY 2021	NONE	1 OF 1

DRAWING NO. 1400

METHOD FOR INSTALLING POLYETHYLENE WRAP
AROUND DUCTILE IRON PIPE, FITTINGS, AND VALVES

(PVC PIPE IS NOT WRAPPED)



METHOD FOR RESTORING
POLYETHYLENE WRAP
WHEN TAPPING WATER MAINS

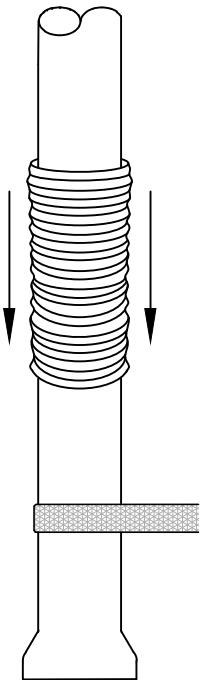
NOTES:

- 1) ANY DAMAGE OR TORN POLYETHYLENE WRAP MUST BE REPAIRED WITH POLYETHYLENE ADHESIVE TAPE AND ADDITIONAL POLYETHYLENE WRAP IF NECESSARY TO PROVIDE TWO (2) LAYERS OF PROTECTION.
- 2) PIPE SHALL NOT BE WRAPPED FOR MORE THAN FIVE (5) DAYS IN ADVANCE OF PLACEMENT INTO THE TRENCH.
- 3) ALL DUCTILE IRON TEES, VALVES AND FITTINGS ON PVC PIPE SHALL BE DOUBLE WRAPPED WITH POLYETHYLENE AND ENDS FASTENED SECURELY ON PVC PIPE.

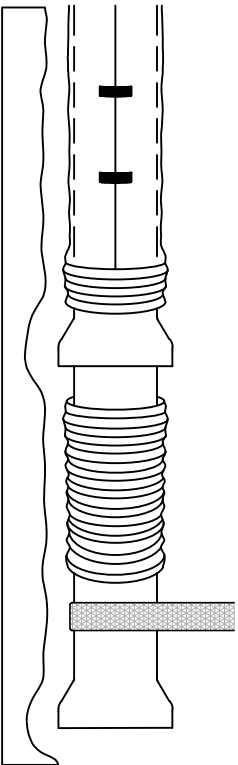
STANDARD DRAWING

METHODS FOR
INSTALLING AND RESTORING
POLYETHYLENE WRAP

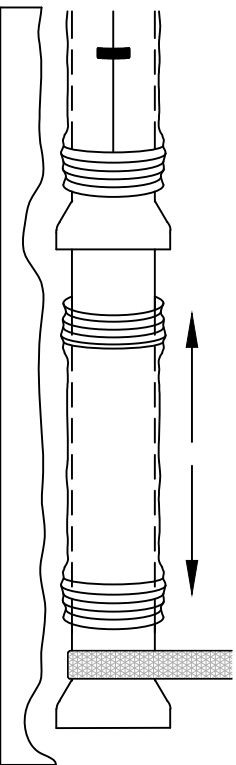
LOUISVILLE WATER COMPANY 550 S. 3RD STREET • LOUISVILLE, KENTUCKY 40202 • (502) 569-3800 SPENCER W. BRUCE, P.E. - PRESIDENT TIMOTHY KRAUS, P.E. - VICE PRESIDENT / CHIEF ENGINEER	
DATE	MAY 2021
DRAWING NO.	1200-A
SHEET	1 OF 3



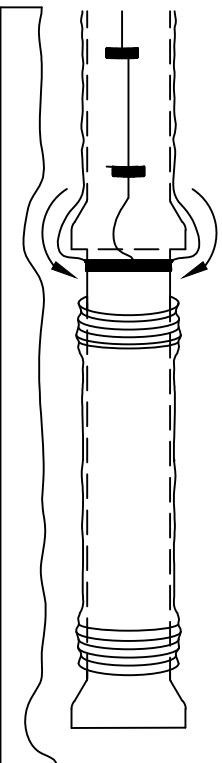
STEP 1.
CUT A SECTION OF POLYETHYLENE TUBE APPROXIMATELY TWO FEET LONGER THAN THE PIPE SECTION. REMOVE ALL LUMPS OF CLAY, MUD, CINDERS, OR OTHER MATERIAL THAT MIGHT HAVE ACCUMULATED ON THE PIPE SURFACE DURING STORAGE. SLIP THE POLYETHYLENE TUBE AROUND THE PIPE, STARTING AT THE SPIGOT END. BUNCH THE TUBE ACCORDIAN-FASHION ON THE END OF THE PIPE. PULL BACK THE OVERHANGING END OF THE TUBE UNTIL IT CLEARS THE PIPE END.



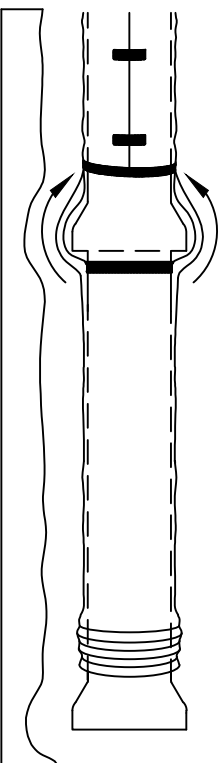
STEP 2.
DIG A SHALLOW BELL HOLE IN THE TRENCH BOTTOM AT THE JOINT LOCATION TO FACILITATE INSTALLATION OF THE POLYETHYLENE TUBE. LOWER THE PIPE INTO THE TRENCH AND MAKE UP THE PIPE JOINT WITH THE PRECEDING SECTION OF PIPE.



STEP 3.
MOVE THE CABLE TO THE BELL END OF THE PIPE AND LIFT THE PIPE SLIGHTLY TO PROVIDE ENOUGH CLEARANCE TO EASILY SLIDE THE TUBE. SPREAD THE TUBE OVER THE ENTIRE BARREL OF THE PIPE. NOTE: MAKE SURE THAT NO DIRT OR THE BEDDING MATERIAL BECOMES TRAPPED BETWEEN THE WRAP AND THE PIPE.



STEP 4.
MAKE THE OVERLAP OF THE POLYETHYLENE TUBE BY PULLING BACK THE BUNCHED POLYETHYLENE FROM THE PRECEDING LENGTH OF PIPE AND SECURING IT IN PLACE. NOTE: THE POLYETHYLENE MAY BE SECURED IN PLACE BY USING POLYTAPE.



STEP 5.
OVERLAP THE SECURED TUBE END WITH THE TUBE END OF THE NEW PIPE SECTION. SECURE THE NEW TUBE END IN PLACE WITH POLYTAPE.



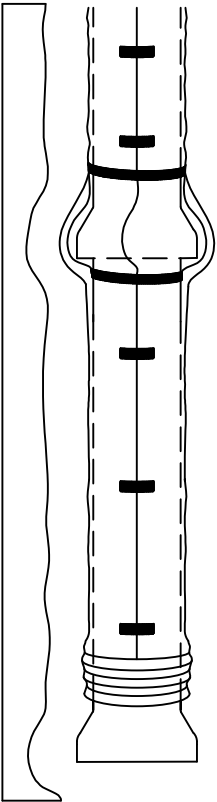
STEP 6.
TAKE UP THE SLACK IN THE TUBE ALONG THE BARREL OF THE PIPE TO MAKE A SNUG, BUT NOT TIGHT, FIT. FOLD EXCESS POLYETHYLENE BACK OVER THE TOP OF THE PIPE AND SECURE WITH POLYTAPE.

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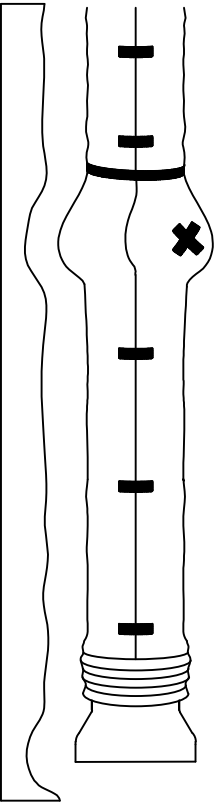
STANDARD DRAWING

METHODS FOR
INSTALLING AND RESTORING
POLYETHYLENE WRAP

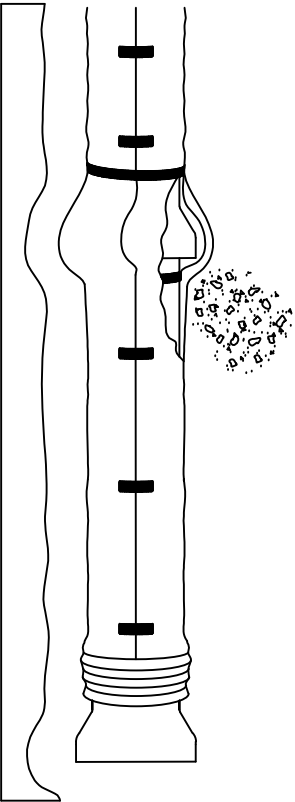
DATE	MAY 2021	SCALE	NONE
DRAWING NO.	1200-B	SHEET	2 OF 3



STEP 7.
SECURE THE FOLD AT SEVERAL LOCATIONS ALONG THE PIPE BARREL (APPROXIMATELY EVERY THREE FEET) WITH POLYTAPE.



STEP 8.
REPAIR ALL SMALL RIPS, TEARS, OR OTHER TUBE DAMAGE WITH ADHESIVE TAPE. IF THE POLYETHYLENE IS BADLY DAMAGED, REPAIR THE DAMAGED AREA WITH A SHEET OF POLYETHYLENE AND SEAL THE EDGES OF THE REPAIR WITH POLYTAPE.



STEP 9.
CAREFULLY BACKFILL THE PIPE ACCORDING TO LOUISVILLE WATER COMPANY'S TECHNICAL SPECIFICATIONS AND STANDARD DRAWINGS FOR 4-20" PIPELINE CONSTRUCTION, SECTION 7, BACKFILLING PROCEDURE AND TAMPING. TO PREVENT DAMAGE DURING BACKFILLING, ALLOW ADEQUATE SLACK IN THE TUBE AT THE JOINT. BACKFILL SHOULD BE FREE OF CINDERS, ROCKS, BOULDERS, NAILS, STICKS, OR OTHER MATERIALS THAT MIGHT DAMAGE THE POLYETHYLENE. AVOID DAMAGING THE POLYETHYLENE WHEN USING TAMPING DEVICES.

TABLE FOR MINIMUM FLATTENED
POLYETHYLENE TUBE WIDTHS

NOMINAL PIPE SIZE (INCHES)	RECOMMENDED POLYETHYLENE FLAT TUBE WIDTH (INCHES)
4	24
6	24
8	24
12	30
16	36
20	48

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STANDARD DRAWING

METHODS FOR
INSTALLING AND RESTORING
POLYETHYLENE WRAP

DATE

MAY 2021

SCALE

NONE

DRAWING NO.

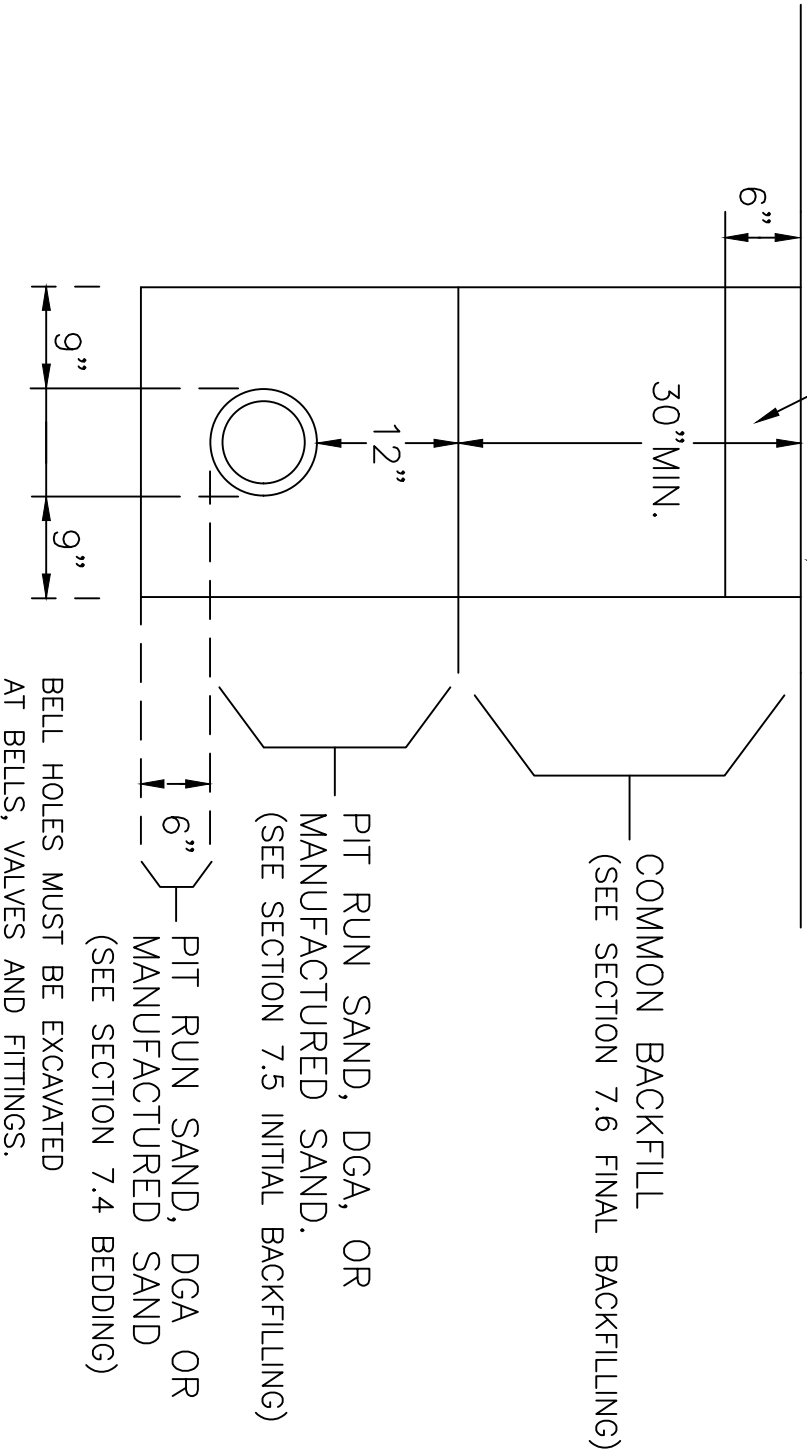
1200-C

SHEET

3 OF 3

NO ROCK IN TOP 6"
LAYER OF SOIL

FINAL GRADE
(SEE SECTION 11.6 UNPAVED SURFACES)

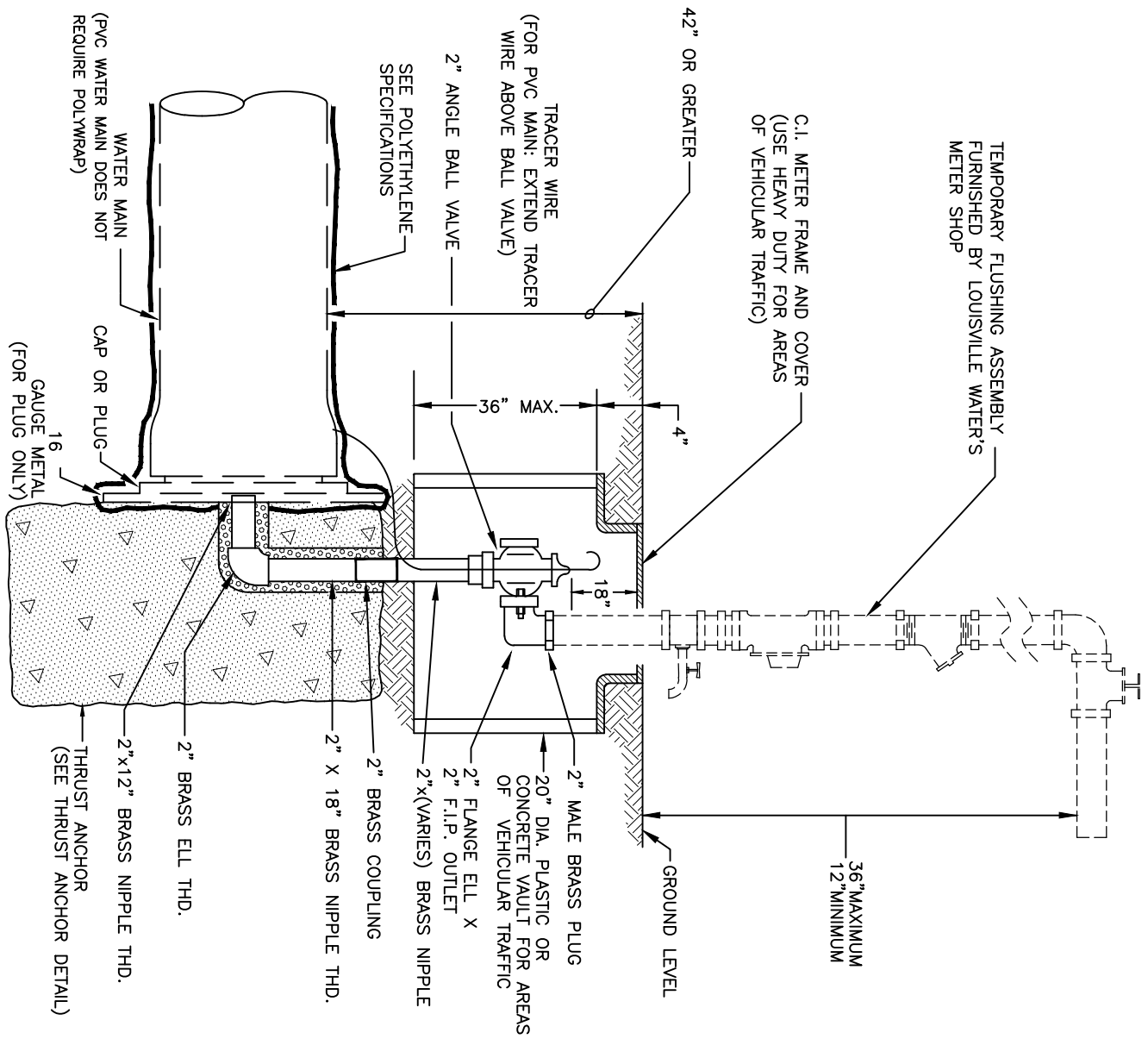


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STANDARD DRAWING

COMMON BACKFILL AND
LAWN RESTORATION

DATE	MAY 2021	SCALE	NONE
DRAWING NO.	4300	SHEET	1 OF 1



NOTES:

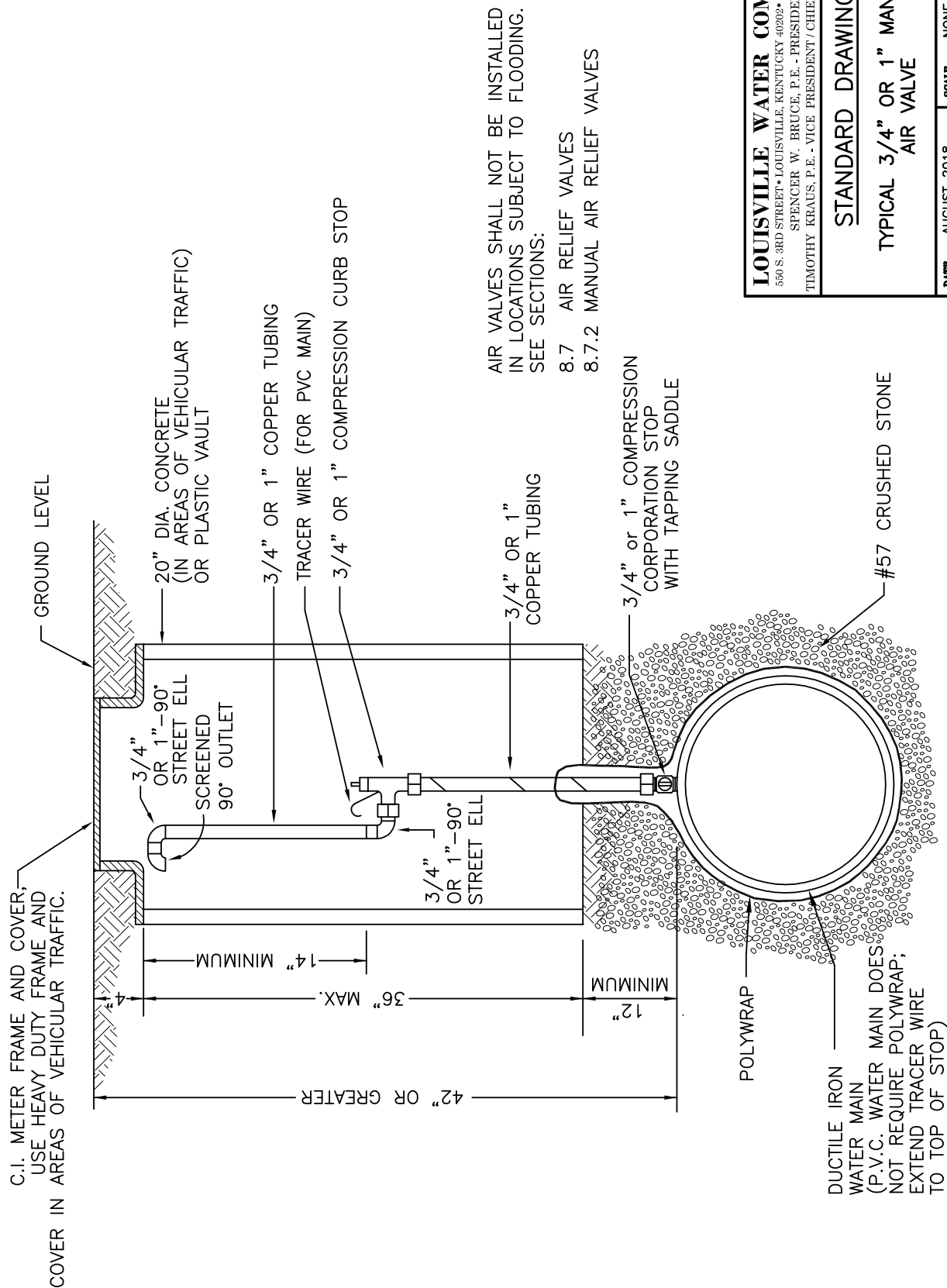
1. CAUTION: DO NOT CONNECT PRESSURE TEST EQUIPMENT TO TEMPORARY FLUSHING ASSEMBLY.
2. 1-1/2" TURBINE METER AND 2" DUAL CHECK VALVE ARE TO BE INSTALLED AFTER PIGGING OPERATIONS. A 2" HOSE IS TO BE USED DURING ALL FLUSHING OPERATIONS.
3. 8" AND LARGER WATER MAINS MAY REQUIRE LARGER THAN A 2" FLUSHING OUTLET TO MEET THE KDW 2.5 F.P.S. FLUSHING REGULATION.
4. PERMANENT PLUGS SHALL NOT BE INSTALLED ON PVC MAINS; ONLY MECHANICAL JOINT CAPS WILL BE ALLOWED.

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STANDARD DRAWING

TYPICAL 2" BLOW-OFF
AND FLUSHING CONNECTION

DATE	MAY 2021	SCALE	NONE
DRAWING NO.	1601	SHEET	1 OF 1



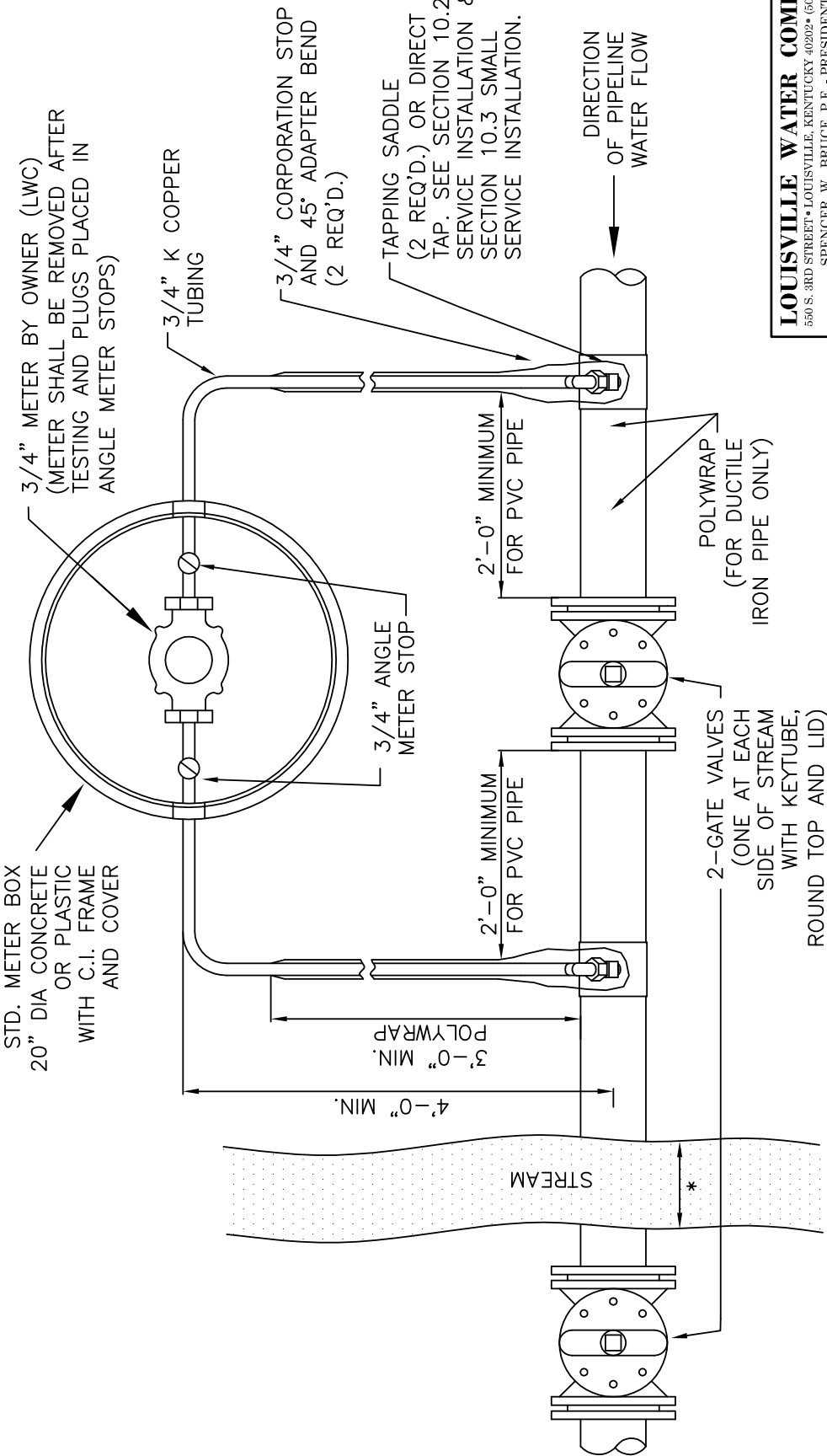


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STANDARD DRAWING

TYPICAL COMBINED 2" AUTOMATIC
AND MANUAL AIR VALVE

DATE	AUGUST 2018	SCALE	NONE
DRAWING NO.	1603	SHEET	1 OF 1



* LEAK DETECTION BY-PASS
METER IS REQUIRED IF
UNDERWATER CROSSING
IS GREATER THAN 15 FT.
SEE SECTION 8.8.

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STANDARD DRAWING
LEAK DETECTION
BY-PASS METER

DATE	FEBRUARY 2020	SCALE	NONE
DRAWING NO.	1608	SHEET	1 OF 1

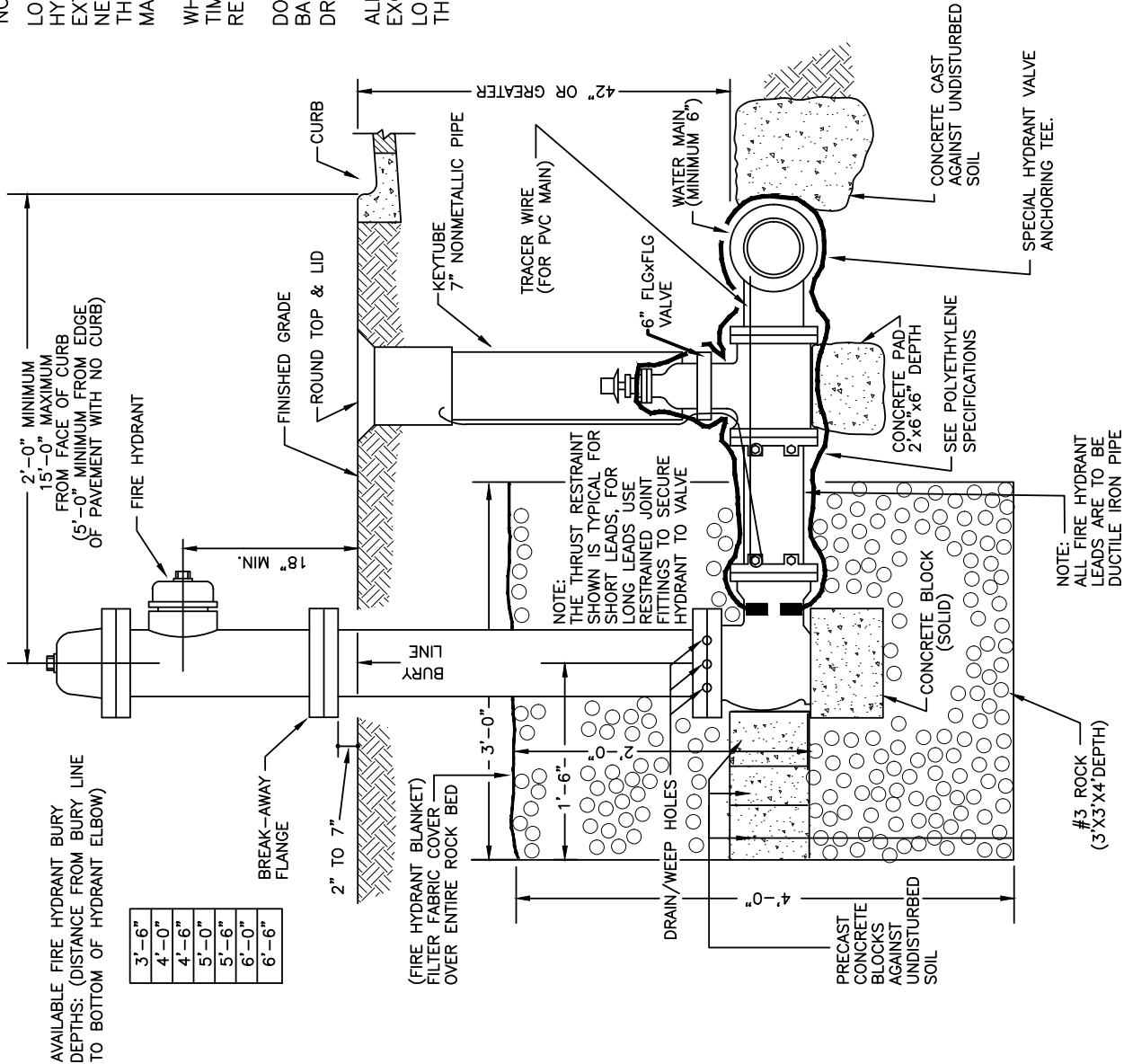
NOTE:

LOUISVILLE WATER COMPANY SUPPLIES HYDRANTS OF VARIOUS BURY DEPTHS. EXTENSION KITS SHALL NOT BE USED FOR NEW INSTALLATIONS. UNLESS APPROVED BY THE LOUISVILLE WATER COMPANY PROJECT MANAGER.

WHEN TURNING FIRE HYDRANT OFF, ALLOW TIME FOR FIRE HYDRANT TO DRAIN BEFORE REPLACING NOZZLE CAPS.

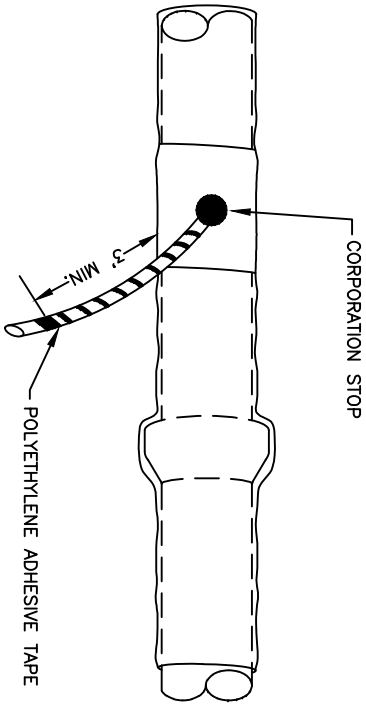
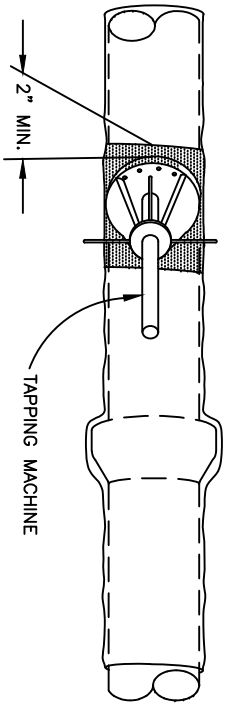
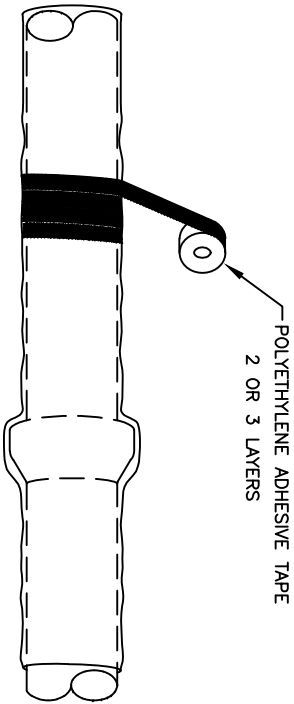
DO NOT INSTALL POLYWRAP ON HYDRANT BARREL. DO NOT COVER HYDRANT DRAIN/WEEP HOLES.

ALL HYDRANTS SHALL BE YELLOW WITH THE EXCEPTION OF WHEN INSTALLED WITHIN THE LOUISVILLE FIRE DEPARTMENT'S DISTRICT. THOSE HYDRANTS SHALL BE ORANGE.



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STANDARD DRAWING			
TYPICAL			
FIRE HYDRANT INSTALLATION			
DATE	MAY 2021	SCALE	NONE
DRAWING NO.	2000	SHEET	1 OF 1



- OPENINGS FOR BRANCHES, SERVICE TAPS, BLOW OFFS, AIR VALVES, AND SIMILAR APPURTENANCES SHALL BE MADE BY :
- 1.) WRAPPING 2 OR 3 LAYERS OF POLYETHYLENE ADHESIVE TAPE COMPLETELY AROUND THE PIPE TO COVER THE AREA WHERE THE TAPPING MACHINE AND CHAIN WILL BE MOUNTED, EXTENDING A MINIMUM OF 2" BEYOND THE MOUNTING SURFACE.
 - 2.) MOUNT THE TAPPING MACHINE ON THE PIPE AREA COVERED BY THE TAPE. MAKE THE TAP AND INSTALL THE CORPORATION STOP DIRECTLY THROUGH THE TAPE AND POLYETHYLENE.
 - 3.) INSPECT THE ENTIRE CIRCUMFERENTIAL AREA FOR DAMAGE AND MAKE ANY NECESSARY REPAIRS WITH TAPE.
 - 4.) ON HOUSE SERVICES, TO MINIMIZE THE POSSIBILITY OF DISSIMILAR METAL CORROSION AT SERVICE CONNECTIONS, WRAP THE CORPORATION STOP AND A MINIMUM CLEAR DISTANCE OF THREE (3) FEET OF THE COPPER SERVICE WITH POLYETHYLENE ADHESIVE TAPE.
 - 5.) SEE SECTION 10.3.1 & 10.4.1

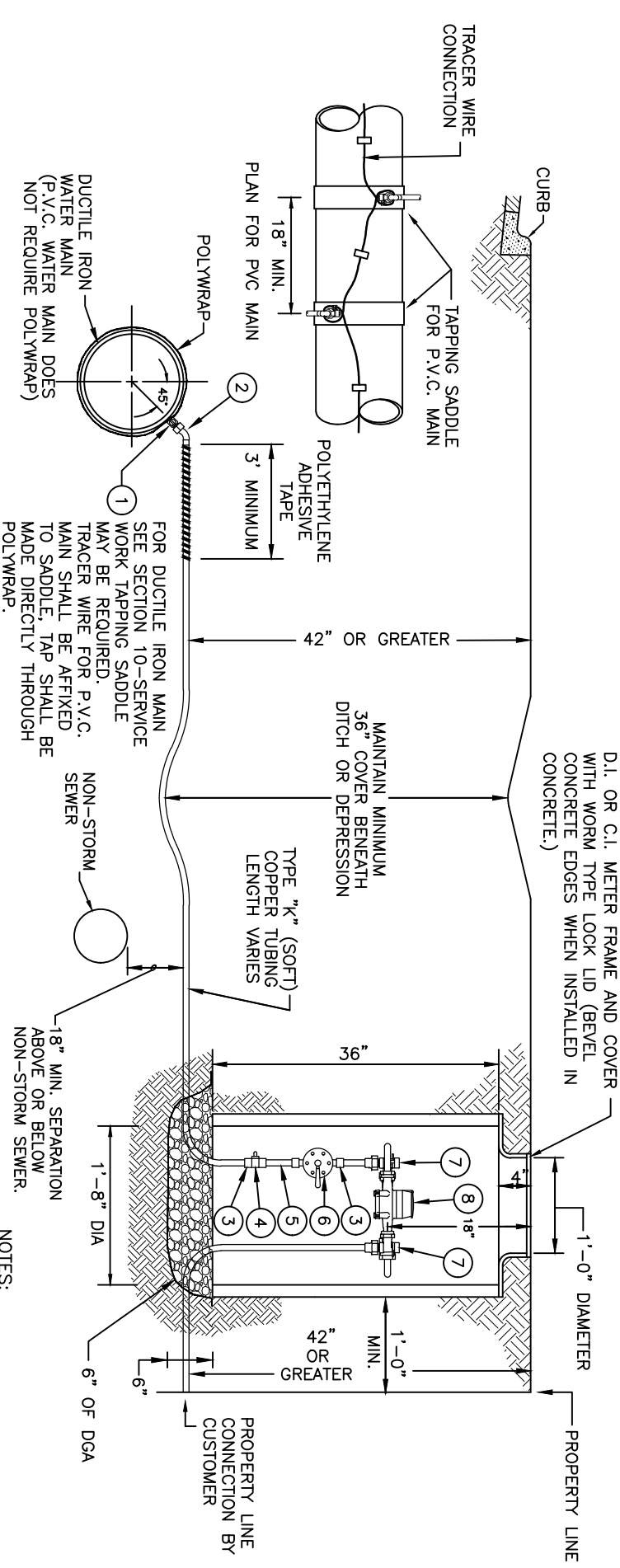
LOUISVILLE WATER COMPANY 550 S. 3RD STREET • LOUISVILLE, KENTUCKY 40202 • (502) 569-3800 SPENCER W. BRUCE, P.E. - PRESIDENT TIMOTHY KRAUS, P.E. - VICE PRESIDENT / CHIEF ENGINEER			
STANDARD DRAWING			
METHOD FOR TAPPING POLYETHYLENE ENCASED PIPE			
DATE	MAY 2021	SCALE	NONE
DRAWING NO.	3804	SHEET	1 OF 1

- 1) VAULT MATERIAL UNDER DRIVING SURFACES SHALL BE CONCRETE, WITH HEAVY FRAME AND COVER, OTHERS SHALL BE PLASTIC WITH LIGHT FRAME AND COVER.
- 2) POLYWRAP REPAIRS SHALL BE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.



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DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3002	SHEET	1 OF 1



DUCTILE IRON
WATER MAIN
(P.V.C. WATER MAIN DOES
NOT REQUIRE POLYWRAP)

FOR DUCTILE IRON MAIN
SEE SECTION 10-SERVICE
WORK TAPPING SADDLE
MAY BE REQUIRED.
TRACER WIRE FOR P.V.C.
MAIN SHALL BE AFFIXED
TO SADDLE. TAP SHALL BE
MADE DIRECTLY THROUGH
POLYWRAP.

18" MIN. SEPARATION
ABOVE OR BELOW
NON-STORM SEWER.

TYPICAL 1" COPPER SERVICE WITH PRESSURE REDUCING VALVE

NO.	QTY	FITTING	JOINT	SIZE
1	1	CORPORATION STOP	INLET-MALE THREAD (TAPERED) OUTLET-MALE THREAD	1"
2	1	ADAPTER BEND (45° OR 90°)	INLET-FEMALE THREAD OUTLET-FEMALE COMPRESSION	1"
3	2	ADAPTER	FEMALE COMPRESSION MALE THREAD	1"
4	1	BALL VALVE W/HANDLE	FEMALE THREAD	1"
5	1	BRASS NIPPLE	MALE THREAD	1"
6	1	PRESSURE REDUCING VALVE	FEMALE THREAD	1"
7	2	ANGLE METER STOP	FEMALE COMPRESSION FEMALE THREAD	1"
8	1	METER	MALE THREAD	1"

NOTES:

- 1) VAULT MATERIAL UNDER DRIVING SURFACES SHALL BE CONCRETE WITH HEAVY FRAME AND COVER, OTHERS SHALL BE PLASTIC WITH LIGHT FRAME AND COVER.
- 2) POLYWRAP REPAIRS SHALL BE MADE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.

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STANDARD DRAWING

TYPICAL 1" COPPER SERVICE
WITH PRESSURE REDUCING VALVE

DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3003	SHEET	1 OF 1

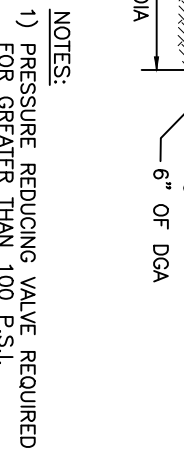


Diagram illustrating the water meter assembly and property line. The diagram shows a water meter (1) with a bypass valve (2) and a check valve (3). The meter is installed between the main (4) and the property line (5). The meter is labeled with a 7" dimension. The property line is indicated by a vertical line. The main is labeled with a 7" dimension. The bypass valve is labeled with a 7" dimension. The check valve is labeled with a 7" dimension. The meter is labeled with a 7" dimension. The property line is indicated by a vertical line. The main is labeled with a 7" dimension. The bypass valve is labeled with a 7" dimension. The check valve is labeled with a 7" dimension. The meter is labeled with a 7" dimension.

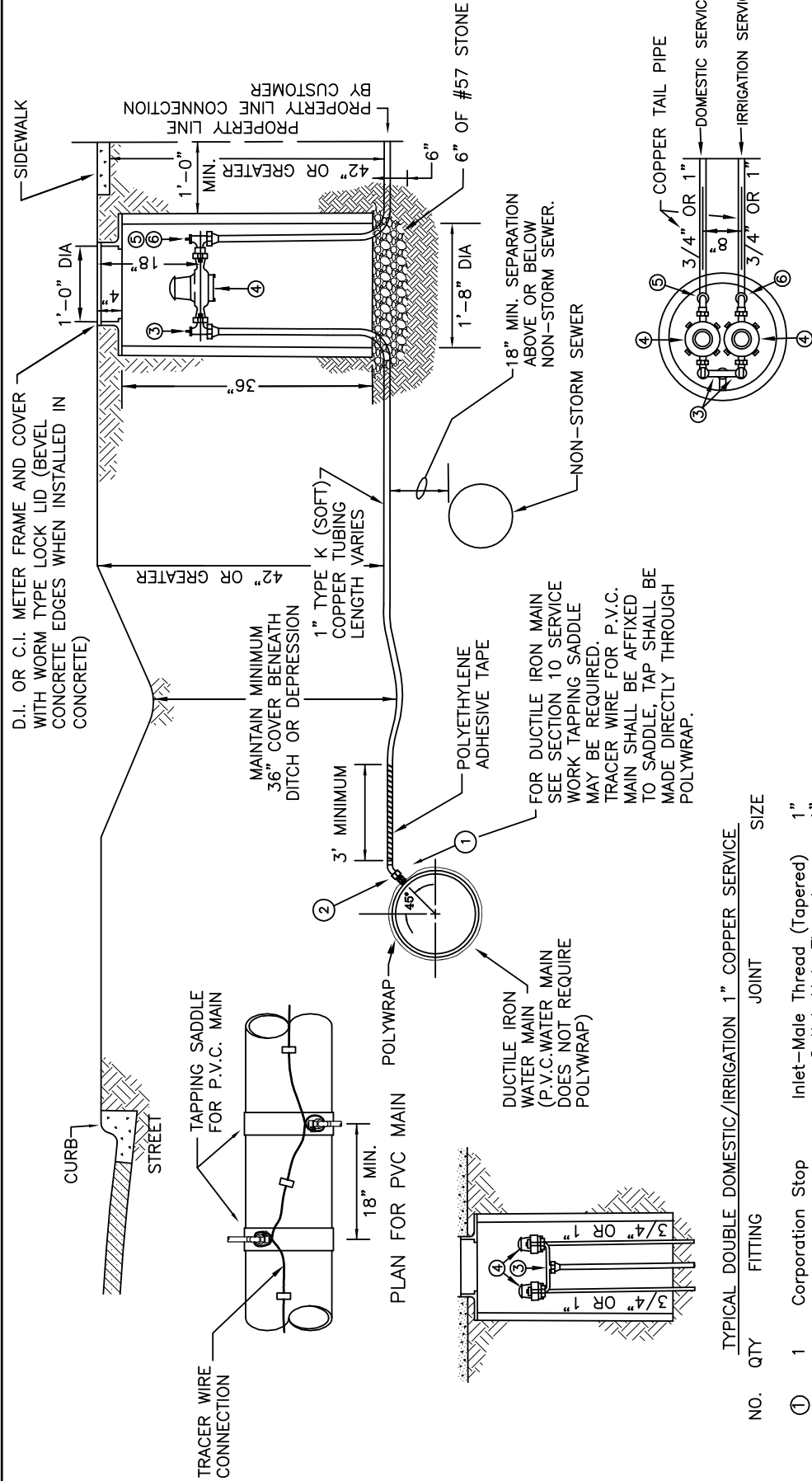
1) PRESSURE REDUCING VALVE REQUIRED FOR GREATER THAN 100 P.S.I.

3) POLYWRAP REPAIRS SHALL BE MADE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.

TYPICAL 3/4" COPPER SERVICE
WITH PRESSURE REDUCING VALVE

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DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3004	SHEET	1 OF 1



TYPICAL DOUBLE DOMESTIC/IRRIGATION 1" COPPER SERVICE

NO.	QTY	FITTING	JOINT	SIZE
①	1	Corporation Stop	Inlet-Male Thread (Tapered) Outlet-Male Thread	1" 1"
②	1	Adapter Bend (45° OR 90°)	Inlet-Female Thread Outlet-Female Compression	1" 1"
③	1	Branch Piece, with 2 Angle Meter Stops	Inlet-Female Compression Outlet-Female Compression	1" 3/4"
④	2	Meter	Male Thread	3/4"
⑤	1	Angle Meter Stop	Female Thread	3/4"
⑥	1	Angle Check Valve (Irrigation Service Only)	Female Compression Female Thread	3/4" or 1" 3/4"

NOTE:

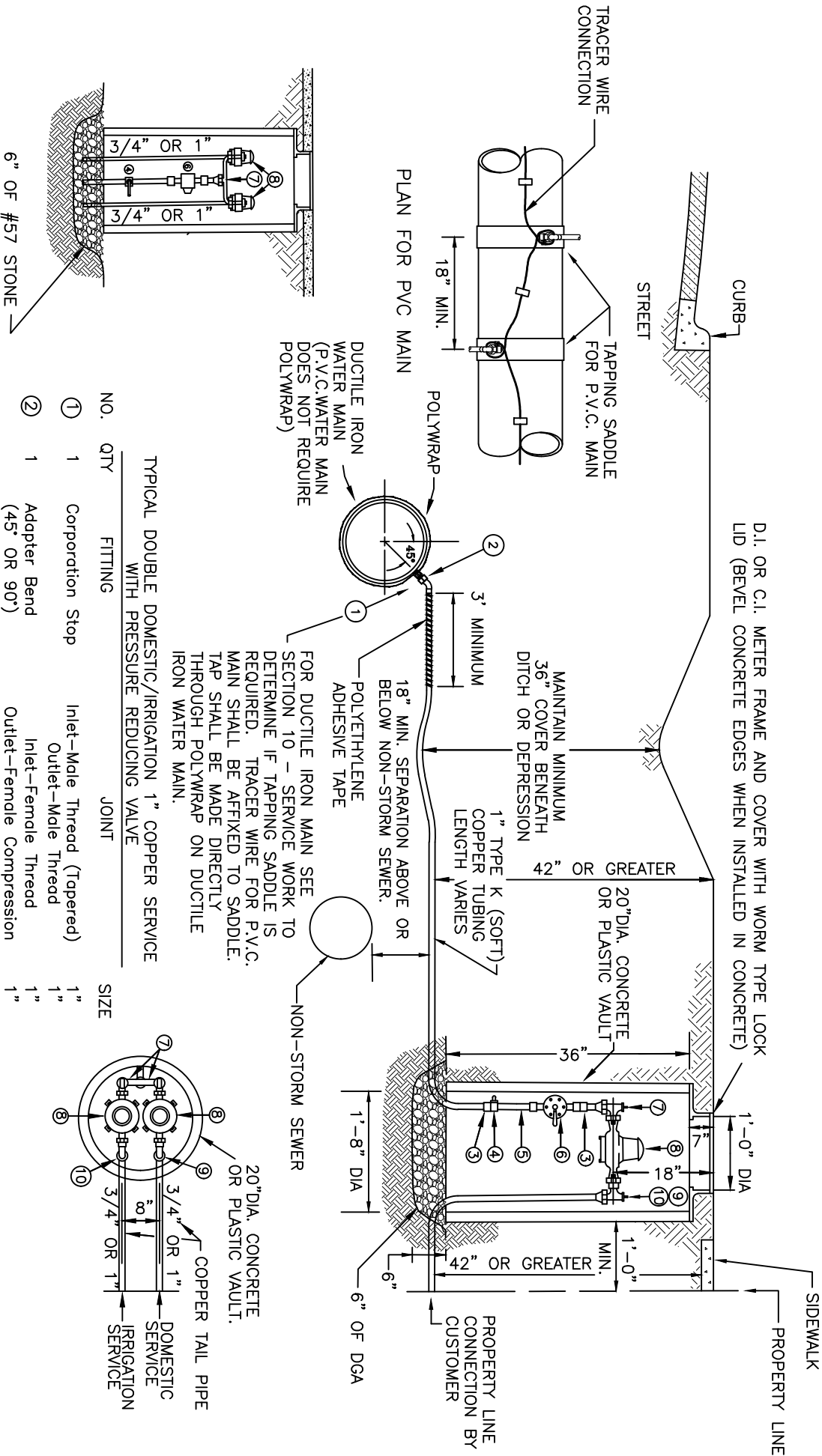
- 1) VAULT MATERIAL UNDER DRIVING SURFACES SHALL BE CONCRETE WITH HEAVY FRAME AND COVER, OTHERS SHALL BE PLASTIC WITH LIGHT FRAME AND COVER.
- 2) POLYWRAP REPAIRS SHALL BE MADE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.

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STANDARD DRAWING

TYPICAL DOUBLE 1"
DOMESTIC/IRRIGATION
COPPER SERVICE

DATE	FEBRUARY 2020	SCALE	NONE
DRAWING NO.	3400	SHEET	1 OF 1

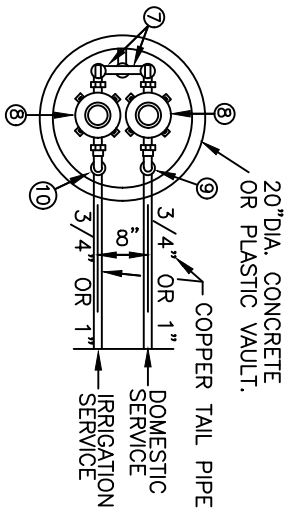


NOTE:

1) VAULT MATERIAL UNDER DRIVING SURFACES SHALL BE CONCRETE WITH HEAVY FRAME AND COVER, OTHERS SHALL BE PLASTIC WITH LIGHT FRAME AND COVER.

2) POLYWRAP REPAIRS SHALL BE MADE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.

TYPICAL DOUBLE DOMESTIC/IRRIGATION 1" COPPER SERVICE WITH PRESSURE REDUCING VALVE			
NO.	QTY	FITTING	JOINT
①	1	Corporation Stop	Inlet-Male Thread (Tapered) Outlet-Male Thread
②	1	Adapter Bend (45° OR 90°)	Inlet-Female Thread Outlet-Female Compression
③	2	Adapter	Female Compression Male Thread
④	1	Ball Valve w/ Handle	Female Thread
⑤	1	Brass Nipple	Male Thread
⑥	1	Pressure Reducing Valve	Female Thread
⑦	1	Branch Piece with 2 Angle Meter Stop	Inlet-Female Compression Outlet-Female Thread
⑧	2	Meter	Male Thread
⑨	1	Angle Meter Stop (Domestic Service Only)	Female Thread
⑩	1	Angle Check Valve (Irrigation Service Only)	Female Thread



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STANDARD DRAWING
TYPICAL DOUBLE 3/4" OR 1"
DOMESTIC / IRRIGATION
COPPER SERVICE WITH
PRESSURE REDUCING VALVE

DATE: JULY 2021

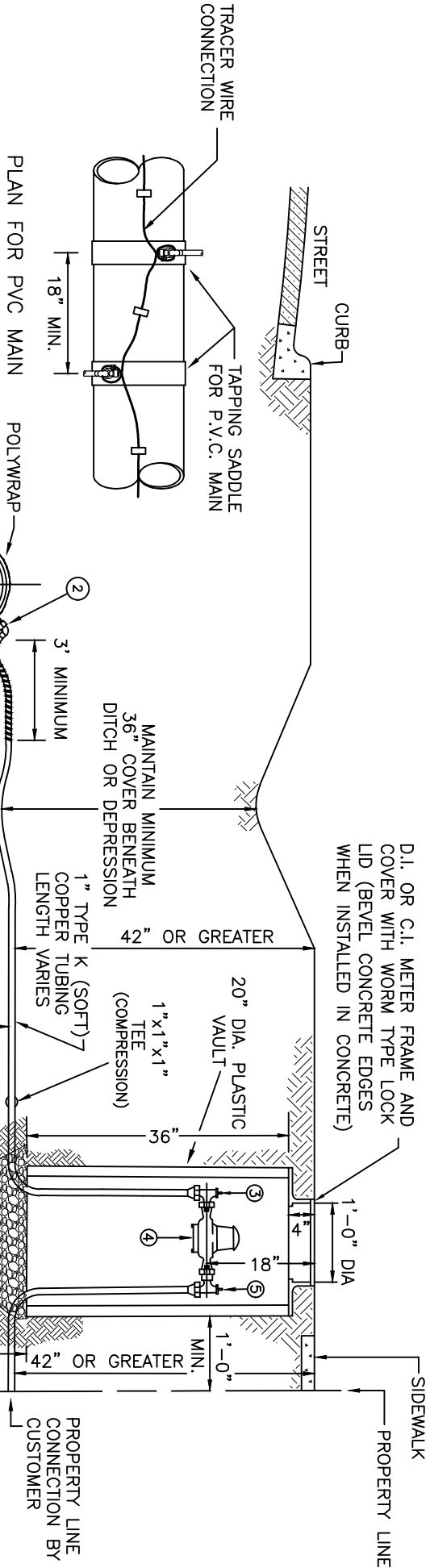
DRAWING NO. 3401

SCALE: NONE

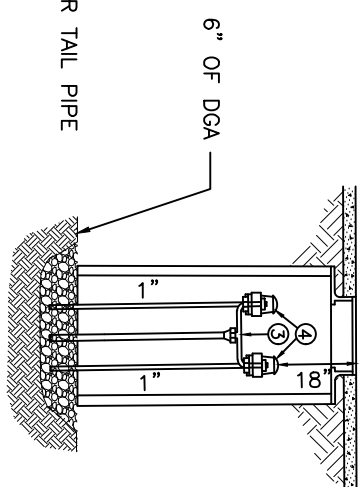
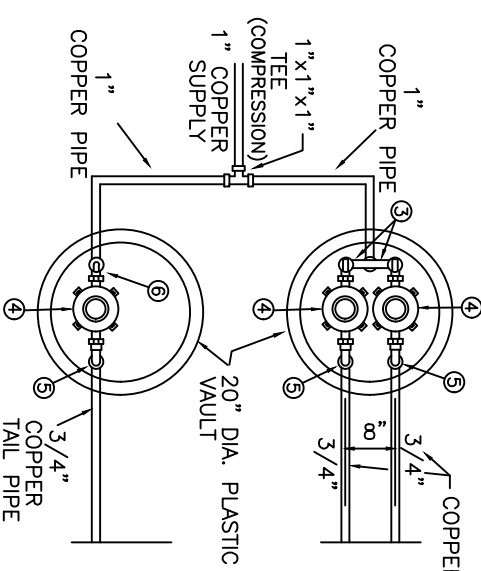
SHEET 1 OF 1

TYPICAL 1" 3-WAY DOMESTIC COPPER SERVICE		
NO.	QTY	FITTING JOINT SIZE
①	1	Corporation Stop Inlet-Male Thread (Tapered) Outlet-Male Thread 1" 1"
②	1	Adapter Bend (45° OR 90°) Inlet-Female Thread Outlet-Female Compression 1" 1"
③	1	Branch Piece, with 2 Angle Meter Stops Inlet-Female Compression Outlet-Female Thread 1"x3/4" 3/4"
④	3	Meter Male Thread 3/4"
⑤	3	Angle Meter Stop Female Thread Female Compression 3/4" 3/4"
⑥	1	Angle Meter Stop Female Thread Female Compression 3/4" 1"

NOTE:
1) VAULT MATERIAL UNDER DRIVING SURFACES SHALL BE CONCRETE, WITH HEAVY FRAME AND COVER, OTHERS SHALL BE PLASTIC WITH LIGHT FRAME AND COVER.
2) POLYWRAP REPAIRS SHALL BE MADE IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING 3804.



SEE SECTION 10 - SERVICE WORK TO DETERMINE IF A TAPPING SADDLE IS REQUIRED. TRACER WIRE FOR P.V.C. MAIN SHALL BE AFFIXED TO SADDLE. TAP SHALL BE MADE DIRECTLY THROUGH POLYWRAP ON DUCTILE IRON WATER MAIN.

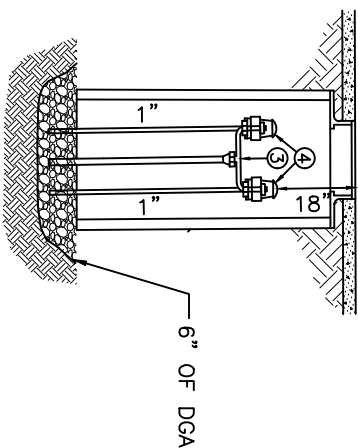


STANDARD DRAWING

TYPICAL 1" 3-WAY
DOMESTIC COPPER SERVICE

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DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3420	SHEET	1 OF 1

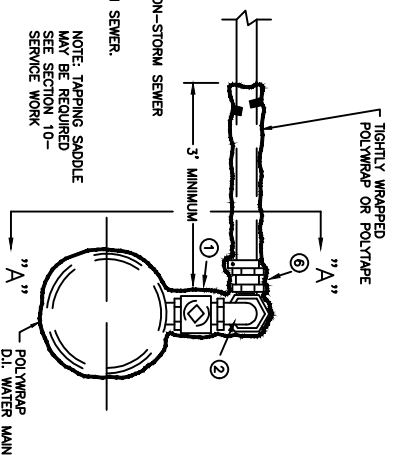
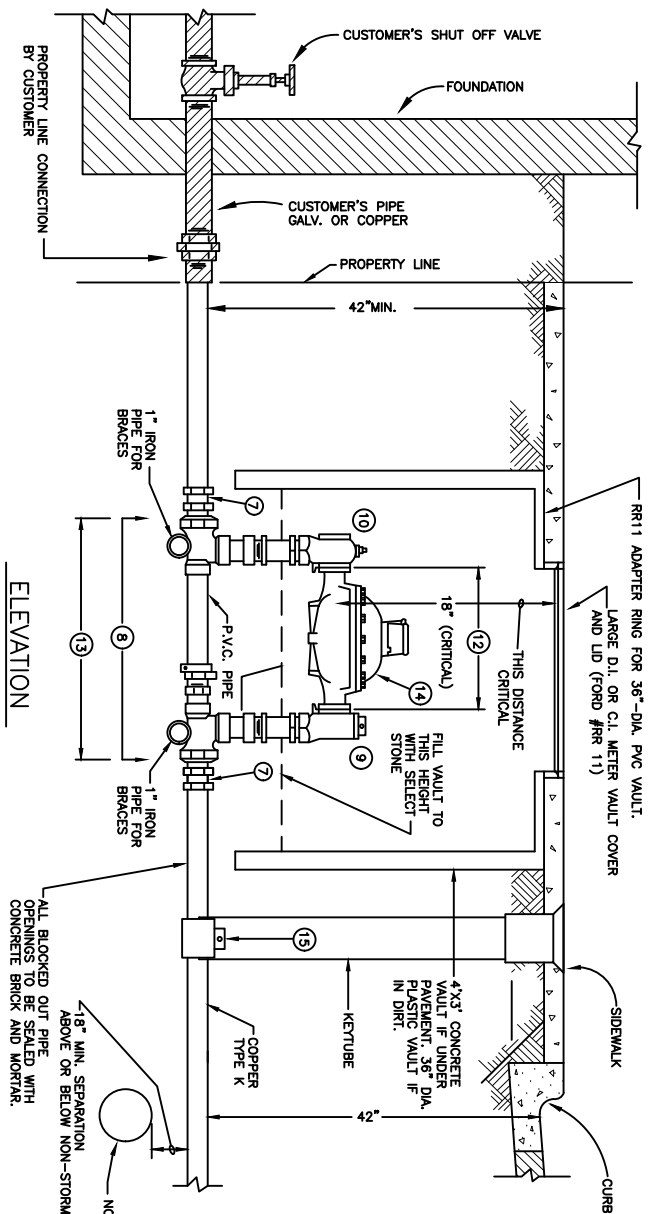


This diagram illustrates a two-unit water distribution system. A single 1" COPPER SUPPLY line enters from the top and splits into two parallel horizontal lines, each labeled COPPER PIPE. These horizontal lines connect to two identical circular units, each representing a vault. The vaults are labeled 20" DIA. PLASTIC VAULT. Inside each vault, the horizontal line connects to a vertical COPPER TAIL PIPE. The tail pipes are labeled 3/4" and have a 60° bend. The units are numbered 1 through 5, corresponding to the labels in the adjacent diagram.

DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3430	SHEET	1 OF 1

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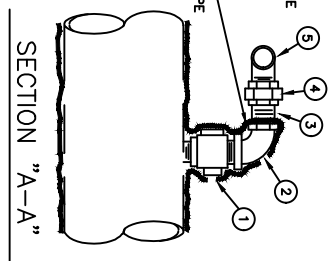
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NOTE: TAPPING SADDLE
MAY BE REQUIRED
SEE SECTION 10-
SERVICE WORK

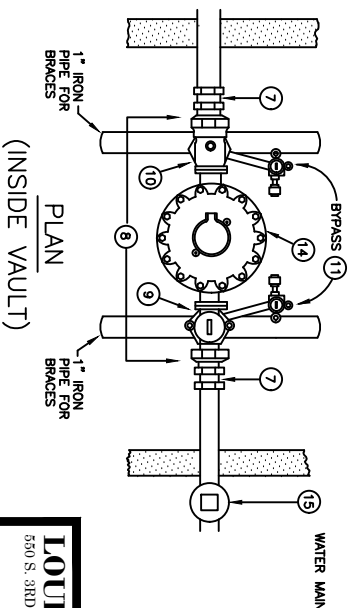
ORM SEWER.

NOTE: POLYWRAP
REPAIRS SHALL BE MADE
IN ACCORDANCE TO
DETAILS AS SHOWN ON
DRAWING 3804.



SECTION "A-A"

NO.	QTY	FITTING	JOINT	1.5" SERVICE'S FITTING SIZES	2" SERVICE'S FITTING SIZES
①	1	CORPORATION STOP	INLET-MALE THREAD (TAPERED) OUTLET-MALE THREAD	1-1/2" 1-1/2"	2" 2"
②	1	BRASS REDUCING ELL	INLET-FEMALE THREAD OUTLET-FEMALE THREAD	2" 2"	2-1/2" 2-1/2"
③	1	BRASS NIPPLE (CLOSE)	MALE THREAD	1-1/2"	2"
④	1	BRASS UNION	FEMALE THREAD	1-1/2"	2"
⑤	1	BRASS STREET ELL	MALE THREAD	1-1/2"	2"
⑥	1	COMPRESSION COUPLING	FEMALE THREAD FEMALE COMPRESSION	1-1/2" 1-1/2"	2" 2"
⑦	2	ADAPTER	FEMALE COMPRESSION MALE THREAD	1-1/2" 1-1/2"	2" 2"
⑧	1	METER SETTER	FEMALE THREAD	1-1/2"	2"
⑨		ANGLE METER STOP	-----	-----	---
⑩		ANGLE CHECK VALVE	-----	-----	---
⑪		BY-PASS 1	-----	-----	---
⑫		-----	-----	13-3/8"	17-3/8"
⑬		-----	-----	22"	27-1/8"
⑭	1	METER	MALE THREAD	1-1/2"	2"
⑮	1	STOP	FEMALE THREAD	1-1/2"	2"

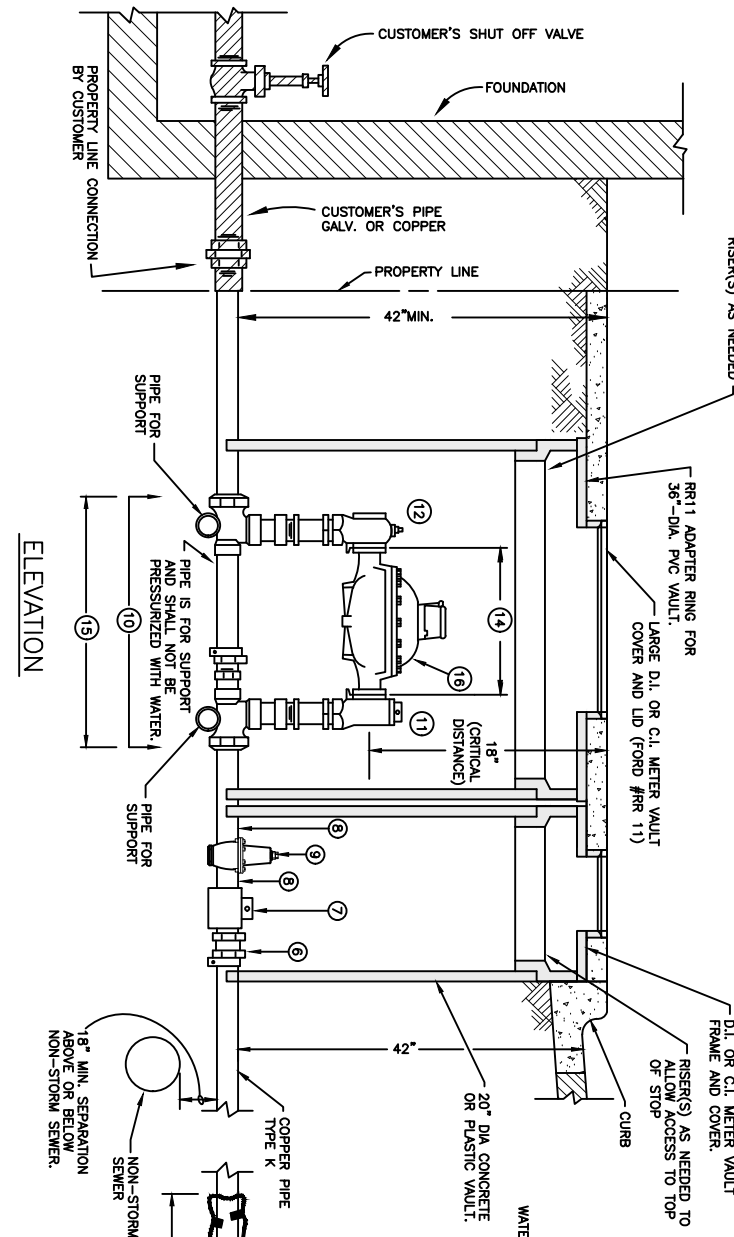


(INSIDE VAULT)

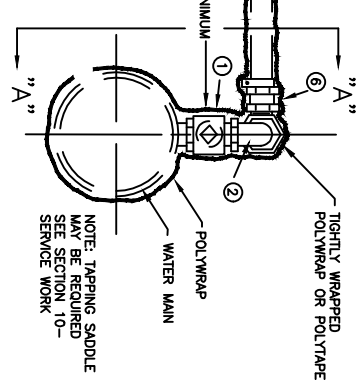
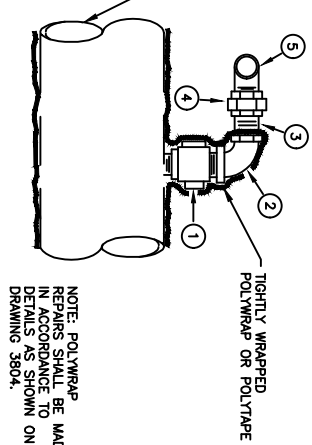
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STANDARD DRAWING			
TYPICAL 1'-1/2" OR 2" COPPER SERVICE			
DATE	JULY 2021		
DRAWING NO.	3200	SHEET	1 OF 1

NO.	QTY	FITTING	JOINT	1.5" SERVICE'S FITTING SIZE	2" SERVICE'S FITTING SIZE
1	1	CORPORATION STOP	INLET-MALE THREAD (TAPERED) OUTLET-MALE THREAD	1-1/2" 2"	2" 2-1/2"
2	1	BRASS REDUCING ELL	INLET-FEMALE THREAD OUTLET-FEMALE COMPRESSION	1-1/2" 2"	2-1/2" 2"
3	1	BRASS NIPPLE (CLOSE)	MALE THREAD	1-1/2"	2"
4	1	BRASS UNION	FEMALE THREAD	1-1/2"	2"
5	1	BRASS STREET ELL	MALE THREAD	1-1/2"	2"
6	1	COMPRESSION COUPLING	FEMALE THREAD FEMALE COMPRESSION	1-1/2" 2"	2" 2"
7	1	STOP	FEMALE THREAD	1-1/2"	2"
8	2	BRASS NIPPLE (X6)	MALE THREAD	1-1/2"	2"
9	1	PRESSURE REDUCING VALVE	FEMALE THREAD	1-1/2"	2"
10	1	METER SETTER	FEMALE THREAD	1-1/2"	2"
11	1	ANGLE METER STOP	-----	-----	-----
12	1	ANGLE CHECK VALVE	-----	-----	-----
13	-----	BYPASS 1"	-----	1-1/2"	2"
14	-----	-----	-----	13-3/8"	17-3/8"
15	-----	-----	-----	22"	27-1/8"
16	1	METER	MALE THREAD	1-1/2"	2"

TYPICAL 1 1/2" or 2" COPPER SERVICE



SECTION "A-A"



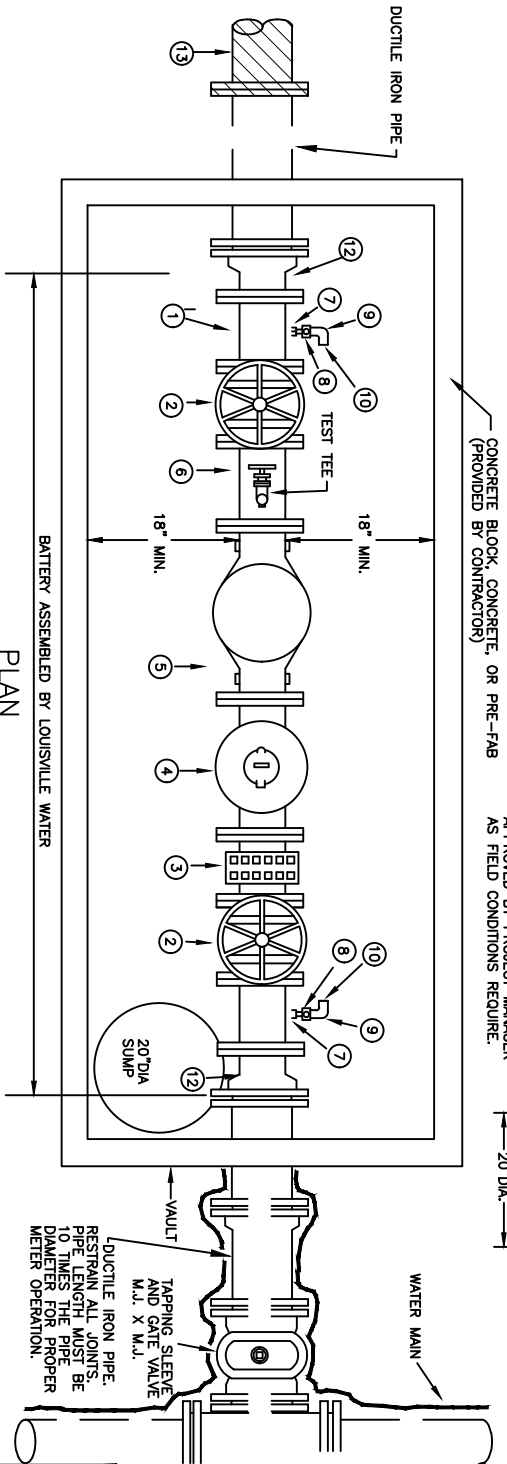
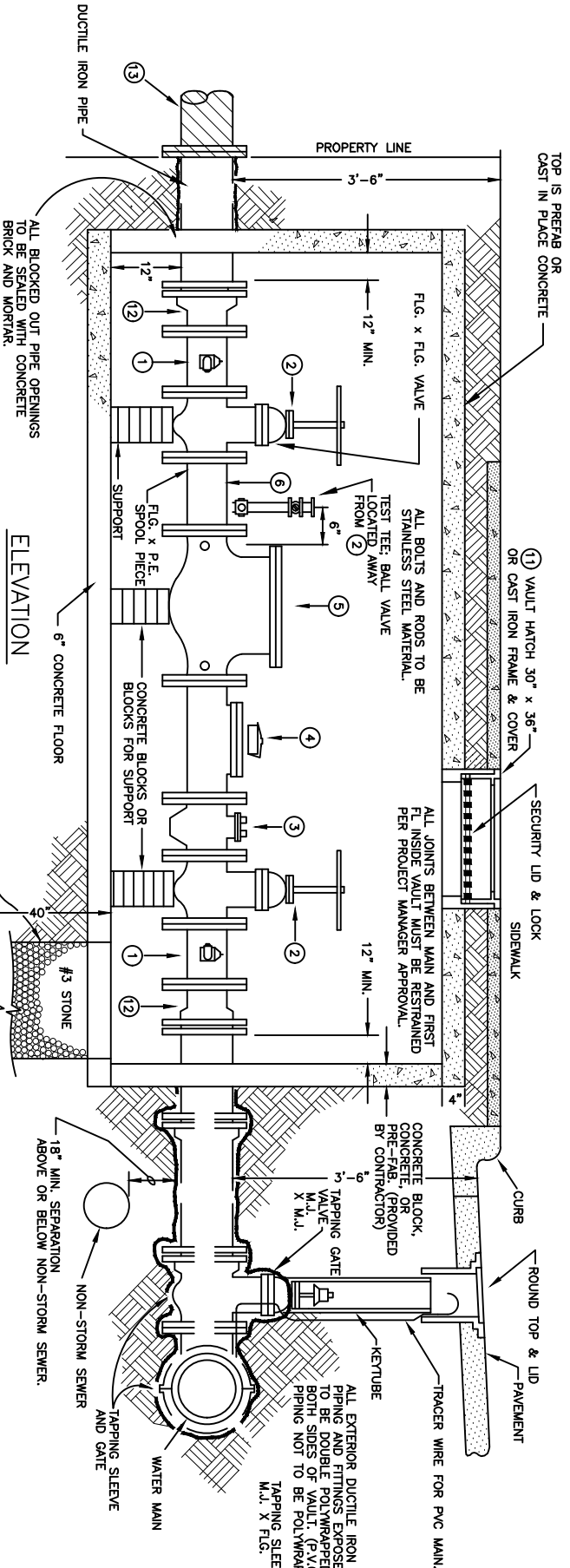
PLAN VIEW
(INSIDE VAULTS)

- NOTES:
1. VAULTS SHALL NOT REST DIRECTLY ON PIPE. A CLEAN CUT ARCH SHALL BE CUT IN VAULT TO ALLOW 3" SEPARATION BETWEEN VAULT AND PIPE.
 2. VAULTS SHALL BE PLACED ON A 6" BEDDING OF DGA THAT EXTENDS 6" BEYOND VAULT EXTERIOR.

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STANDARD DRAWING
TYPICAL 1-1/2" OR 2"
COPPER SERVICE
WITH PRESSURE REDUCING VALVE

DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3202	SHEET	1 OF 1



- 1 TWO (2) 4"x3" SPOOL, PIECES WITH TWO (2) 2" OUTLETS, FLG x FLG
- 2 TWO (2) GATE VALVES, WHEEL, FLG x FLG
- 3 ONE (1) STRAINER, FLG x FLG
- 4 ONE (1) METER, FLG x FLG
- 5 ONE (1) CHECK VALVE, FLG x FLG
- 6 ONE (1) SPOOL, PIECE, FLG x FLG WITH ONE (1) 2" OUTLET, 2" BALL VALVE ASSEMBLY FOR TEST TEE
- 7 TWO (2) NIPPLES, MALE THREAD
- 8 TWO (2) STOP OR VALVES, MALE THREAD
- 9 TWO (2) STREET ELBS, MALE THREAD
- 10 TWO (2) PLUGS, MALE THREAD
- 11 ONE (1) VAULT HATCH-30" x 36"
- 12 TWO (2) 4"x3" ADAPTERS-FLG. x M.U. WITH GRIPPER GLAND
- 13 CUSTOMER PIPING

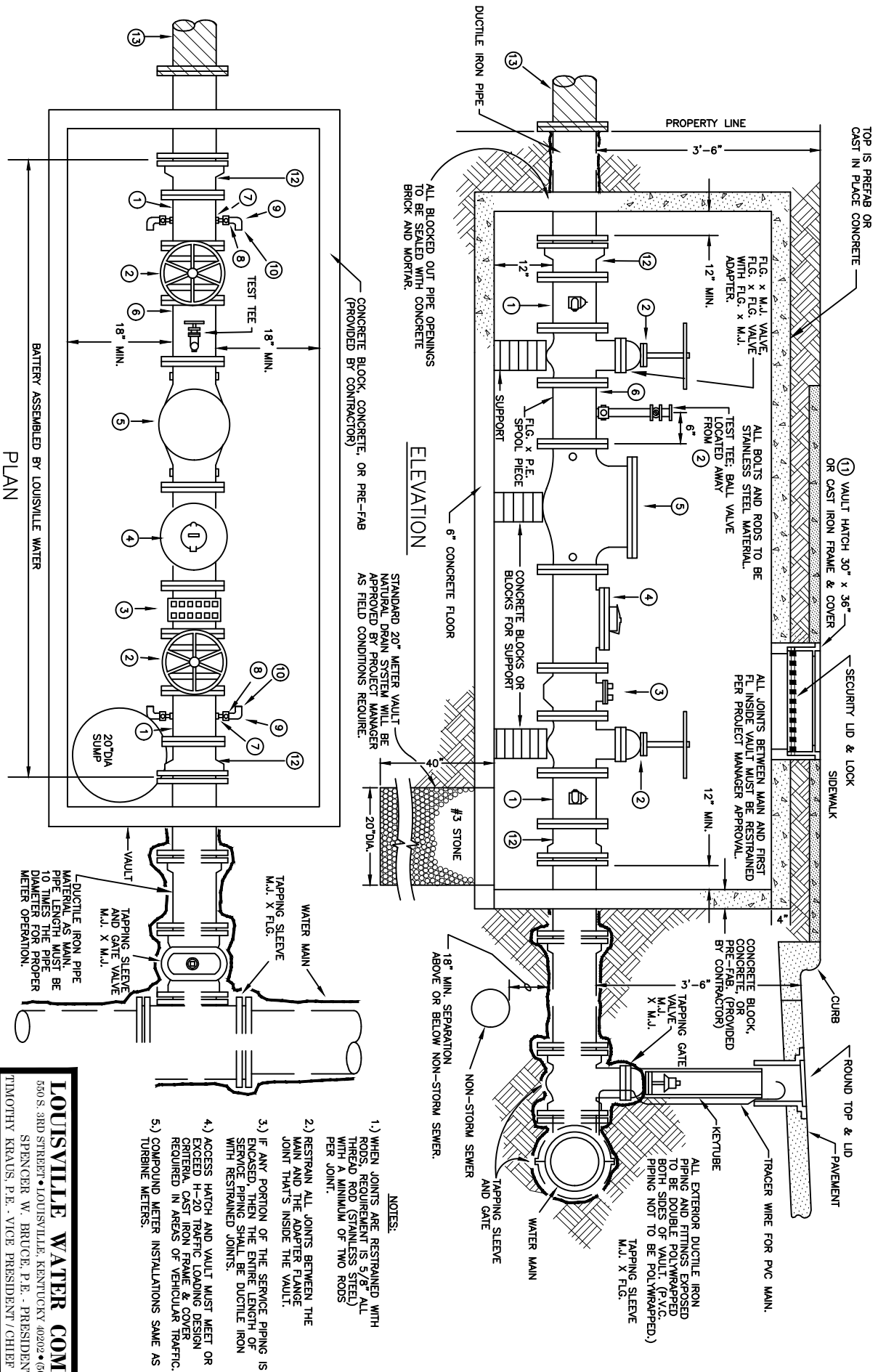
- NOTES:
- 1.) WHEN JOINTS ARE RESTRAINED WITH RODS, REQUIREMENT IS 5/8" ALL THREAD ROD (STAINLESS STEEL) WITH A MINIMUM OF TWO RODS PER JOINT.
 - 2.) RESTRAIN ALL JOINTS BETWEEN THE MAIN AND THE ADAPTER FLANGE JOINT THAT'S INSIDE THE VAULT.
 - 3.) IF ANY PORTION OF THE SERVICE PIPING IS EXPOSED, THE ENTIRE LENGTH OF SERVICE PIPING SHALL BE DUCTILE IRON WITH RESTRAINED JOINTS.
 - 4.) ACCESS HATCH AND VAULT MUST MEET OR EXCEED H-20 TRAFFIC LOADING DESIGN CRITERIA. CAST IRON FRAME & COVER REQUIRED IN AREAS OF VEHICULAR TRAFFIC.
 - 5.) COMPOUND METER INSTALLATIONS SAME AS TURBINE METERS.

STANDARD DRAWING

TYPICAL DUCTILE IRON
DOMESTIC SERVICE 4" x 3"

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SPENCER W. BRUCE, P.E. - PRESIDENT
TIMOTHY KRAUS, P.E. - VICE PRESIDENT / CHIEF ENGINEER

DATE	OCT. 2021	SCALE	NONE
DRAWING NO.	3203A	SHEET	1 OF 1

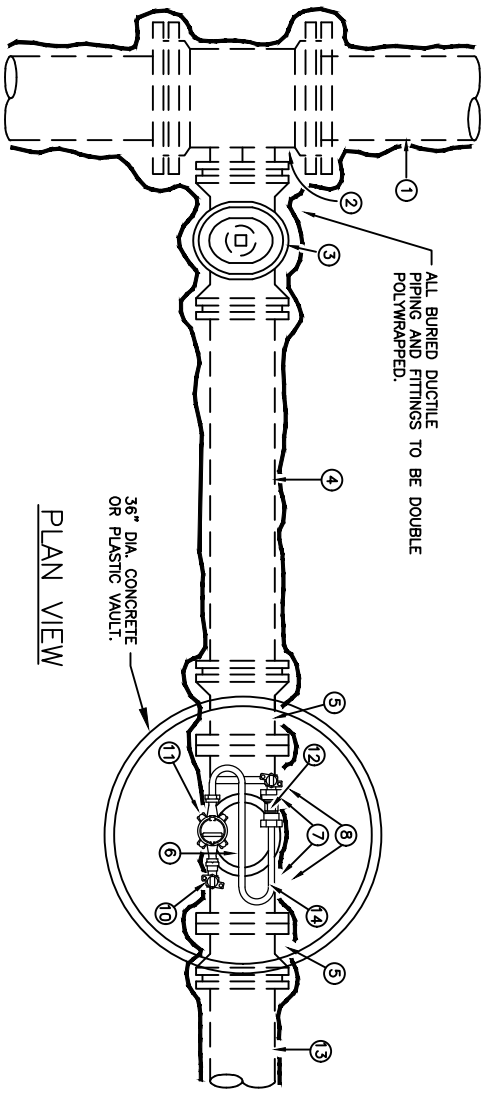


STANDARD DRAWING

TYPICAL DUCTILE IRON
DOMESTIC SERVICE
4" AND LARGER

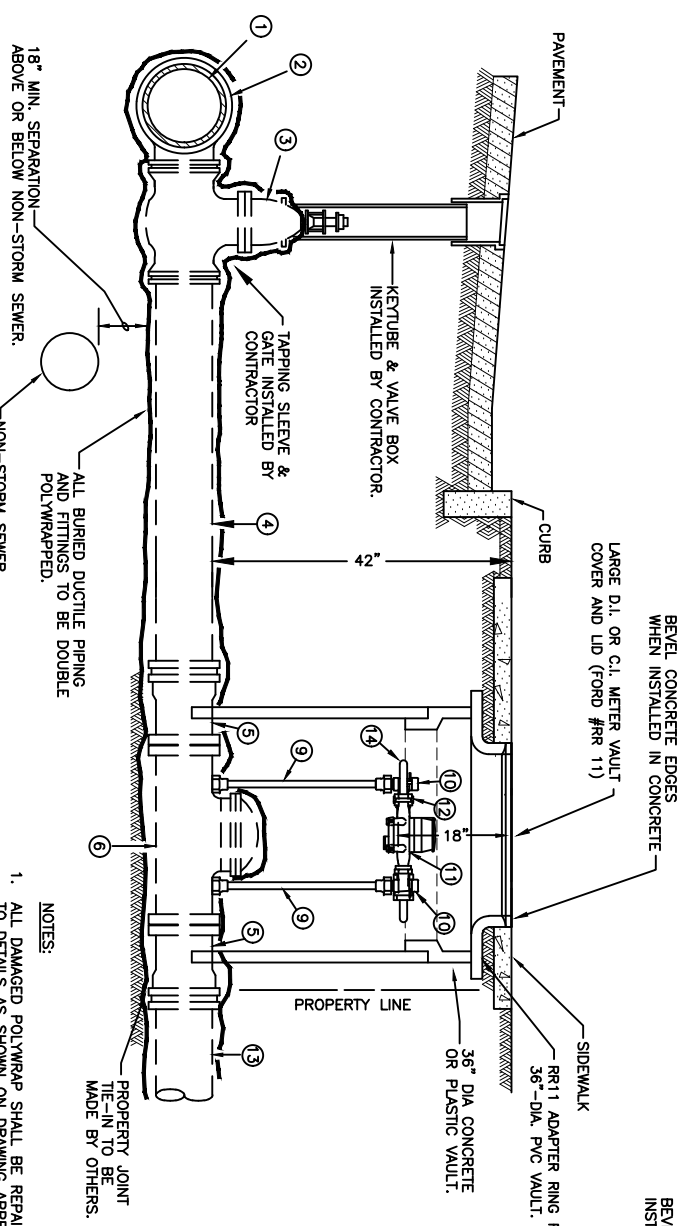
LOUISVILLE WATER COMPANY
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DATE	SCALE	SHEET	OF
OCT. 2021	NONE	1	1
DRAWING NO.	3203		

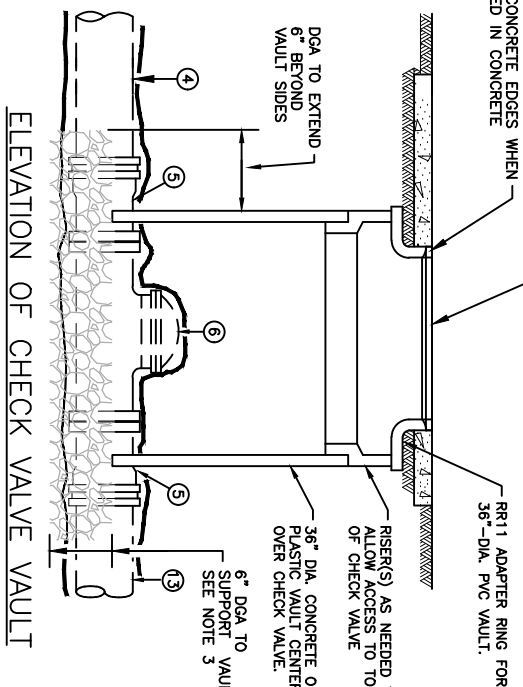


PLAN VIEW

TYPICAL FIRE PROTECTION SERVICE 4" OR LARGER				FIRE SERVICE SIZES	
NO.	QTY	FITTING	JOINT	4"	6"
1	—	Main in Street	Varies	—	—
2	1	Tapping Sleeve	MJ	4"	6"
3	1	Tapping Gate Valve	MJ x MJ (restrained)	4"	6"
4	varies	D.I. Service Piping	MJ / Bell & Spig (restrain oil joints up to check valve)	4"	6"
5	2	Adapter	Flange X MJ or PE	4"	6"
6	1	Detector Check Valve	Flange X Flange	4"	6"
7	2	Bushing	Male Thread	1" - 1 1/2"	3/4"
8	2	Adapter	Female Thread	3/4"	3/4"
9	varies	Copper Tubing	Female Compression	3/4"	3/4"
10	2	Angle Meter Stop	Female Compression	3/4"	3/4"
11	1	Meter	Female Thread	3/4"	3/4"
12	1	Swing Check Valve	Female Thread X Male Thread	3/4"	3/4"
13	1	Customer Piping	Female Thread	3/4"	3/4"
14	1	S-Tube	Female Thread	3/4"	3/4"



PROFILE VIEW



ELEVATION OF CHECK VALVE VAULT

- NOTES:
1. ALL DAMAGED POLYWRAP SHALL BE REPAIRED IN ACCORDANCE TO DETAILS AS SHOWN ON DRAWING APPENDIX.
 2. RESTRAIN ALL JOINTS BETWEEN THE MAIN AND THE DETECTOR CHECK VALVE.
 3. 36" DIA. VAULT SHALL NOT REST DIRECTLY ON PIPE. A CLEAN CUT ARCH SHALL BE CUT IN VAULT TO ALLOW 3" SEPARATION. VAULT SHALL REST ON A 6" BEDDING OF DGA
 4. ALL BOLTS ON TOP OF CHECK VALVE SHALL BE MADE ACCESSIBLE FROM INSIDE OF VAULT
 5. CAST CONCRETE THRUST ANCHOR ON TAPPING SLEEVE AS PER DRAWING 1400

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TYPICAL

FIRE PROTECTION SERVICE

4" AND LARGER

DATE

JULY 2021

SCALE

NONE

DRAWING NO.

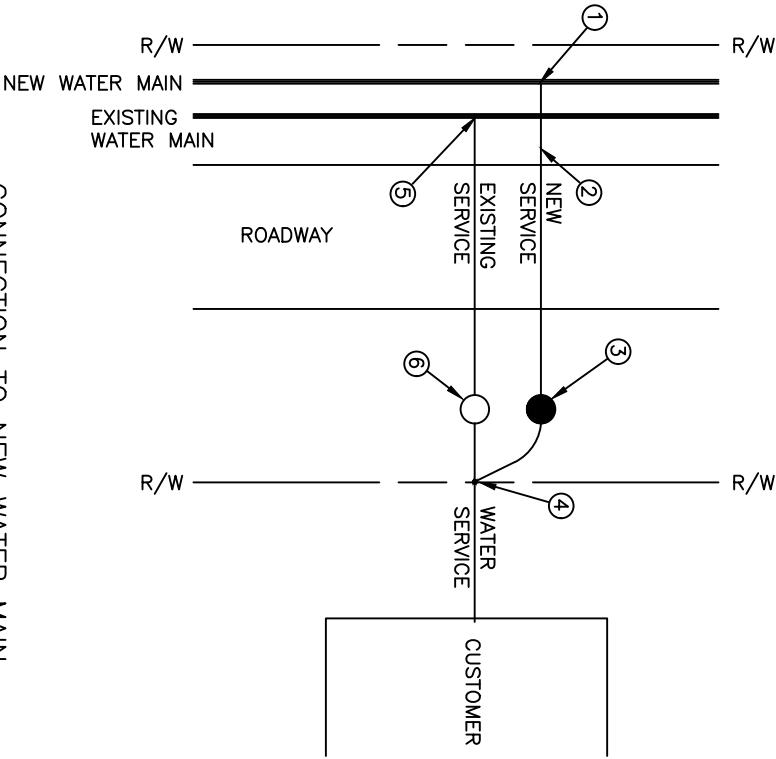
3601

SHEET

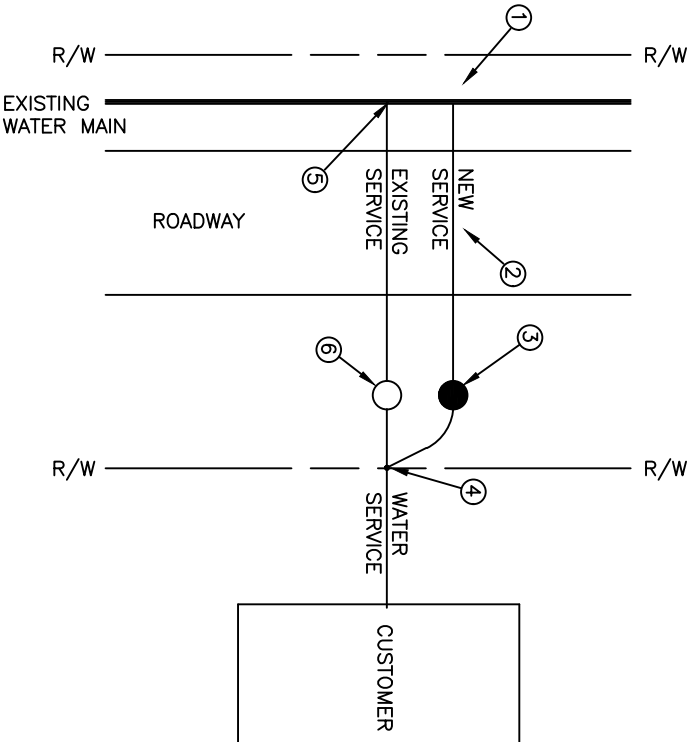
1

OF

1



CONNECTION TO NEW WATER MAIN



CONNECTION TO EXISTING WATER MAIN

NOTES:

- 1 INSTALL NEW CORPORATION STOP ON MAIN.
 - 2 INSTALL NEW SERVICE LINE.
 - 3 INSTALL METER, VAULT, FRAME AND LID. CONCRETE METER VAULTS WITH HEAVY FRAME AND COVER SHALL BE INSTALLED IN AREAS OF VEHICULAR TRAFFIC.
 - 4 INSTALL TAIL PIECE AND TIE-IN TO CUSTOMER SERVICE LINE. IF EXISTING TAIL PIECE OR CUSTOMER SERVICE LINE IS LEAD OR GALVANIZED IRON THEN FOLLOW CURRENT INSTALLATION PROCEDURES PER THE LOUISVILLE WATER PROJECT MANAGER.
 - 5 DISCONTINUE OLD SERVICE AT EXISTING WATER MAIN. DRIVEN FERULES MUST BE REMOVED AND A TAPPING SADDLE INSTALLED AT TAP IF MAIN WILL REMAIN ACTIVE. (SEE SECT. 10.17)
 - 6 ABANDON OLD METER VAULT, RETURN METER AND CAST IRON FRAME & COVER TO ALLMOND AVENUE, BACKFILL METER VAULT (SEE SECT.10.18)
- * CONNECTION AS SHOWN IS A "LONG SERVICE" TO MAIN ON OPPOSITE SIDE OF ROAD. "SHORT SERVICE" IS DEFINED AS METER AND MAIN ON THE SAME SIDE OF ROADWAY.

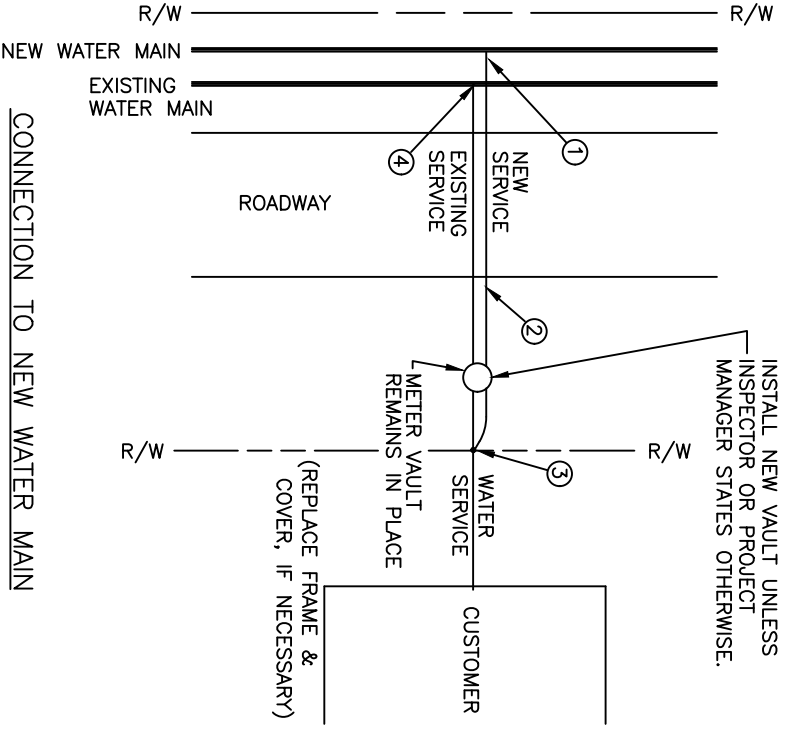
LEGEND

- = EXISTING METER VAULT
● = NEW METER VAULT

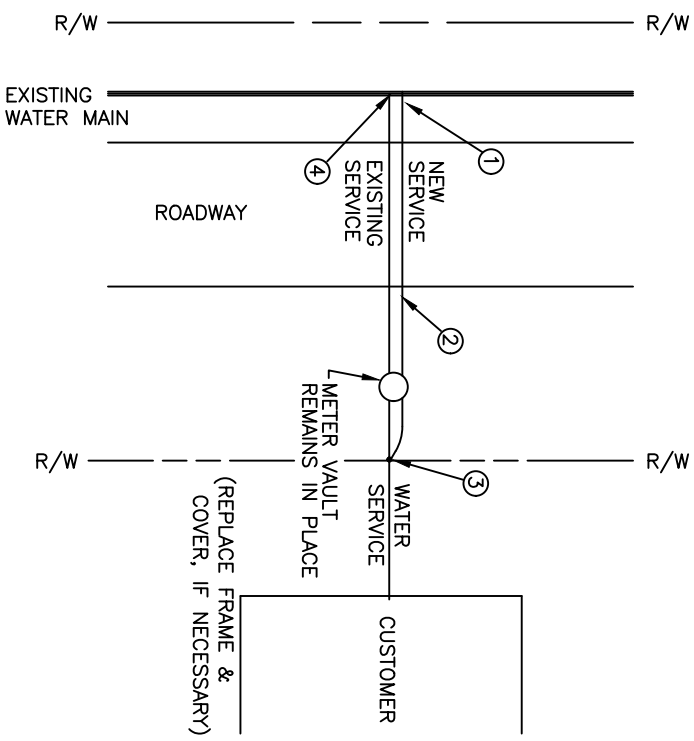
STANDARD DRAWING
RELOCATE SERVICE

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DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3440	SHEET	1 OF 1



CONNECTION TO NEW WATER MAIN



CONNECTION TO EXISTING WATER MAIN

LEGEND
○ = EXISTING METER VAULT

NOTES:

- ① INSTALL NEW CORPORATION STOP ON MAIN.
- ② INSTALL NEW SERVICE LINE TO EXISTING METER STOP.
- ③ INSTALL TAIL PIECE AND TIE-IN TO CUSTOMER SERVICE LINE. IF EXISTING TAIL PIECE OR CUSTOMER SERVICE LINE IS LEAD OR GALVANIZED IRON THEN INSTALL TAIL PIECE AND TIE-IN TO CUSTOMER SERVICE LINE. IF CUSTOMER SERVICE LINE IS LEAD THEN FOLLOW CURRENT INSTALLATION PROCEDURES PER THE LOUISVILLE WATER PROJECT MANAGER.

- ⑤ DISCONTINUE OLD SERVICE AT EXISTING WATER MAIN. DRIVEN FERRULES MUST BE REMOVED AND REPAIR BAND INSTALLED AT TAP IF MAIN WILL REMAIN ACTIVE. (SEE SECT. 10.17)
- ⑥ REPLACE EXISTING VAULT, FRAME, AND COVER IN SAME LOCATION AS OLD METER VAULT UNLESS THE LOUISVILLE WATER PROJECT MANAGER OR INSPECTOR APPROVES OF LEAVING THE EXISTING VAULT IN PLACE.

* CONNECTION AS SHOWN IS A "LONG SERVICE" TO MAIN ON OPPOSITE SIDE OF ROAD. "SHORT SERVICE" IS DEFINED AS METER AND MAIN ON THE SAME SIDE OF ROADWAY.

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STANDARD DRAWING

RENEW SERVICE

DRAWING NO.

3441

SHEET

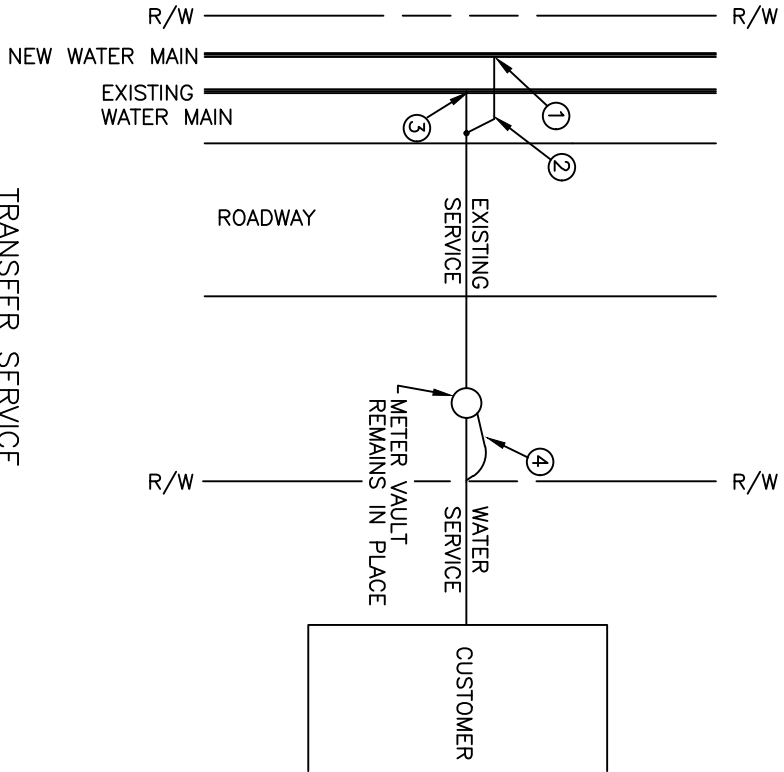
1 OF 1

DATE

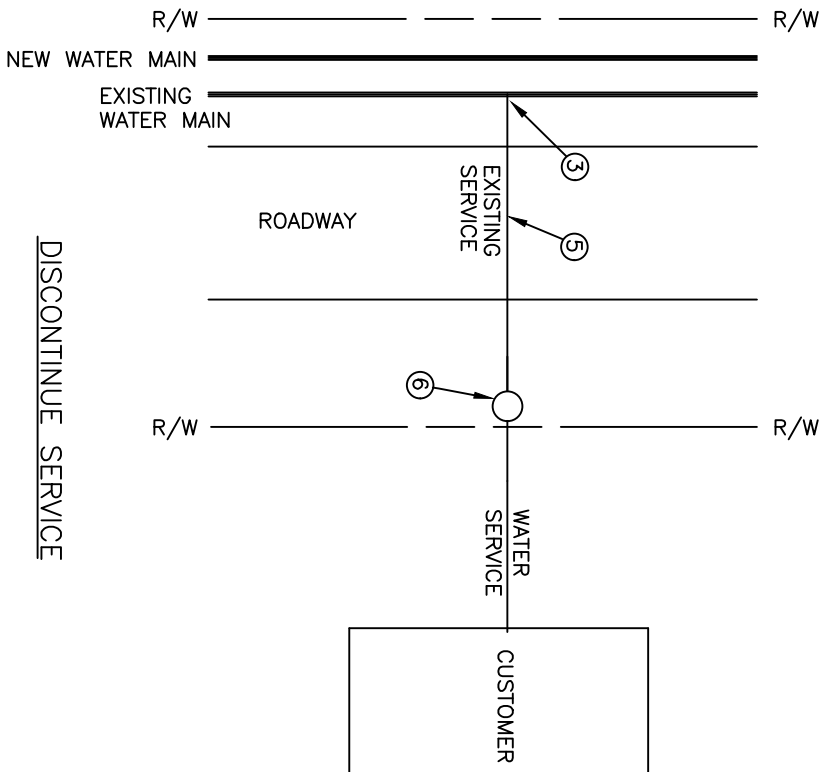
JULY 2021

SCALE

NONE



TRANSFER SERVICE



DISCONTINUE SERVICE

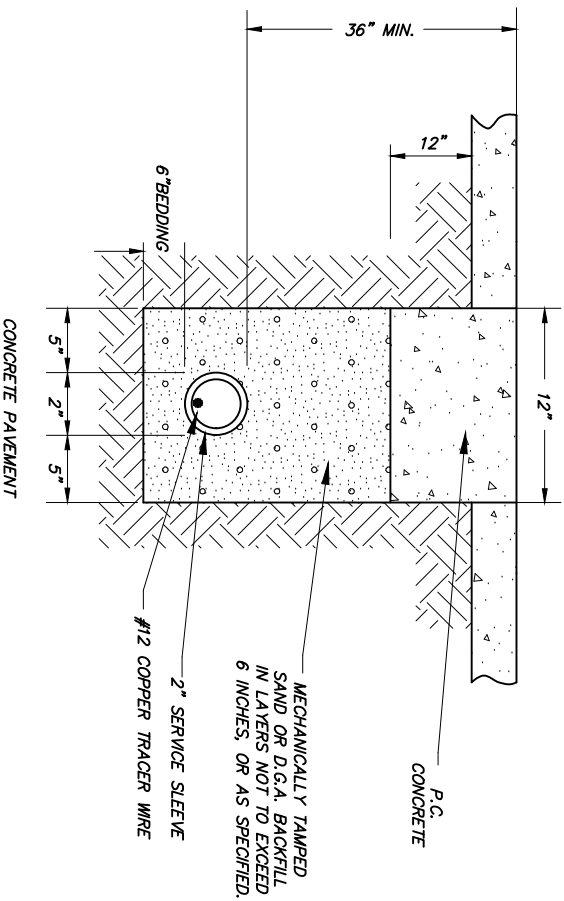
NOTES:

- ① INSTALL NEW CORPORATION STOP ON MAIN.
- ② INSTALL NEW SERVICE LINE FROM NEW MAIN AND TIE-IN TO EXISTING SERVICE LINE. (AS REQUIRED)
- ③ DISCONTINUE OLD SERVICE AT EXISTING WATER MAIN. DRIVEN FERRULES MUST BE REMOVED AND REPAIR BAND INSTALLED AT TAP IF MAIN WILL REMAIN ACTIVE. (SEE SECT. 10.17)
- ④ INSTALL TAIL PIECE AND TIE-IN TO CUSTOMER SERVICE LINE. IF EXISTING TAIL PIECE OR CUSTOMER SERVICE LINE IS LEAD OR GALVANIZED IRON THEN INSTALL TAIL PIECE AND TIE-IN TO CUSTOMER SERVICE LINE. IF CUSTOMER SERVICE LINE IS LEAD THEN FOLLOW CURRENT INSTALLATION PROCEDURES PER THE LOUISVILLE WATER PROJECT MANAGER.
- ⑤ DISCONNECT AND PLUG SERVICE LINE.
- ⑥ ABANDON OLD METER VAULT, RETURN METER AND CAST IRON FRAME & COVER TO ALMOND AVENUE, BACKFILL METER VAULT (SEE SECT.10.18)

* CONNECTION AS SHOWN IS A "LONG SERVICE" TO MAIN ON OPPOSITE SIDE OF ROAD. "SHORT SERVICE" IS DEFINED AS METER AND MAIN ON THE SAME SIDE OF ROADWAY.

LEGEND
○ = EXISTING METER VAULT

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STANDARD DRAWING			
TRANSFER SERVICE DISCONTINUE SERVICE			
DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3442	SHEET	1 OF 1



SERVICE SLEEVE INSTALLATIONS

IN ORDER TO AVOID CURB AND PAVEMENT CUTS DURING SERVICE INSTALLATIONS, THE FOLLOWING PROCEDURES HAVE BEEN ESTABLISHED FOR NEW DEVELOPMENT PROJECTS:

- SERVICE SLEEVES ARE TO BE INSTALLED BY THE DEVELOPER'S WATER MAIN INSTALLATION CONTRACTOR AS SHOWN ON THE PLANS. LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE; THE CONTRACTOR SHALL COORDINATE EXACT SERVICE SLEEVE LOCATIONS WITH THE DEVELOPER OR THEIR REPRESENTATIVE.
- WHEN THE SERVICE SLEEVES ARE SUPPLIED BY THE DEVELOPER, THE COMPANY WILL ADJUST THE DEVELOPER'S PROJECT MATERIAL COSTS TO REFLECT DEVELOPER-DOCUMENTED SLEEVE MATERIAL COST.
- SLEEVES MUST BE INSTALLED AT 36" COVER, AND ALIGNED SO THAT FUTURE INSTALLATION OF SERVICE PIPING CAN BE ACCOMPLISHED WITHOUT PAVEMENT, OR CURB CUTS. SLEEVES MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY BENDS OR OBSTRUCTIONS.
- ALL SERVICE SLEEVES MUST EXTEND AT LEAST 2 FEET BEYOND THE BACK OF CURBS, WITH SEALED END CAPS AND MARKED BY ABOVE-GRADE P.V.C. PIPE THAT SHALL BE PAINTED BLUE ON THE EXPOSED END-EXTENDING A MIN. OF 6" ABOVE FINISH GRADE TO EACH END OF THE SERVICE SLEEVE OR OTHER MARKER ACCEPTABLE TO LOUISVILLE WATER.
- ALL SLEEVES MUST HAVE #12 COPPER TRACER WIRE INSTALLED THROUGH EACH SLEEVE AND THE TRACER WIRE MUST BE MADE ACCESSIBLE FOR THE COMPANY'S SERVICE INSTALLER FOR THE PURPOSE OF LOCATING THE SERVICE SLEEVE.

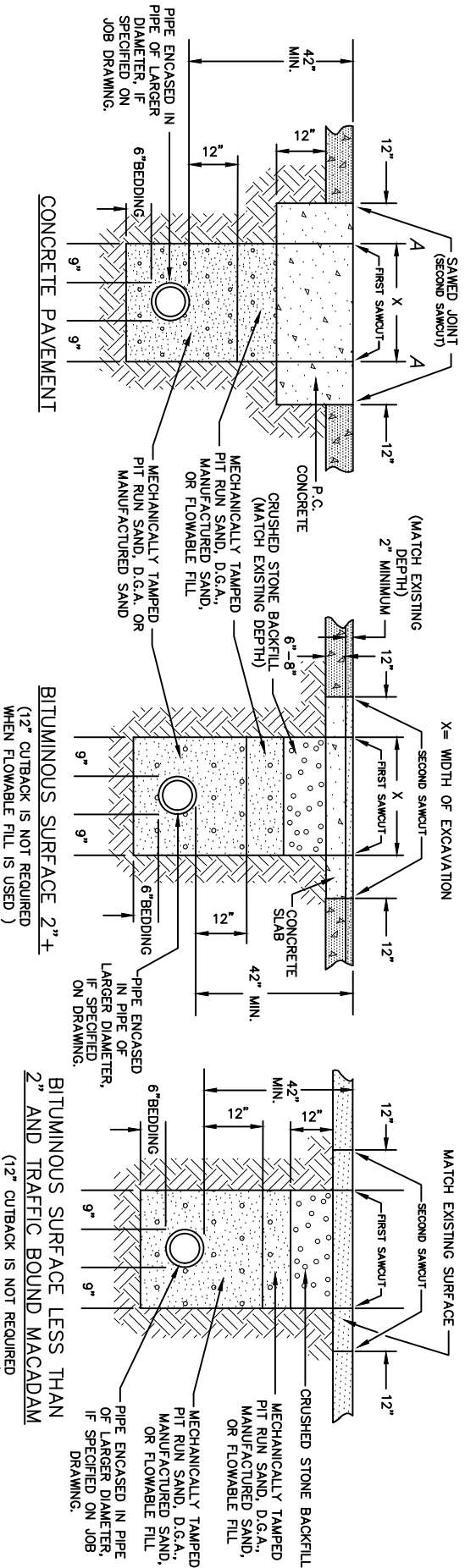
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STANDARD DRAWING

SERVICE SLEEVE INSTALLATION DETAIL

DATE	JULY 2021	SCALE	NONE
DRAWING NO.	3805	SHEET	1 OF 1

NOTE: FROM POINTS "A" (CONCRETE PAVEMENT) TO NEAREST JOINT OR BREAK IN PAVEMENT MUST BE SIX(6) FEET OR MORE. IF LESS THAN 6, REMOVE PAVEMENT TO JOINT OR BREAK AND REPLACE ENTIRE SLAB. CONCRETE SLAB UNDER BITUMINOUS SURFACE TO EXTEND 12 INCHES ON EACH SIDE OF TRENCH.

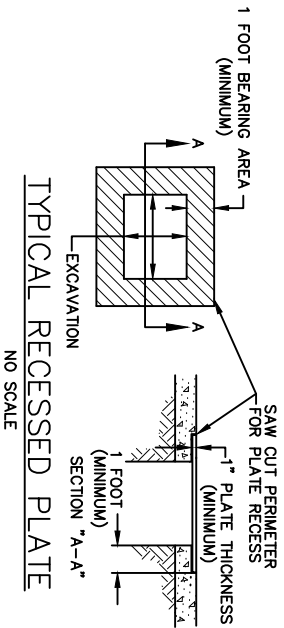


NOTE: REPLACE CONCRETE PAVEMENT WITH NEW PAVEMENT SAME THICKNESS OF EXISTING PAVEMENT + 12\".

REPLACE BITUMINOUS PAVEMENT WITH SAME TYPE AND DEPTH AS EXISTING PAVEMENT.

STATE OF KENTUCKY SPECIFICATIONS

1. BEDDING SHALL BE PIT RUN SAND, DENSE-GRADE AGGREGATE, MANUFACTURED SAND MECHANICALLY COMPACTED PER SPECIFICATION SECTION 7.4 AND 7.5.
2. SELECT GRANULAR BACKFILL SHALL COMPLY WITH SPECIFICATION 7.6
3. ANY USE OF NO. 57 STONE FOR BEDDING OR BACKFILL MUST BE APPROVED BY THE DIRECTOR OF ENGINEERING.
4. CONTRACTOR WILL BE HELD RESPONSIBLE DURING THE ENSUING 5 YEARS FOR PROPER BACKFILLING AND REPLACEMENT OF SURFACE DURING THE 5 YEAR PERIOD AFTER THE DATE OF THE FINAL CONTRACT PAYMENT. ANY PAVEMENT SETTLEMENT SHALL BE IMMEDIATELY REPAIRED IN AN APPROVED MANNER AT THE EXPENSE OF THE CONTRACTOR.
5. BACKFILLING UP TO BOTTOM OF SUBBASE ELEVATION SHALL BE COMPLETED PRIOR TO SECOND PAIR OF SAWCUTS AND EXCAVATION FOR THE ADDITIONAL 12" OF CONCRETE ON EACH SIDE OF THE TRENCH.
6. DILUTE SS1H (OR OTHER APPROVED TACK COAT MATERIAL) SHALL BE APPLIED AT THE RATE OF 0.1 GAL. PER SQUARE YARD OVER THE CONCRETE BASE. ALLOW SUFFICIENT TIME FOR IT TO "BREAK" BEFORE THE FINISHED BITUMINOUS CONCRETE IS PLACED, AND SEAL ALL JOINTS SECURELY AFTER PAVING.



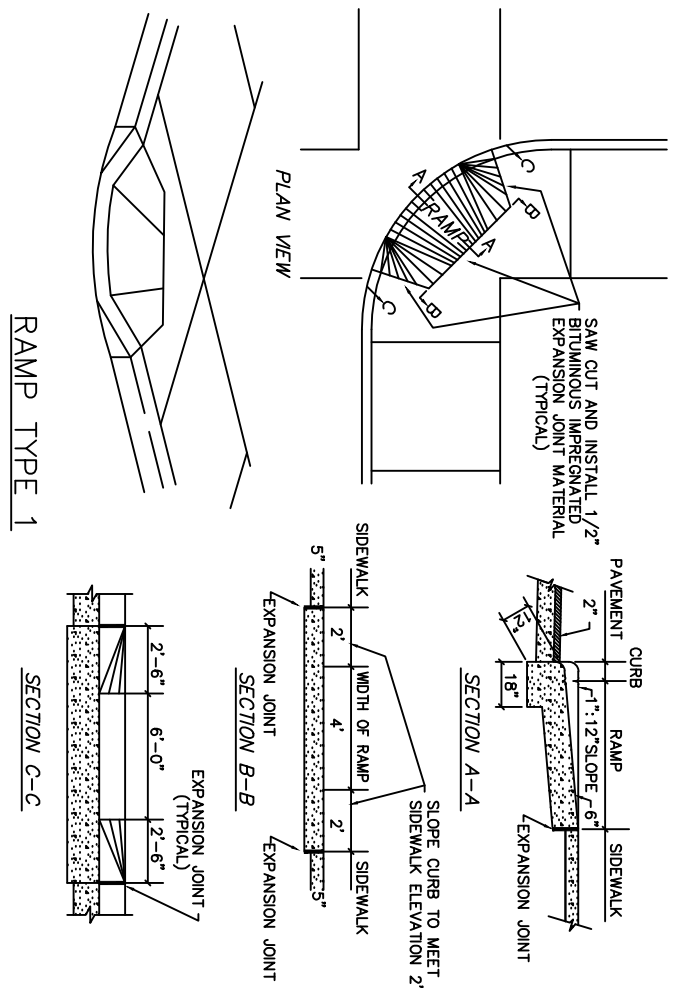
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STANDARD DRAWING

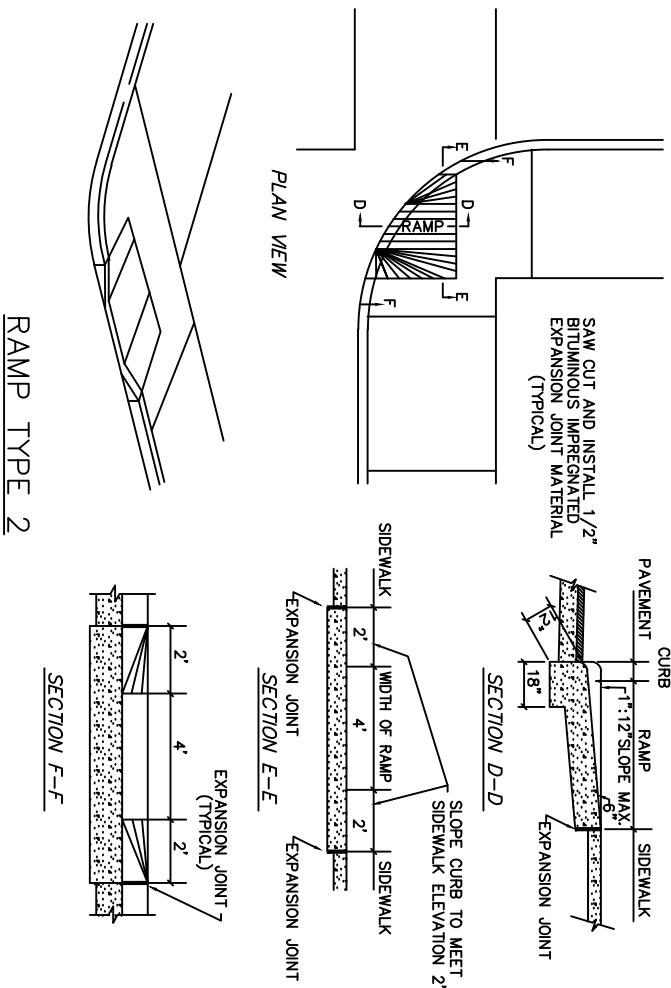
STATE OF KENTUCKY
BACKFILL AND PAVING
RESTORATION

DATE	AUG. 2021	SCALE	NONE
DRAWING NO.	4000	SHEET	1 OF 1

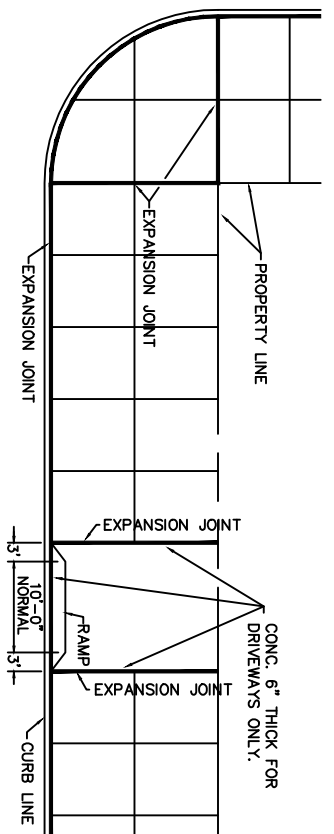
DATE	JULY 2021	SCALE	NONE
DRAWING NO.	4100	SHEET	1



RAMPTYPE 1



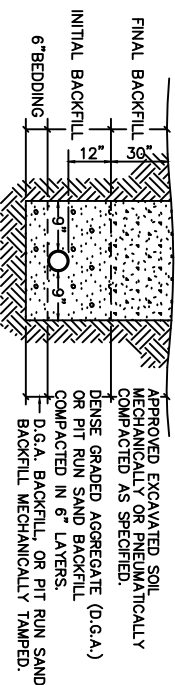
RAMMP TYPE 2



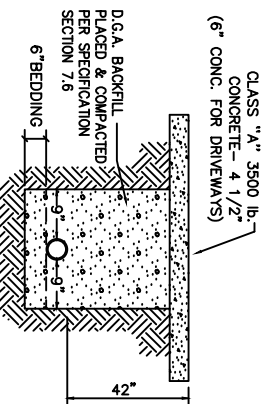
PLAN OF SIDEWALK AND DRIVEWAY-FULL WIDTH

NOTES:
ALL SIDEWALKS SHALL BE 5" THICK. ALL DRIVEWAYS SHALL BE 6" THICK. ALL CONCRETE SHALL BE CLASS "A"(3500 lb. CONCRETE), WOOD FLOAT FINISH FOR ALL WORK. AN APPROVED TYPE OF LIQUID CURING COMPOUND WILL BE PERMITTED.
EXPANSION JOINTS ACROSS THE LINE OF THE WALK SHALL BE SPACED NOT MORE THAN 50' APART. EXPANSION JOINTS PARALLEL TO THE LINE OF WALK WILL BE REQUIRED AT THE BACK OF CURB FOR FULL WIDTH WALKS. AT DRIVEWAYS, EXPANSION JOINTS SHALL BE USED ON BOTH SIDES AGAINST THE SIDEWALK. OTHER JOINTS DETERMINED BY THIS LOCATION, AT DRIVEWAYS AND ENTRANCE WALKS ACROSS GRASS PLOTS, AN EXPANSION JOINT SHALL BE USED AT BACK OF CURB. ALL EXPANSION MATERIAL SHALL BE APPROVED NON-EXTRUDING PREFORMED STRIPS 1/2" THICK. BLOCKS SHALL BE MARKED OR SCORED IN CONTRASTING SIZED BLOCKS, BUT NOT LESS THAN 4" OR MORE THAN 6" ON A SIDE. CONTRASTION JOINTS (PLANES OF WEAKNESS) SHALL BE AT EVERY THIRD BLOCK AND SHALL BE CUT AT LEAST 1 1/2" IN DEPTH (IN LIEU OF A SCORE) AT BACK OF WALK. TERRACE SHALL BE HAND TRIMMED OR FINISHED TO A 1 TO 1 SLOPE OR FLATTER.

ALL SIDEWALK AND DRIVEWAY CONSTRUCTION IN THE PUBLIC WAYS OF THE CITY OF LOUISVILLE SHALL CONFORM WITH THE REQUIREMENTS ON THIS SHEET UNLESS OTHERWISE APPROVED IN WRITING BY THE CHIEF ENGINEER. MINIMUM WIDTH OF SIDEWALK SHALL BE 5' EXCEPT WITH PERMISSION OF CHIEF ENGINEER.



BACKFILL NOT UNDER PAVEMENT



BACKFILL UNDER SIDEWALK

STANDARD DRAWING

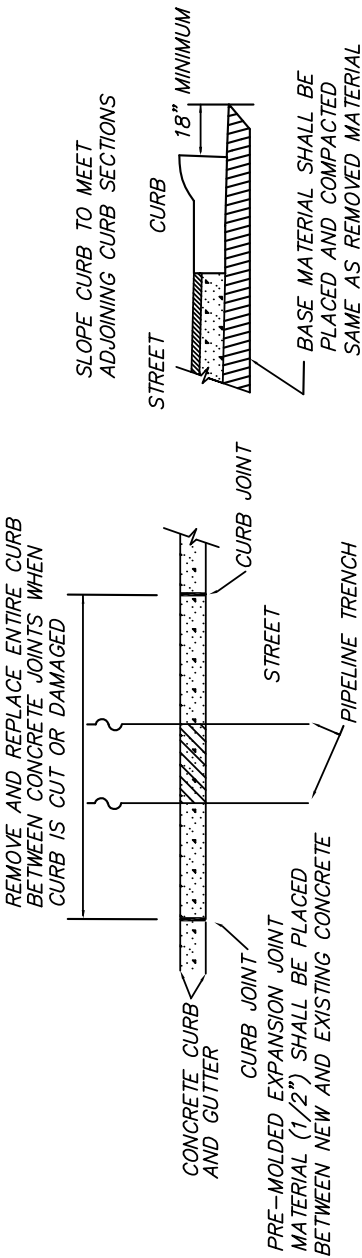
SIDEWALK / BACKFILL DETAIL

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TIMOTHY KRAUS, P.E. - VICE PRESIDENT / CHIEF ENGINEER

DATE	MAY 2021	SCALE	NONE
DRAWING NO.	4400	SHEET	1 OF 1

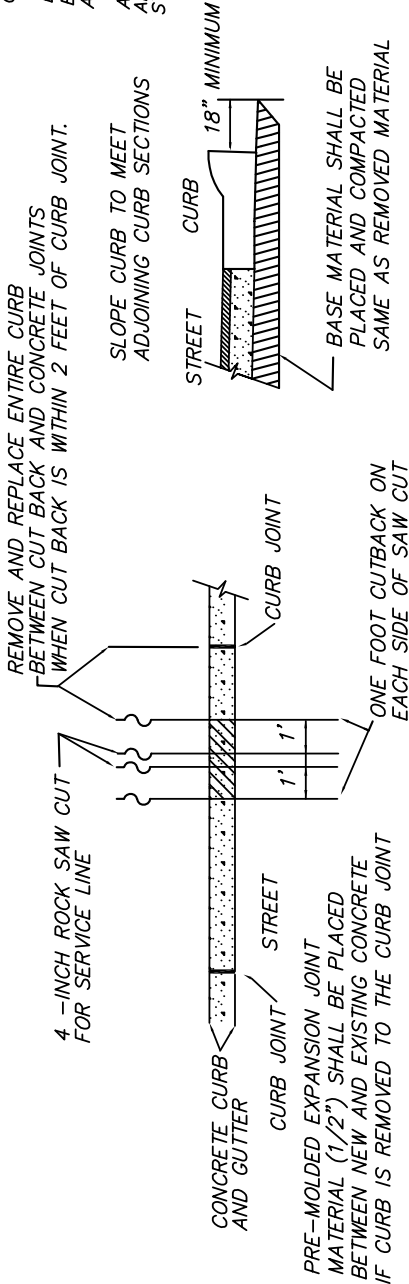


PLAN VIEW

SECTION

CURB RESTORATION FOR PIPELINE INSTALLATION

- NOTES:
- ALL CONCRETE SHALL BE A MINIMUM CLASS "A" (3500 lb. CONCRETE).
 - AN APPROVED TYPE OF LIQUID CURING COMPOUND WILL BE REQUIRED ON CONCRETE.
 - EXPANSION JOINT MATERIAL SHALL BE USED BETWEEN CURB JOINTS AND CURBS AND ADJOINING SIDEWALKS.
 - ALL EXPANSION MATERIAL SHALL BE APPROVED NON-EXTRUDING PREFORMED STRIPS (1/2" THICK).



PLAN VIEW

SECTION

CURB RESTORATION FOR SERVICE LINE INSTALLATION

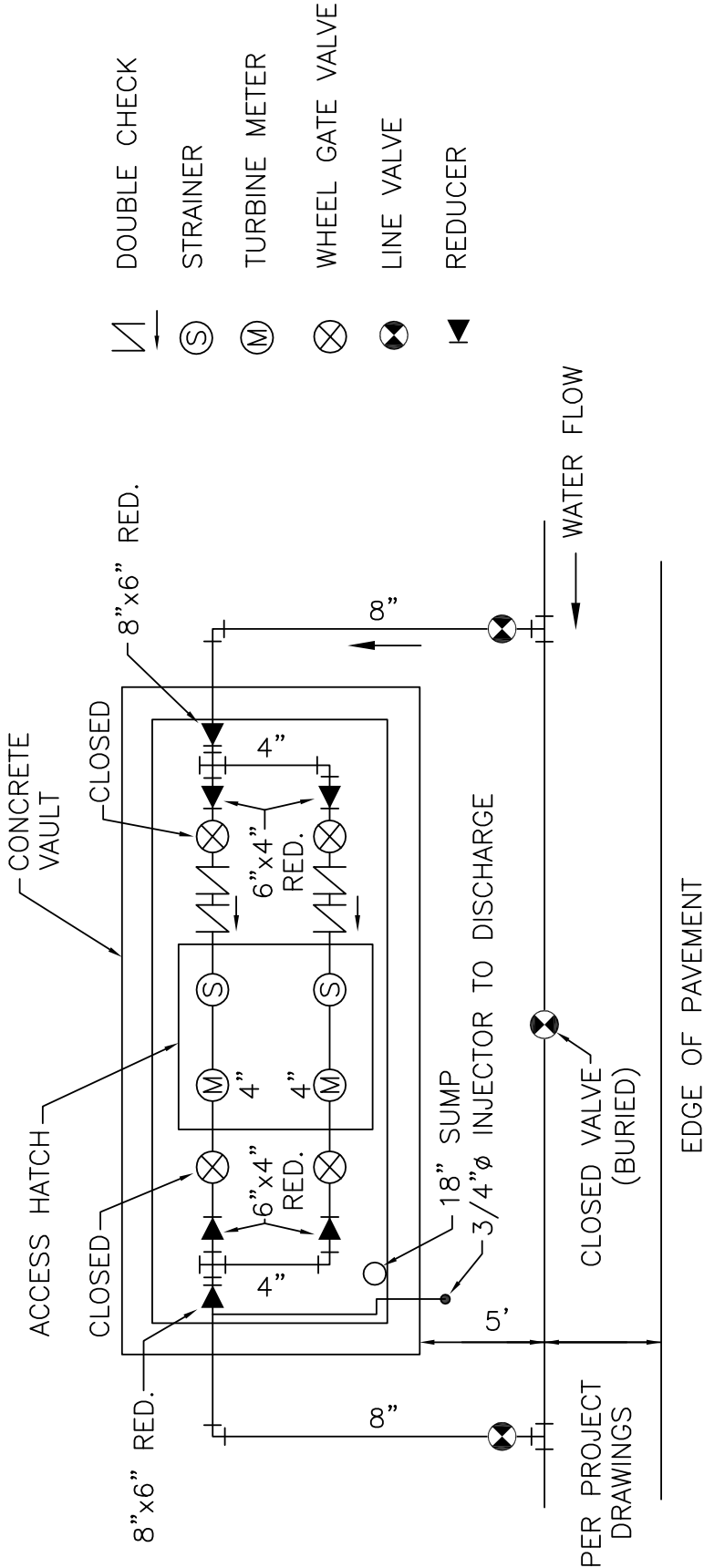
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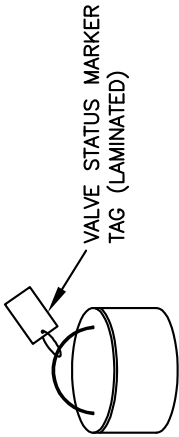
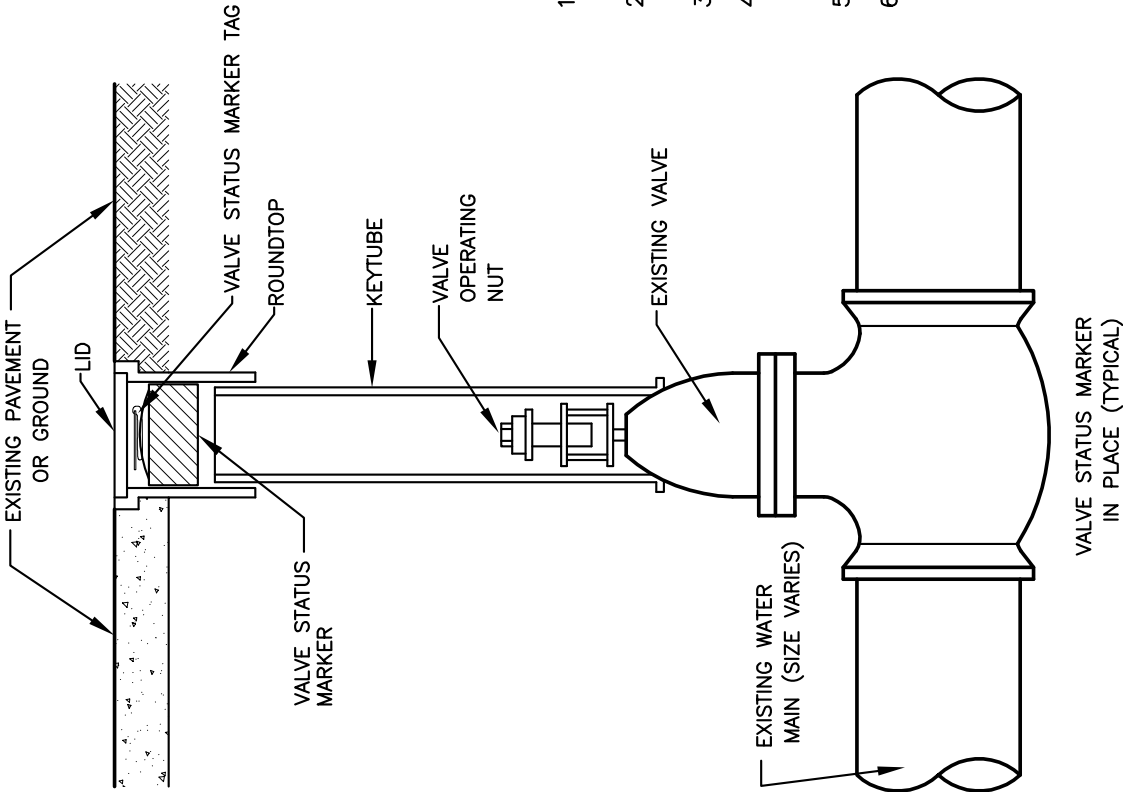
TIMOTHY KRAUS, P.E. • VICE PRESIDENT / CHIEF ENGINEER

STANDARD DRAWING			
CONCRETE CURB AND GUTTER RESTORATION DETAIL			
DATE	AUGUST 2018	SCALE	NONE
DRAWING NO.	4410	SHEET	1 OF 1



- ∇ DOUBLE CHECK
- $\odot$ STRAINER
- $\odot$ TURBINE METER
- $\otimes$ WHEEL GATE VALVE
- $\bullet$ LINE VALVE
- $\blacktriangleleft$ REDUCER

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STANDARD DRAWING			
TYPICAL MASTER METER DETAIL			
DATE	AUGUST 2018	SCALE	NONE
DRAWING NO.	4600	SHEET	1 OF 1



VALVE STATUS MARKER

TYPICAL MARKER TAG NOTES:

- 1. PRESSURE PLANE BOUNDARY VALVE – DO NOT OPEN
- 2. CLOSED VALVE – DO NOT OPEN
- 3. LEFT HAND OPEN
- 4. TEMPORARY CONSTRUCTION –CLOSED VALVE: CONTACT LWC RADIO ROOM OR INSPECTION
- 5. VALVE PARTIAL OPEN # TURNS
- 6. NAME/DATE/CELL# (MORE DETAIL).

NOTES:

- 1. CONTACT PROJECT MANAGER OR COMPANY INSPECTOR FOR APPROVAL BEFORE OPERATING ANY VALVE.
- 2. NOTES ON PLUGS SHALL BE MADE USING A LAMINATED TAG ZIP TIED TO THE STRAP OR BY WRITING DIRECTLY ON TOP OF THE PLUG WITH A PERMANENT INK MARKER.

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STANDARD DRAWING
VALVE STATUS MARKER

DATE	FEBRUARY 2020	SCALE	NONE
DRAWING NO.	5005	SHEET	1 OF 1

DIVISION 03

CONCRETE

SECTION 033000 – CAST-IN-PLACE CONCRETE

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and services required to furnish and install all cast-in-place concrete specified herein.
- B. All concrete construction shall conform to all applicable requirements of ACI 301 (latest), Specifications for Structural Concrete for Buildings, except as modified by the supplemental requirements specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Earthwork: Section 312000

1.3 SUBMITTALS

The Contractor shall submit the following data for Engineer review in accordance with Section 013323.

- A. Concrete mixture proportions, test results, and curves plotted to establish water-cementitious materials ratio if ACI 301-05 Section 4.2.3.4.b is followed.
- B. Proposed mix designs and all necessary substantiating data used to establish the proposed mix designs if ACI 301-05 Section 4.2.3.1 is followed.
- C. Mix designs shall be submitted for all mixes proposed or required to be used, including all mixes containing admixtures.
- D. A certified copy of the control records of the proposed production facility establishing the standard deviation as defined in Paragraph 4.2.3.2. of ACI 301.
- E. Submit shop drawings as specified in ACI 301. Submit shop drawing showing the location of proposed construction and control joints separate from the steel reinforcement shop drawings.
 - 1. Construction Joints
 - 2. Control Joints
 - 3. Steel Reinforcement

1.4 QUALITY ASSURANCE

The Contractor shall obtain and have available in the field office at all times, the following references:

- A. ACI 301 Specifications for Structural Concrete for Buildings ACI 301 (latest Revision).
- B. SP-15 (05) Field Reference Manual: Specifications for Structural Concrete for Buildings with selected ACI references.

Available from:

The American Concrete Institute
Publications Department
P.O. Box 9094
Farmington Hills, Michigan 48333-9094

- C. Manual of Standard Practice - CRSI. (Latest Edition).
- D. Placing Reinforcing Bars - CRSI (Latest Edition).

Available from:

Concrete Reinforcing Steel Institute
933 North Plum Grove Road
Schaumburg, Illinois 60173-4758

- E. ACI 318-08 Building Code Requirements for Structural Concrete and Commentary.
- F. ACI 347 Guide to Form Work for Concrete.

PART 2 - PRODUCTS

2.1 CLASSES OF CONCRETE AND USAGE

- A. Structural concrete of the various classes required shall be proportioned by either Method 1 or Method 2 of ACI 301 to produce the following 28-day compressive strengths:
 - 1. Selection of Proportions for Class A Concrete:
 - a. 4,500 psi compressive for strength at 28 days.
 - b. Type II cement plus supplementary cementitious materials.
 - c. Max. water-cementitious materials ratio = 0.45.
 - d. Min. cement content = 584 lbs.
 - e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max.). Walls with architectural treatment shall use No. 67 (3/4" max.).
 - f. Air content = 6% plus or minus 1% by volume.
 - g. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.
 - 2. Selection of Proportions for Class B Concrete:
 - a. 3,000 psi compressive strength at 28 days.
 - b. Type I cement plus supplementary cementitious materials.
 - c. Max. water-cementitious materials ratio = 0.45.
 - d. Min. cement content = 470 lbs. (5.0 bags)/cu. yd. concrete.
 - e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max.). Walls with architectural treatment shall use No. 67 (3/4" max.).
 - f. Air content = 6% plus or minus 1% by volume.

- g. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.
- B. Concrete shall be used as follows:
 - 1. Class A concrete for all concrete work except as noted below.
 - 2. Class B concrete for fill concrete, thrust blocks and topping over hollow-core slabs, and where indicated on the Drawings.
- C. Type II cement conforming to ASTM C 150 shall be used in all structural concrete. Cement for exposed to view concrete shall have a uniform color classification.
- D. Coarse aggregate for concrete shall be size No. 57, as specified in ASTM C 33 unless a smaller size aggregate is required to conform to provisions of Section 4.2.2.3 of ACI 301. Coarse aggregate shall conform to all requirements of ASTM C 33.
- E. Manufactured sand shall not be used as fine aggregate in concrete.

2.2 ADMIXTURES

- A. An air entraining admixture shall be used on all concrete exposed to freezing and thawing cycles. Product shall be MB-AE 90, MB-VR or Micro Air by BASF Construction Chemicals or approved equal. A certification attesting to the percent of effective solids and compliance of the material with ASTM C 260 shall be furnished if requested.
- B. Water-Reducing Admixture shall conform to ASTM C 494/C 494M Type A. Product shall be "Pozzolith" Series or "PolyHeed" Series by BASF Construction Chemicals or approved equal.
- C. High-Range Water-Reducing Admixture shall conform to ASTM C 494/C 494M Type F. Product shall be Rheobuild 1000, "Glenium" Series or PS 1466 by BASF Construction Chemicals or approved equal.
- D. Accelerating Admixture shall conform to ASTM C 494/C 494M Type C or E. Products shall be Pozzolith NC 534 or Pozzutec 20+ by BASF Construction Chemicals or approved equal.
- E. Retarding Admixture shall conform to ASTM C 494/C 494M Type B or D. Product shall be "Pozzolith" Series or "DELVO" Series by BASF Construction Chemicals.
- F. A water-reducing, set controlling admixture (nonlignin type) shall be used in all concrete. The admixture shall be a combination of polyhydroxylated polymers including catalysts and components to produce the required setting time based on job site conditions, specified early strength development, finishing characteristics required, and surface texture, as determined by the Engineer.
- G. Certification shall be furnished attesting that the admixture exceeds the physical requirements of ASTM C 494, Type A, water-reducing and normal setting admixture, and when required, for ASTM C 494, Type D, water-reducing and retarding admixture when used with local materials with which the subject concrete is composed.

- H. The admixture manufacturer, when requested, shall provide a qualified concrete technician employed by the manufacturer to assist in proportioning concrete for optimum use. He shall also be available when requested to advise on proper addition of the admixture to the concrete and on adjustment of the concrete mix proportions to meet changing job conditions.
- I. The use of admixtures to retard setting of the concrete during hot weather, to accelerate setting during cold weather, and to reduce water content without impairing workability will be permitted if the following conditions are met:
- J. The admixture shall conform to ASTM C494, except that the durability factor for concrete containing the admixture shall be at least 100 percent of control, the water content a maximum of 90 percent of control and length change shall not be greater than control, as defined in ASTM C 494.
- K. Where the Contractor finds it impractical to employ fully the recommended procedures for hot weather concreting, the Engineer may at his discretion, require the use of a set retarding admixture for mass concrete 2.5 feet or more thick for all concrete whenever the temperature at the time concrete is cast exceeds 80oF. The admixture shall be selected by the Contractor subject to the review of the Engineer. The admixture and concrete containing the admixture shall meet all the requirements of these Specifications. Preliminary tests of this concrete shall be required at the Contractor's expense.
- L. When more than one (1) admixture is used, all admixtures shall be compatible. They should preferably be by the same manufacturer.
- M. Calcium chloride will not be permitted as an admixture in any concrete.

2.3 REINFORCEMENT

- A. The minimum yield strength of the reinforcement shall be 60,000 pounds per square inch. Bar reinforcement shall conform to the requirements of ASTM A 615/A 615M. All bar reinforcement shall be deformed.
- B. Wire-mesh reinforcement shall be continuous between expansion joints. Laps shall be at least one full mesh plus 2 inches, staggered to avoid continuous lap in either direction and securely wired or clipped with standard clips.
- C. Smooth dowels shall be plain steel bars conforming to ASTM A 615/A615M, Grade 60, or steel pipe conforming to ASTM A 120, Schedule 80. Pipe, if used, shall be closed flush at each end with mortar or metal or plastic cap. Dowels shall be installed at right angles to construction joints and expansion joints. Dowels shall be accurately aligned parallel to the finished surface and shall be rigidly held in place and supported during placing of the concrete. One end of dowels shall be oiled or greased, or dowels shall be coated with high-density polyethylene with a minimum thickness of 14 mils.
- D. Reinforcement supports and other accessories in contact with the forms for members which will be exposed to view in the finished work shall be of stainless steel or shall have approved high-density polyethylene tips so that the metal portion shall be at least 1/4 of an inch from the form or surface. Supports for reinforcement, when in contact with the ground or stone fill, shall be precast stone concrete blocks. Particular attention is directed to the requirement of Paragraph

3.3.2.4 of ACI Standard 301. These requirements apply to all reinforcement, whether in walls or other vertical elements, inclined elements or flatwork.

- E. Particular care shall be taken to bend tie wire ends away from exposed faces of beams, slabs and columns. In no case shall ends of tie wires project toward or touch formwork.

2.4 OTHER MATERIALS

- A. Anchorage items shall be of standard manufacture and of the type required to engage with the anchors to be installed therein under other sections of the Specifications and shall be subject to approval by the Engineer.

- 1. Slots shall be galvanized dovetail-type as specified in Section "Masonry Work".
- 2. Inserts shall be malleable iron or steel, and of sturdy design adequate strength for the load to be carried. All inserts shall be galvanized. Adjustable wedge inserts shall have an integral loop or strap at the back or shall be slotted to receive a special-headed bolt not smaller than 5/8-inch in diameter and of the required length and fitted with a hexagonal nut. Other inserts shall be either threaded or slotted as required by their usage. Threaded inserts shall have integral lugs to prevent running.
- 3. Concrete anchors shall be an approved expansion type conforming to Federal Specification FF-S-325, Groups I, II, III, or VIII, and shall be installed in strict accordance with the manufacturer's recommendations. Material for anchors shall be as specified in Section 05500 "Miscellaneous Metals". Anchors shall develop ultimate shear and pull-out loads of not less than the following values in Class A concrete:

Bolt Diameter (Inches)	Min. Shear (Pounds)	Min. Pull-Out Load (Pounds)
2	4,500	4,600
5/8	6,900	7,700
3/4	10,500	9,900

- B. Epoxy bonding adhesive used to bond fresh plastic concrete to sound, hardened concrete shall meet the following Specification. The contractor shall furnish a notarized certification by the manufacturer that the proposed material meets the Specification.

- 1. Material:

The epoxy material shall consist of a 2-component system whose components conform to the following requirements:

- a. Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A condensation type, containing suitable viscosity control agents and having an epoxide equivalent of 180-200.
- b. Component B - The B component shall be primarily a reaction product of one mole of an aliphatic polyamine and two moles of mono-functional epoxide containing compounds modified with 2, 4, 6 tri (dimethylaminomethyl) phenol.
- c. The component ratio of B to A by volume shall be as specified by the manufacturer.

2. Properties of Mixed Components:
- a. Solids Content

100% by weight
- b. Pot Life

25-35 min. @ 73°F.
- c. Tack-Free Time

4-5-1/2 hrs @ (Thin Film) 73°F.
- d. Final Cure ASTM D 695

3 days at 73°F. (75% ultimate strength)
- e. Initial Viscosity (A+B)

2,000 cps. min at 73°F.
- f. Color Mixed

Straw

3. Properties of Cured Material (Neat Material):
- a. Tensile Strength

3,000 psi min. @

ASTM D 638

14 days 73°F. cure
- b. Tensile Elongation

2 - 2% at 14

ASTM D 638

modified days 73°F. cure
- c. Compressive Strength

12,500 psi min. at

ASTM D 695

73° F. cure
- d. Compressive Modules

470,000 psi min. @

ASTM D 695

28 days, 73°F cure
- e. Compressive Strength

5,500 psi min. @

ASTM D 695

24 days 73°F cure
- f. Water Pick-up

1.5 max.

ASTM D 570

- C. Premolded expansion-joint filler strips shall conform to ASTM D 1752 and shall be 3/8-inch thick unless otherwise shown.
- D. Joint sealants shall conform to ANSI A 116.1. The following joint sealants are acceptable:
1. Colma by Sika Chemical Corporation

2. Hornflex by A.C. Horn, Inc.

3. Sonolastic by BASF Construction Chemicals.
- E. Nonshrink grout shall be Embeco 885 grout by BASF Construction Chemicals, Euco Firmix grout by the Euclid Chemical Company, or approved equal. The approved product shall be delivered to the site of the Work in the original sealed containers, each bearing the trade name of the material and the name of the manufacturer.
- F. Hardeners and dustproofers shall be colorless, aqueous solution of zinc or magnesium fluosilicate. Each gallon of solution used for the first application shall contain not less than one pound of crystals. Each gallon of solution used for subsequent application shall contain not less than two pounds of crystals. Materials shall be reviewed by the Engineer. Product shall be Lapidolith by BASF Construction Chemicals or approved equal.
- G. Porous fill shall be crushed rock or gravel of such size that all will pass a 1-1/2 inch screen and not more than 5 percent will pass a No. 4 screen, free from earth clay or other foreign substances.
- H. Waterstops: Waterstops shall be polyvinyl chloride, flat dumbbell shape (no center bulb), of size shown on Drawings, complete with fittings as required such as unions, vertical tees, vertical ells, flat crosses, flat ells, flat tees, etc. Waterstops shall be securely wired into place to

maintain proper position during placement of fresh concrete, as shown on the Drawings. Care shall be taken in the installation of the waterstop and the placing of the concrete to avoid "folding" while concrete is being placed, and to prevent voids in the concrete surrounding the waterstop.

- I. Form Liners: Form liners for construction of fluted wall treatment shall be prefabricated plastic liners as manufactured by Greenstreak Plastic Products, Interform Company, or Symons Corporation.
 1. Liners shall be fiberglass or ABS (acrylonitrile - butadiene - styrene) of such configuration as to obtain the fluted pattern shown or indicated on the Drawings.
 2. For purposes of designating type and quality of material required, form liners shall be pattern 361 trapezoidal liners as manufactured by Greenstreak Plastic Products.
 3. Preparation of forming materials, sealing of joints to prevent grout leakage and form release treatment (if required) shall be in strict compliance with the manufacturer's printed instructions and recommendations.

PART 3 - EXECUTION

3.1 FINISHES

A. Exposed to Public View Concrete Surfaces:

1. All concrete exposed to view in the completed structure shall be produced using materials and workmanship to such a quality that only nominal finishing will be required. The provisions of paragraphs 6.2.2.1 and 6.3.6 of ACI 301 shall apply to all exterior exposed to public view concrete surfaces, including the outside surfaces of tanks.
2. Forms for exposed concrete surfaces shall be exterior grade, high-density overlay plywood, steel, or wood forms with smooth tempered hard-board form-liners.
3. Forms shall be coated with an approved release agent before initial pour and between subsequent pours, in accordance with the manufacturer's printed instructions. Form boards shall not be wet prior to placing concrete.
4. Recessed joints in concrete shall be formed using lacquer-coated wood battens or forms, milled to indicated profiles. Battens and corner strips shall be carefully inspected before concrete is placed and damaged pieces replaced.
5. Chamfer strips shall be one (1) inch radius with leg, polyvinyl chloride strips by Gateway Building Products, Saf-T-Grip Specialties Corp., Vinylex Corp., or equal.
6. Form panels shall be provided in the maximum size practicable in order to minimize form joints. Wherever practicable, form joints shall occur at recessed joints. All form joints in exterior exposed to view surfaces shall be carefully caulked with an approved nonstaining caulking compound. Joints shall not be taped. Form oil or other material which will impart a stain to the concrete shall not be allowed to contact concrete surfaces.
7. Care shall be taken to prevent chipping of corners or other damage to concrete when forms are removed. Exposed corners and other surfaces which may be damaged by ensuing operations shall be protected from damage by boxing, corner boards or other approved means until construction is completed.
8. Form ties shall remain in the walls and shall be equipped with a water seal to prevent passage of water through the walls. The minimum set back of form ties shall be 1-1/2 inches from faces of wall. The hole left by removal of tie ends shall be sealed and

grouted in accordance with the procedure described hereinafter in Par. 3.01.F. Form ties will be permitted to fall within as-cast areas of architecturally treated wall surfaces; this does not apply to walls receiving decorative waterproof masonry coating.

9. All formed exposed to view concrete surfaces shall have a "smooth rubbed finish". Exterior vertical surfaces shall be rubbed to one foot below grade. Interior exposed to public view vertical surfaces of liquid containers shall be rubbed to one (1) foot below the minimum liquid level that will occur during normal operations.

B. All vertical surfaces in liquid-containing structures shall have a "smooth form" finish.

1. All "smooth form" concrete vertical surfaces shall be a true plane within 1/4 inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the surface in any direction. Abrupt irregularities shall not exceed 1/8 inch.

C. Basin, flume, conduit and tank floors shall have a "troweled" finish unless shown otherwise on Drawings.

D. Weirs and overflow surfaces shall be given a "troweled" finish.

E. Exterior platforms, steps and landings, shall be given a "broom" finish. "Broom" finish shall be applied to surfaces which have been steel-troweled to an even, smooth finish. The troweled surface shall then be broomed with a fiber-bristle brush in the direction transverse to that of the main traffic.

F. Patching of holes due to removal of tie ends and other repairable defective areas, shall be as follows: Entire contact area of hole shall be coated with two-part moisture insensitive epoxy bonding compound as specified in Par. 2.04.B. in accordance with manufacturer's specifications, and prior to placing of freshly mixed patching mortar. Patching mortar shall be mixed and placed in general accordance with ACI 301, Par. 5.3.7.5.

G. For floors and slabs in which drains occur, special care shall be exercised to slope the floors uniformly to the drains. All floors with drains shall be sloped not less than 1/8 inch per foot unless otherwise shown. In all areas where quarry tile or other materials requiring more than 1/4 inch drop are to be overlaid, the concrete base slab shall be depressed to provide a finished floor at the same elevation as surrounding areas.

3.2 TESTING

A. All testing shall be in accordance with provisions of ACI 301. Testing services listed in ACI Sections 1.6.4 shall be performed by a testing agency acceptable to the Engineer and Owner.

B. The testing services of ACI sections 1.6.4.2 and 1.6.4.3 shall be performed at the Contractor's expense. The Owner-approved third-party testing agency shall be responsible for making concrete test cylinders, storing and protecting concrete cylinders, and delivering cylinders to the Owner-approved testing laboratory.

C. Testing services of ACI Section 1.6.4.4 shall be paid for by the Contractor. Test shall be made for each 50 cubic yards of concrete and/or each day concrete is placed.

3.3 ADDITIONAL REQUIREMENTS

- A. Unless otherwise directed by the Engineer, the vertical surfaces of footings shall be formed. Excavations and reinforcement for all footings shall have been inspected by the Engineer before any concrete is placed.
- B. The installation of underground and embedded items shall be inspected before slabs are placed. Pipes and conduits shall be installed below the concrete unless otherwise indicated. The fill required to raise the subgrade shall be placed as specified in Section 312000 "Earthwork". Porous fill not less than 6 inches in compacted thickness shall be installed under all slabs, tank bottoms, and foundations. The fill shall be leveled and uniformly compacted to a reasonably true and even surface. The surfaces shall be clean, free from frost, ice, mud and water. Waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness, or polyethylene-coated burlap shall be laid over all surfaces receiving concrete.
- C. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.
- D. Concrete Mixing
 - 1. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M and furnish batch ticket information.
 - a. When air temperature is between 85 and 90 degrees F (30 and 32 degrees C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 degrees F (32 degrees C), reduce mixing and delivery time to 60 minutes.
 - 2. Project site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - a. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - b. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd.
 - c. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.
- E. If concrete is placed by pumping, no aluminum shall be used in any parts of the pumping system which contact or might contaminate the concrete. Aluminum chutes and conveyors shall not be used.
- F. All concrete surfaces shall be moist cured by the application of absorptive mats or double thicknesses of fabric kept continuously wet. Forms shall be kept continuously wet. Use of other curing methods will not be permitted unless written authorization is received from the Engineer.

- G. The unit of operation shall not exceed 30 feet for tank walls and walls exposed to weather, and 45 feet for other work in any horizontal direction and not less than 48 hours shall elapse between casting of adjoining units unless these requirements are waived by the Engineer. Provision shall be made for jointing successive units as indicated or required to be made at spacing of approximately 25 feet. Additional construction joints required to satisfy the 25-foot spacing shall be located by the Contractor subject to the review of the Engineer. The Contractor shall submit for review drawings separate from the steel reinforcing drawings, showing the location of all proposed construction joints. All construction joints shall be prepared for bonding by roughening the surface of the concrete in an acceptable manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface. Joints in walls and columns shall be maintained level. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.
- H. Formwork for beam soffits and slabs and other parts that support the weight of concrete, shall remain in place until the concrete has reached its specified 28-day strength, unless otherwise specified or permitted.
- I. Concrete Walks and Curbs:
1. Subgrade shall be true and well compacted at the required grades. Spongy and otherwise unsuitable material shall have been removed and replaced with approved material. Concrete walks shall be placed upon porous fill covered with waterproof paper, polyethylene sheeting of nominal 4-mil minimum thickness or polyethylene-coated burlap.
 2. Concrete walks shall be not less than 4 inches in thickness. Walks shall have contraction joints every 5 linear feet in each groove in the top surface of the slab to a depth of at least one-fourth the slab thickness with a jointing tool. Transverse expansion joints shall be installed at all returns, driveways, and opposite expansion joints in adjacent curbs. Where curbs are not adjacent, transverse expansion joints shall be installed at intervals of approximately forty (40) feet. Sidewalks shall receive a "broomed" finish. Scoring shall be in a transverse direction. Edges of the sidewalks and joints shall be edged with a tool having a radius not greater than 1/6 inch. Sidewalks adjacent to curbs shall have a slope of 1/4 inch per foot toward the curb. Sidewalks not adjacent to curbs shall have a slope of 1/4 inch per foot. The surface of the concrete shall show no variation in cross section in excess of 1/4 inch in 5 feet. Concrete walks shall be reinforced with 6 x 6-W1.4xW1.4 welded wire reinforcement.
 3. Concrete curbs shall be constructed to the section indicated on the Standard Detail, and all horizontal and vertical curves shall be incorporated as indicated or required. Forms shall be steel as approved by the Engineer. At the option of the Contractor, the curbs may be precast or cast-in-place. Cast-in-place curbs shall be divided into sections 8 to 10 feet in length using steel divider plates. The divider plates shall extend completely through the concrete and shall be removed. Precast curbs shall be cast in lengths of 4 to 5 feet. All exposed surfaces of concrete shall be finished smooth. All sharp edges and the edges of joints and divisions shall be tooled to 1/4 inch radius. Steel reinforcement shall be installed where the curb crosses pipe trenches or other insecure foundations. Such reinforcement shall consist of two (2) No. 4 deformed bars near the bottom of the curb and shall extend at least 24 inches beyond the insecure area. Transverse expansion joints shall be installed at all curb returns and at intervals of approximately 40 feet.

- J. Column base plates, bearing plates for beams and similar structural members, machinery and equipment bases shall, after being plumbed and properly positioned, be provided with full bearing with nonshrink grout. Concrete surfaces shall be rough, clean, free of oil, grease, and laitance and shall be moistened thoroughly immediately before grout is placed. Metal surfaces shall be clean and free of oil, grease and rust. Mixing and placing shall be in conformance with the material manufacturer's printed instructions. After the grout has set, exposed surfaces shall be cut back one (1) inch and covered with a parge coat of mortar consisting of one (1) part Portland cement, two (2) parts sand and sufficient water to make the mixture placeable. Parge coat shall have a smooth dense finish. Exposed surfaces of grout and parge coat shall be water cured with wet burlap for seven (7) days.
- K. Grout fill which is formed in place by using rotating equipment as a screen, such as clarifiers and similar types of equipment, shall be mixed in proportions and consistencies as required by the manufacturer or supplier of the equipment.
- L. Watertightness:
1. The structures which are intended to contain liquids and/or will be subjected to exterior hydrostatic pressures shall be so constructed that, when completed and tested, there shall be no loss of water, and no wet spots shall show.
 2. As soon as practicable, after the completion of the structures, the Contractor shall fill them with water and if leakages develop or wet spots show, the Contractor shall empty such structures and correct the leakage in an approved manner. Any cracks which appear in the concrete shall be dug out and suitably repaired. Temporary bulkheads over pipe openings in walls shall be provided as required for the testing.
 3. After repairs, if any are required, the structures shall be tested again and further repaired, if necessary, until satisfactory results are obtained. All work in connection with these tests and repairs shall be at the expense of the Contractor.
 4. Waterstops shall be placed in other locations as indicated on the Drawings and as may be required to assure the watertightness of all containers of liquids. Special shop-fabricated ells, tees, and crosses shall be provided at junctions. Waterstops shall be extended at least 6 inches beyond end of placement in order to provide splice length for subsequent placement. In slabs and tank bottoms, water stops shall be turned up to be made continuous with waterstops at bottom of walls or in walls.
 5. Joints between pipe (except cast iron wall pipe) and cast-in-place concrete walls shall be sealed by means of a groove cast completely around the pipe; the groove shall be filled with a quick setting hydraulic compound similar and equal to "Master Seal 590" as made by BASF Construction Chemicals mixed and applied by the manufacturer's instructions.
- M. Unless otherwise shown or directed, all pumps, other equipment, and items such as lockers, motor control centers and the like, shall be installed on concrete bases. The bases shall be constructed to the dimensions shown on the plans or as required to meet plan elevations. Where no specific plan elevations are required, the bases shall be 6 inches thick and shall extend 3 inches outside the metal equipment base. In general, the concrete bases shall be placed up to 2 inches below the metal base. The equipment shall then be properly shimmed to grade and the 2- inch void filled with nonshrink grout.
- N. Concrete which, in the opinion of the Architect-Engineer, has excessive honeycomb, aggregate pockets or depressions will be rejected and the Contractor shall, at his own expense, remove the entire section containing such defects and replace it with acceptable concrete.

- O. Manhole or access steps shall be plastic, constructed of copolymer polypropylene meeting the requirements of ASTM D 2146 for Type II, Grade 16906 material. Step shall be reinforced with ASTM A 615, Grade 60, #4 deformed steel reinforcing bar, be 9 inches deep, 14 inches wide, provided with notched tread ridge, foot retainer lugs on each side of tread and penetration stops for press fit installation. Plastic steps shall be PS2-PF as manufactured by M.A. industries, Inc., Peachtree City, Georgia. Steps shall be installed by drilling 1 inch diameter holes, minimum 3-3/4 inches deep into the wall, and then driving steps into hole to the penetration stop, resulting in a press fit condition.
- P. Tank pressure relief valves shall be 6 inches diameter Neenah Foundry Company R-5001-1, American Valve & Hydrant B315.1, or equal, floor type, with outside hooks or inside self-contained lock; quantity and spacing as shown on structural drawings. No part of pressure relief valves shall project above the neat line of the tank floor to prevent fouling of scraper mechanisms where used.
- Q. All existing contact surfaces with new patch shall be coated with moisture-insensitive epoxy bonding adhesive, Sikadur Hi-Mod, Concrese LPL Liquid by BASF Construction Chemicals, or approved equal. Patch shall consist of base pour of 4,000 psi structural concrete, then a topping of non-shrink natural aggregate grout, Masterflow 713, SonogROUT by BASF Construction Chemicals, or approved equal, mixed and placed in accordance with manufacturer's instructions, to the thicknesses shown on Drawings. Coat base pour with epoxy bonding adhesive prior to placing grout course.

END OF SECTION 033000

SECTION 034000 – PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required to furnish and install all precast concrete structures and accessories appurtenances specified herein.
- B. Delegated Design: Design precast concrete structures, including comprehensive engineering analysis by a qualified Professional Engineer, licensed in the state in which the project using performance requirements and design criteria indicated.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-in-Place Concrete: Section 033100
- B. Access Hatches: Section 083110

1.3 SUBMITTALS

The Contractor shall submit the following data for Engineer's review in accordance with Section 013323.

- A. Delegated Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data, calculations, and erection drawings signed and sealed by the qualified Professional Engineer responsible for their preparation.
- B. Product Data: For each type of product indicated included but not limited to standard precast units, proprietary precast units, embedded items, and accessories.
- C. Design Data: Submit calculations prepared under the direct supervision of a Professional Engineer supporting the structural design, including resistance to buoyancy with groundwater table to the top of the structure, resistance to uplift and resistance to wheel loads in accordance with requirements and references indicated. The calculations shall be sealed by a Professional Engineer licensed in the state in which the project is located.
- D. Test Reports: Submit test reports for the following:
 - 1. Material certifications and/or laboratory test reports, including mill tests and all other test data, for Portland cement, blended cement, pozzolans, ground granulated blast furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this Project.
 - 2. Test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Such tests may include compressive strength, flexural strength, plastic or hardened air content, freeze thaw

- durability, abrasion and absorption. Clearly detail in the specifications special tests for precast concrete or cast-in items.
3. Sufficient documentation, when the use of self-consolidating concrete (SCC) is proposed, showing a minimum of 30-days production track records demonstrating that SCC is appropriate for casting of the product.
 4. In-plant QA/QC inspection reports, upon the request of the Project Representative.
- E. Shop Drawings: Submit shop drawings for standard precast units and custom-made precast units prepared under direct supervision of a Professional Engineer licensed in the state in which the project is located. Shop drawings shall include:
1. The criteria and loads used in the design of the precast components.
 2. All materials used, their specifications and their design strengths.
 3. Layout, piece mark, dimensions, reinforcing, and connection details of each precast member, including openings.
 4. Details and instructions for lifting, rigging, erection, and installation of each precast component.
 5. Lists and descriptions of all loose accessory materials supplied.
 6. Instructions on secondary pours (in the field) when required.
 7. Professional Engineer's seal.
- F. Quality Control Procedures: Submit certificate from the NPCA QC Manual that the precast concrete structure manufacturer participates in their QA/QC program.
- G. Manufacturer's Instructions.

1.4 QUALITY ASSURANCE

- A. Manufacturer of precast concrete structures shall be quality certified by NPCA. Inspect manufacture of structures in accordance with ASTM C1037.
- B. Installer of precast concrete structures shall have a record of at least three years of successful installation of similar products on similar projects.
- C. Inspection of earthwork, compaction and backfill shall be in accordance with the earthwork specifications in Division 31.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver precast units to the site in accordance with the delivery schedule to avoid excessive build-up of units in storage at the site. Upon delivery to the jobsite, all precast concrete units will be inspected by the Project Representative for quality and final acceptance.
- B. Store units off the ground or in a manner that will minimize potential damage.
- C. Handle, transport, and store products in a manner to minimize damage. Lifting devices or holes shall be consistent with industry standards. Perform lifting with methods or devices intended for this purpose as indicated on Shop Drawings.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE STRUCTURES

- A. Circular precast vaults and structures shall conform to ASTM C478. Non-circular vaults and structures shall conform to ASTM C857. Access hatch and pipe penetrations shall be cast in the top slab and/or sides as indicated on the drawings.
- B. Manhole frames and covers shall have a clear opening of 22 inches and shall be made of cast iron conforming to ASTM A48/A48M Class 30. Casting shall be smooth, clean and free from blisters, blowholes and shrinkage. Castings shall be dipped twice in a preparation of asphalt or coal tar and oil applied at a temperature of not less than 144 degrees F and not more than 155 degrees F so as to form a tenacious coating.
- C. Structural design of precast concrete structures is hereby delegated.
- D. All precast concrete structures shall be designed to resist the lateral soil pressures and fluid pressures in accordance with ASTM C857.
- E. All precast concrete structures have integral flanges at the base to engage enough soil resistance to resist the buoyant force from full submergence.
- F. All precast concrete structures shall be designed to support HL-93 or HS25-44 wheel loads in accordance with the AASTHO HB-17 anywhere on the top surface of the structure.
- G. Joints: Joints shall be watertight and shall be sealed with one of the following:
 - 1. Rubber gaskets conforming to ASTM C443.
 - 2. Pre-formed flexible butyl type joint sealant conforming to AASHTO M198.
 - a. Hamilton Kent "Kent Seal No. 2"
 - b. K.T. Snyder Company "Rub'r Nek"
 - c. Press Seal Gasket "E Z Stik"
 - d. Concrete Sealants, Inc. "ConSeal"
- H. Corrosion Control: Follow recommendations outlined in ACPA 01-110 when hydrogen sulfide is indicated as a potential problem.
- I. External Rubber Wrap:
 - 1. Each precast concrete structure joint shall be sealed with an external rubber wrap as manufactured by Sealing Systems, Inc., or equal. The wrap shall be made of a Stretchable, Self-Shrinking, IntraCuring Halogenated Based Rubber with a minimum thickness of 30 mils. The back side of each unit shall be coated with a cross-linked re-enforced butyl adhesive. The butyl adhesive shall be non-hardening sealant, with a minimum thickness of 30 mils. The wrap shall be designed to stretch around the substrate then overlapped creating a cross-link and fused bond between the rubber and butyl adhesive. The application shall form a continuous rubber seal that applies inward pressure on the protected area for the life

of the application. The butyl adhesive and the inward pressure exerted on the substrate will prevent the intrusion of water and soil through the joint sections of a manhole.

External Rubber Wrap Specifications

Height	9 inches
Length	16 or 50 foot rolls
Thickness	60 mils
Height tolerances	9 inches +/- .188"
Length tolerances	+/- 3"
Rubber Thickness tolerances	30 mils
Butyl Adhesive Thickness	30 mils

Stretchable, Self-Shrinking, Intra-Curing Halogenated Based Rubber

Physical Properties	ASTM Test Method	Typical Value
Sheer Strength	D816	20 lb. PSI min
Tensile, PSI	D412	50 PSI
Elongation %	D412	500%
Penetration	D217	60/140 MM
Low Temperature	D746	Minus 49° F flexibility
Heat Aging	D573 7 days @ 90 degrees C	
Tensile Strength	minimum, PSI (MPa) > 100 PSI	Pass
Fusion	5/64" (0.2) max	Pass
Elongation %	minimum 300% at break	Pass
Ozone Resistance	no visible signs of cracking	Pass
Aging and Storage	300% elongation applied (10 Years)	Pass
UV Resistance	No visible signs of cracking	Pass

PART 3 - EXECUTION

3.1 FABRICATION

- A. Fabricate precast concrete structures in accordance with NPCA QC Manual.

3.2 INSTALLATION

- A. Install precast concrete structures in accordance with ASTM C891 and the manufacturer's instructions.
- B. Lift precast components at designated lifting points in accordance with the manufacturer's instructions and other applicable safety standards.

- C. Precast concrete structures shall bear on a minimum 4-inches-thick bedding / base / drainage course of free-draining granular material. See Division 31 for bedding / base / drainage course materials.
- D. Do not bear precast concrete structures on uneven subgrade or grade with high points from rock pinnacles or boulders or rock ledges.
- E. Install precast concrete structures in proper location, with the proper alignment and level.
- F. Backfill around the precast concrete structures in accordance with Division 31 specifications.

3.3 JOINTS

- A. Joints shall be sealed with an approved sealant as specified in Part 2 and shall be mortared or grouted.
- B. When making joints with mastic compound prime and seal all joints with primer supplied with the joint compound.
- C. Joints shall be watertight.
- D. Pipe Connections into Precast Structures:
 - 1. Precast Openings:
 - a. Pipe shall be sealed in the precast section pipe opening with a resilient connector meeting the requirements of ASTM C923. Resilient connector shall be "Dura-Seal III" by Dura-Tech, Dayton, Ohio; "A-Lok" by A-LOK Products, Inc.; or approved equal.
 - b. Resilient connector shall be cast integrally into the wall of the precast section at the time of manufacture. There shall be no mortar placed around the connector on the outside of the manhole and no mortar shall be placed around the top half of the connector on the inside of the manhole when completing the invert work.
 - 2. Cored Openings:
 - a. Pipe shall be sealed in cored precast section pipe opening with a resilient mechanical connector meeting the requirements of ASTM C923. Resilient connector shall be "NPC Kor-N-Seal I" (with stainless steel wedge) by Trelleborg Pipe Seals Milford, Inc.; "PSX: Direct Drive" by Press-Seal Gasket Corporations; interlocking link pipe seal; or approved equal. All fasteners and hardware shall be Type 304 stainless steel.
 - b. There shall be no mortar placed around the connector on the outside of the structure and no mortar shall be placed around the top half of the connector on the inside of the structure when completing the invert work.

3.4 LEAKAGE TESTING

- A. Leakage tests shall be made and observed by the Project Representative's representative for all precast structures. The test shall be the watertightness (exfiltration) test as described herein.
- B. After each structure has been assembled in place, including wall piping, all lifting holds shall be filled with an approved non-shrink, non-metallic grout. Upon completion, each precast structure shall be tested to determine watertightness. The leakage test shall be made prior to placing any fill material and prior to application of interior/exterior wall coatings if specified. If the groundwater table has been allowed to rise above the bottom of the structure, it shall be lowered for the duration of the test. All pipes and other openings into the structures shall be suitably plugged and the plugs braced to prevent blow out.
- C. The tank shall be filled with potable water to the maximum level. The test shall consist of measuring the liquid level over the next 24 hours to determine if any change has occurred. If a change is observed and exceeds the maximum allowance, the test shall be extended to a total of five days. If at the end of five days the average daily change has not exceeded the maximum allowance, the test shall be considered satisfactory.
- D. The liquid volume loss for a period of 24 hours shall not exceed one-twentieth of one percent of the tank capacity, $0.0005 \times \text{tank volume}$. If the liquid volume loss exceeds this amount, it shall be considered excessive, and the tank shall be repaired and retested.
- E. Damp spots will not be permitted at any location on the structure wall. Damp spots are defined as spots where moisture can be picked up on a dry hand. All such areas shall be repaired as necessary.
- F. Damp spots or standing water on the footing may occur upon tank filling and are permissible within the allowable volume loss. Measurable flow in this area is not permissible and must be corrected.
- G. It shall be the Contractor's responsibility to uncover the structure as necessary and to disassemble, reconstruct, or replace it as directed by the Project Representative. The structure shall then be retested.
- H. No adjustment in the leakage allowance will be made for unknown causes such as leaking plugs, absorptions, etc. It will be assumed that all loss of water during the test is a result of leaks through the joints or through the concrete. Furthermore, the Contractor shall take any steps necessary to assure the Project Representative that the water table is below the bottom of the structure throughout the test.

3.5 CLEAN UP

- A. Upon completion of installation of the precast structures and appurtenances, the Contractor shall remove all debris and surplus construction materials resulting from the Work. The Contractor shall grade the ground around and adjacent to the construction area in a uniform and neat manner to the final grade lines.

END OF SECTION 034000

DIVISION 10
SPECIALTIES

SECTION 107445 – ACCESS HATCHES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Provide all labor, materials, equipment, and service required for the complete installation of the access hatches as specified herein and shown on the Drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Cast-in-Place Concrete: Section 033300
- B. Precast Concrete: Section 034133

1.3 SUBMITTALS

- A. Submit manufacturer's data and shop drawings for the materials specified herein. Comply with all requirements of Section 013323.
- B. Descriptive literature, catalog cuts, and 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.
- C. 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 Engineer's Contract Drawings and Specifications.
- D. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Access Hatches	X	X		X						X		

1.4 ACCEPTABLE MANUFACTURERS

- A. Access hatches shall be as manufactured by the Bilco Company, New Haven, Connecticut; Halliday Products, Orlando, Florida; Milcor Division Inryco, Inc., Milwaukee, Wisconsin; Nystrom, Minneapolis Minnesota or equal.

1.5 WARRANTY

- A. The guaranty period shall be as set forth in specification Section 011400, "General Provisions". In the event the manufacturer's guarantee period exceeds that as stated in the General Provisions, the manufacturer's guarantee period will stay in effect and shall not be replaced by that previously stated.

PART 2 - PRODUCTS

2.1 ACCESS HATCH FOR AIR RELEASE VALVE VAULTS

- A. Access hatch shall be double leaf or single leaf, as indicated on the Contract Drawings or by the Engineer, aluminum, gutter type, watertight, exterior, flush floor hatch design. Door leaves shall be 1/4-inch aluminum diamond pattern plate to withstand a live load of 300 lbs./sf. Channel frames shall be 1/4-inch aluminum with an anchor flange around the perimeter. Provide 1-1/2-inch female NPT threaded aluminum drainage coupling welded under frame at right front corner for connection of drainpipe.
- B. Door shall be equipped with 316 stainless steel hinges, a lockable hasp for use with a padlock, stainless steel pins, spring operator for easy operation and an automatic hold-open arm with release handle. Provide inside stainless-steel snap locks with removable wrench lift handle outside. Furnish threaded aluminum plug to seal lock aperture. Hardware shall be cadmium plated.
- C. Doors and frames shall be mill-finished with coating applied to the exterior of the frame. Hatches shall have an odor resistant gasket.
- D. Access Hatch shall be furnished with a factory installed FTPS. The FTPS must be able to withstand a live load of 300 lbs./sf, be of aluminum "I" bar construction with safety orange powder-coating finish and have 316 stainless steel mounting hardware. The lifting handle shall be spring loaded, and the system shall be hinged with an automatic hold open arm to maintain an upright position, as well as be lockable with Owner-supplied padlock.
- E. For a schedule of valve vaults and 8-foot x 8-foot influent junction box hatches see Schedule:

STRUCTURE	SIZE Width x Length (Ft-In x Ft-In)	NO. OF HATCHES	LEAF Double or Single
ARV Vault	3'-0" x 3'-0" 4'-0" x 3'-0"	2 1	Single Single

PART 3 - EXECUTION

3.1 GENERAL

- A. Installation shall be in accordance with manufacturer instructions.
- B. Manufacturer shall guarantee against defects in material of workmanship for a period of five years.
- C. Unit shall be set with slight pitch toward drain. Furnish and install 1 inch diameter schedule 80 PVC plastic drainage pipe and fittings to connect to gutter drainage coupling, set in concrete and run outside vault to daylight.

END OF SECTION 107445



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
220 WEST MAIN STREET
LOUISVILLE, KY 40202

August 07, 2026

Regulatory Division
South Branch
ID No. LRL-2026-00198

Emma Priger
Kentucky Transportation Cabinet (KYTC)
200 Mero Street
Frankfort, Ky 40622
Via email: Emma.Priger@ky.gov

Dear Ms. Priger:

This letter is in response to the Pre-Construction Notification (PCN) you submitted to the Louisville District, Regulatory Division on March 30, 2026, for a Department of the Army Nationwide permit (NWP) verification. This project has been assigned the file number LRL-2026-00198 and is known as KYTC Item No. 5-481.00 KY 864 Beulah Church Road Improvement project. This file number should be referenced in all correspondence concerning this project.

A review of the information provided indicates that the proposed work would permanently discharge fill material into approximately 528 linear feet (0.076 acre) of perennial un-named tributaries to Pennsylvania Run and 226 linear feet (0.0209 acre) of intermittent un-named tributaries to Pennsylvania Run in association with the Beulah Church Road Improvement project. The review area includes a 1.36-mile-long project corridor which begins at Cedar Creek Road (MP 1.818) and extends northward to Rocky Lane (MP 3.152) at Latitude 38.112272 and Longitude -85.615840; in Jefferson County, Kentucky.

We have determined that the proposed work is authorized by 33 CFR 330 Nationwide Permit (NWP) No. 14 (Linear Transportation Projects), as published in the Federal Register January 8, 2026, pursuant to authorities under Section 404 of the Clean Water Act (33 U.S.C. § 1344). The proposed work must be accomplished in strict accordance with the general permit conditions, any regional conditions, the special conditions listed in this letter, and the application materials. If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised PCN must be submitted to this office for written approval before work is initiated.

This verification is valid until March 15, 2031, unless prior to this date the subject NWP(s) is suspended, revoked, or is modified such that the activity no longer complies with the terms and conditions of this NWP. If you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

Project Specific Special Conditions:

- a. The Permittee shall comply with all conditions of the Section 401 Water Quality Certification No. WQC2026-89-1, dated July 22, 2026, issued by the Kentucky Division of Water, which are incorporated herein by reference.
- b. The Permittee shall provide to the Corps written proof of purchase, in the form of a receipt of payment, of 561 Adjusted Mitigation Units (AMUs) from a Corps-approved mitigation bank authorized to sell stream credits in an approved service area where the wetland/stream impacts are to occur. If the appropriate number or type of credits are not available from a mitigation bank with an approved service area where the wetland/stream impacts are to occur, the permittee shall purchase 673 AMUs from an In Lieu Fee (ILF) Program within the Salt River service area. The specific mitigation bank or in-lieu fee program used to provide the required compensatory mitigation must be approved by the Corps prior to purchase. **The permittee must provide to the Corps proof of credit purchase prior to the discharge of fill material into "waters of the U.S." ILF credits shall not be purchased unless a mitigation bank, with an approved service area where the wetland/stream impacts are to occur, does not have the appropriate number or type of credits available.**
- c. This Department of the Army permit does not authorize you to take an endangered species. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a BO under ESA Section 7, with "incidental take" provisions with which you must comply). The enclosed U.S. Fish and Wildlife Service Biological Opinions (BO) "Federal Highway Administration Kentucky Division's 2020 Programmatic Consultation on the Effects of Transportation Projects in Kentucky on the Indiana Bat and Gray Bat" and the "2015 Biological Opinion: Kentucky Field Office's Participation in Conservation Memoranda of Agreement for the Indiana Bat and/or Northern Long-eared Bat" (Attachment 1) contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with incidental take that is also specified in the BOs. Your authorization under this Department of the Army permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BOs, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BOs, where a take of the listed species occurs would constitute an unauthorized take, and it would also constitute non-compliance with your Department of the Army permit. The U.S. Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its BOs, and with the ESA.
- d. To mitigate for adverse effects to listed bat species, the Permittee shall submit the appropriate contribution to the Imperiled Bat Conservation Fund (IBCF) in accordance with the process outlined in the FHWA 2020 Programmatic Consultation and accompanying biological opinion on the effects of transportation projects on the Gray bat and the Indiana bat between the FHWA, KYTC, and the USFWS Kentucky Field Office (KFO). If additional

forested areas not previously considered in the DA permit application are to be cleared, the Permittee shall notify the Corps and the USFWS in advance of any additional tree clearing to determine if re-initiation of ESA consultation is required.

- e. The Permittee shall not clear trees greater than 5" dbh between May 15 and July 31 to avoid impacting federally listed bat species.
- f. The Permittee shall fully implement all stipulations in the Memorandum of Agreement between KYTC, the Kentucky State Historic Preservation Officer (SHPO) and the Federal Highway Administration (FHWA), dated June 30, 2026, which is incorporated herein by reference.

The enclosed Compliance Certification (ENG 6285) 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. Please note that we also perform periodic inspections to ensure compliance with our permit conditions and applicable Federal laws.

This NWP verification does not preclude the necessity to obtain any other Federal, State, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Crystal Byrd at 606-784-9709, by mail at the above address, or by email at crystal.d.byrd@usace.army.mil.

Sincerely,

Matt Dennis
Chief, MCE Branch
Regulatory Division

Enclosures

Cc (w/enclosures)
KDOW (via Eric.Stephens@ky.gov)



Andy Beshear
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 Sower Boulevard
Frankfort, Kentucky 40601
Phone: (502) 564-2150
Fax: 502-564-4245

John S. Lyons
SECRETARY

Amanda LeFevre
COMMISSIONER

July 22, 2026

Danny Peake
Kentucky Transportation Cabinet (KYTC)
200 Mero St
Frankfort, KY 40622

Re: §401 Water Quality Certification
KY 864 Beulah Church Road Widening
WQC No: WQC2026-089-1
AI No.: 189842; Activity ID: APE20260001
USACE ID No.: LRL-2026-00198
KYTC Item No.: 5-481.00
UTs of Pennsylvania Run
Jefferson County, Kentucky

Dear Mr. Peake:

Pursuant to Section 401 of the Clean Water Act (CWA) and 40 CFR 121.7(c), the Commonwealth of Kentucky certifies it has reasonable assurances that applicable water quality standards under Kentucky Administrative Regulations Title 401, Chapter 10, established pursuant to Sections 301, 302, 303, 304, 306, and 307 of the CWA, will not be violated by the above referenced project provided that the attached conditions are met. This certification authorizes the activity under any required federal license or permit.

Other permits from the Division of Water may be required for this activity. Projects that disturb one acre or more of land or is part of a larger common plan of development or sale that will ultimately disturb one acre or more of land require a Kentucky Pollution Discharge Elimination System (KPDES) Stormwater Permit; contact the Surface Water Permits Branch (502-564-3410 or SWPBSupport@ky.gov). A Groundwater Protection Plan is required if activities listed in Section 2(2) of 401 KAR 5:037 are conducted. A Water Withdrawal Application is required for activities proposing raw water withdrawals of 10,000 gallons per day or more; contact the Watershed Management Branch (502-564-3410).

All future correspondence on this project must reference AI No. 189842. **The attached document is your official Water Quality Certification; please read it carefully.** Please contact Bryan Killian by phone at 502-782-4695 or email at bryan.killian@ky.gov if you have any questions.

Sincerely,



Mike Heyn, Supervisor
Water Quality Certification Section
Kentucky Division of Water

MH:BK
Attachment

cc: Emma Priger, KYTC: Frankfort (via email: emma.priger@ky.gov)
Andrew Logsdon, KYTC: Frankfort (via email: Andrew.Logsdon@ky.gov)
Dave Harmon, KYTC: Frankfort (via email: Dave.Harmon@ky.gov)
Crystal Byrd, USACE: Louisville District (via email: Crystal.D.Byrd@usace.army.mil)
Rick Larsen, ICF: (via email: rick.larsen@icf.com)
USFWS, Kentucky Field Office: Frankfort (via email: kentuckyes@fws.gov)
Todd Giles, Louisville Regional Office (via email: todd.giles@ky.gov)

KTC Water Quality Certification
Beulah Church Rd - Jefferson Co
Facility Requirements
Permit Number: WQC2026-089-1
Activity ID No.:APE20260001

ACTV0000000002 (AI 189842 - Beulah Church Rd - Jefferson Co) KYTC Item # 5-481.00:

Submittal/Action Requirements:

Condition No.	Condition
S-1	Prior to any construction activity, the Kentucky Transportation Cabinet (KYTC) shall submit to the Water Quality Section Project Manager a copy of the receipt of purchase of 561 stream Adjusted Mitigation Units (AMUs) from an approved mitigation bank OR purchase of 673 stream AMUs from an approved Kentucky in-lieu fee (ILF) program fund. Credits must be purchased prior to impacts. Mitigation banks and ILF programs are considered approved as defined in the April 10, 2008 Final Rule, 40 CFR Part 230: Compensatory Mitigation for Losses of Aquatic Resources. This condition is necessary to allow impacts to occur. Compensatory mitigation is the method to approve impacts and entire losses of a water resource. The Division can approve impacts and loss based on the confidence that the resource will be replaced and not result in a net loss of aquatic resources. Compensatory mitigation is the method of compliance for the Commonwealth's water quality standards. [33 CFR 332, 40 CFR 230, 401 KAR 10:031 Section 2(1)(a)] KYTC shall notify the Water Quality Certification Project Manager or Supervisor of the scheduled start of construction activities at least two weeks before the start of construction. This condition is necessary for the Division of Water to be informed of the ongoing activity for the purposes of site visits to ensure implementation of Kentucky Regulatory Statutes and Administrative Regulations; the Division will monitor the environment, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
S-2	KYTC shall notify the Water Quality Certification Project Manager or Supervisor of substantial completion of construction no later than two weeks post-construction. This condition is necessary for the Division of Water to be informed of the ongoing activity for the purposes of site visits to ensure implementation of Kentucky Regulatory Statutes and Administrative Regulations; the Division will monitor the environment, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
S-3	KYTC shall submit as-built drawings within 90 days after substantial completion of construction to the Water Quality Certification Section Project Manager or Supervisor. This condition is necessary to monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
S-4	KYTC shall submit as-built drawings within 90 days after substantial completion of construction to the Water Quality Certification Section Project Manager or Supervisor. This condition is necessary to monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]

KTC Water Quality Certification
Beulah Church Rd - Jefferson Co
Facility Requirements
Permit Number: WQC2026-089-1
Activity ID No.:APE20260001

ACTV0000000002 (AI 189842 - Beulah Church Rd - Jefferson Co) KYTC Item # 5-481.00:

Narrative Requirements:

Condition No.	Condition
T-1	The work approved by this certification shall be limited to Lat: 38.112272, Lon: -85.615840: - Widening of 1.36 miles of Beulah Church Road (KY 864) in Jefferson County - 528 linear feet of permanent impacts to perennial streams for scour protection and piping - 228 linear feet of permanent impacts to intermittent streams for scour protection and piping This condition is necessary to confirm activities approved by this certification. [401 KAR 10:030 Section 1, 401 KAR 9:010 Section 1(a)(2), KRS 224.10-100, KRS 224.70-110]
T-2	All work performed under this certification shall adhere to the design and specifications set forth in the following document(s): - Application for Permit to Construct Across or Along a Stream and/or Water Quality Certification received on 3/30/2026 - Pre-file Meeting Request received on 3/30/2026 - Certification Request received on 6/5/2026 - 5-481.00_NW14-WQC_ENV_PSE_20263003.pdf - NOD_1_Beulah_Church_Road.pdf This condition is necessary to confirm activities approved by this certification. [401 KAR 10:030 Section 1, 401 KAR 9:010 Section 1(a)(2), KRS 224.10-100, KRS 224.70-110]
T-3	KYTC is responsible for preventing degradation of waters of the Commonwealth from soil erosion. An erosion and sediment control plan must be designed, implemented, and maintained in effective operating condition at all times during construction. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-4	No in-stream operations or activities shall be conducted during fish spawning season (April 1 through June 30), due to the potential impacts of increased sediment load and associated water quality and designated aquatic habitat impacts. This condition is necessary to monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 4(1)(c,h), KRS 224.10-100, KRS 224.70-110]
T-5	Heavy equipment (e.g. bulldozers, backhoes, draglines, etc.), if required for this project, should not be used or operated within the stream channel. In those instances where such instream work is unavoidable, then it shall be performed in such a manner and duration as to minimize re-suspension of sediments and disturbance to the channel, banks, or riparian vegetation. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]

KTC Water Quality Certification
Beulah Church Rd - Jefferson Co
Facility Requirements
Permit Number: WQC2026-089-1
Activity ID No.:APE20260001

ACTV0000000002 (AI 189842 - Beulah Church Rd - Jefferson Co) KYTC Item # 5-481.00:

Narrative Requirements:

Condition No.	Condition
T-6	Erosion and sediment 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. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-7	Remove all sediment and erosion control measures after re-vegetation has become well-established. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-8	Any fill or riprap shall be of a composition that shall not cause violations of water quality standards by adversely affecting the biological, chemical, or physical properties of waters of the Commonwealth. If riprap is used, it shall be of a weight and size that bank stress or slump conditions shall not occur. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-9	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. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-10	Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse. This condition is necessary to prevent water pollution as prohibited by statute. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-11	To the maximum extent practicable, all in-stream work under this certification shall be performed during low flow. This condition is necessary to prevent and minimize objectionable deposits and pollution and protect the use of the stream. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-12	Removal of existing riparian vegetation shall be restricted to the minimum necessary for project construction. This condition is necessary to minimize negative effects to the environment, protect the use of the stream, and protect aquatic resources. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]

KTC Water Quality Certification
Beulah Church Rd - Jefferson Co
Facility Requirements
Permit Number: WQC2026-089-1
Activity ID No.:APE20260001

ACTV0000000002 (AI 189842 - Beulah Church Rd - Jefferson Co) KYTC Item # 5-481.00:

Narrative Requirements:

Condition No.	Condition
T-13	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. This condition is necessary to monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 10:031 Section 2(1)(a), KRS 224.10-100, KRS 224.70-110]
T-14	This Water Quality Certification expires on July 22, 2031. This condition is necessary for the issuance of the certification. [KRS 224.10-100, KRS 224.16-050(2), KRS 224.70-110]
T-15	Other permits from the Division of Water may be required for this activity. If this activity occurs within a floodplain, a Permit to Construct Across or Along a Stream may be required. Please contact the Floodplain Management Section Supervisor (502-564-3410) for more information prior to construction. If the project will disturb one acre or more of land, or is part of a larger common plan of development or sale that will ultimately disturb one acre or more of land, a Kentucky Pollution Discharge Elimination System (KPDES) Stormwater Permit shall be required. Please contact the Surface Water Permits Branch (502-564-3410 or SWPBSupport@ky.gov) for more information. A Groundwater Protection Plan is required if any of the activities listed in Section 2(2) of 401 KAR 5:037 are conducted. A Water Withdrawal Application is required for any activities proposing raw water withdrawals of 10,000 gallons per day or more. For technical assistance contact the Watershed Management Branch at 502-564-3410 or visit eec.ky.gov. This condition is necessary for confirm authorized impacts, the appropriate responsible party, monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [KRS 224.10-100, KRS 224.16-050(2), KRS 224.70-110]
T-16	If there is a transfer or conveyance of the project site during the issued WQC term for the approved activity, KYTC shall submit written notice to the Water Quality Certification Section Project Manager or Supervisor of the transfer or conveyance of the project site or any part of the project site at least 60 days prior to the transfer or conveyance of the project site. The notification shall include the WQC number; the Agency Interest (AI) No.; the name, mailing address, email address, and telephone number of the current owner; the name, mailing address, and telephone number of the prospective transferee; the proposed effective date of transfer/conveyance; and a copy of the documentation evidencing the transfer/conveyance. Failure to comply with this condition does not negate the validity or enforceability of this certification. This condition is necessary for confirm authorized impacts, the appropriate responsible party, monitor the aquatic resources, minimize impact to aquatic resources, protect the use and designation of resources, allow more effective and efficient control practices, identify changes and conditions in ecological systems as a result of activities, and to warn of emergency conditions. [401 KAR 10:030 Section 1, 401 KAR 9:010 Section 1(a)(2), KRS 224.10-100, KRS 224.70-110]

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Kentucky Transportation Cabinet

Highway District 5 (1)

And

_____ (2), Construction

Kentucky Pollutant Discharge Elimination System

Permit KYR10

Best Management Practices (BMP) plan

Groundwater protection plan

For Highway Construction Activities

For

***KY 864 - Widen Beulah Church Road from 2 to 3 lanes
from I-265 to Cedar Creek Road. (1)***

Project: PCN 5 – 481.00

KYTC BMP Plan for Project PCN 5-481.00

Project information

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

1. Owner – Kentucky Transportation Cabinet, District 5 (1)
2. Resident Engineer: (2)
3. Contractor name: (2)

Address: (2)

Phone number: (2)

Contact: (2)

Contractors agent responsible for compliance with the KPDES permit requirements (3):

4. Project Control Number (2)
5. Route (Address): (1) **Louisville, KY 40228 - Beulah Church Road, (Cedar Creek to I-265), Louisville, KY.**
6. Latitude/Longitude (project mid-point) dd/mm/ss, dd/mm/ss (1)
Lat: 38 06 39 N
Long: 85 36 57 W
7. County (project mid-point) (1) **Jefferson**
8. Project start date (date work will begin): (2)
9. Projected completion date: (2)

A. Site description:

1. Nature of Construction Activity (from letting project description) (1)
KY 864 - Widen Beulah Church Road from 2 to 3 lanes from I-265 to Cedar Creek Road.

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2. Order of major soil disturbing activities (2) and (3)
3. Projected volume of material to be moved (1) **60,357 CU YD**
4. Estimate of total project area (acres) (1) **31.62**
5. Estimate of area to be disturbed (acres) (1) **23.02**
6. Post construction runoff coefficient will be included in the project drainage folder. Persons needing information pertaining to the runoff coefficient will contact the resident engineer to request this information. (1)
7. Data describing existing soil condition (1) & (2)

The Geotechnical Branch performed drilling, sampling and laboratory testing. The purpose of the investigation is to define the soil and subsurface conditions for the roadway. The reduced size geotechnical symbol sheet, geotechnical notes sheet, soil profile sheets, cut stability sheets and embankment stability sheets are attached. The CADD input for these sheets, in. DGN format is being e-mailed to the design consultant, GRW Inc., for incorporation into the roadway plans.

The project is in the Mt. Washington (GQ #1282) Geological Quadrangle and Jefferson Town (GQ #999) Geological Quadrangle. The bedrock is primarily composed of Louisville Limestone which primarily consists of Dolomitic limestone.

The bedrock within the project can be susceptible to karst features. However, there were no karst features encountered during the geotechnical investigation. Due to the possibility of encountering sinkholes during construction it is recommended that a quantity for "Cleaning and Capping Sinkholes" and Sepia Sheet 003 "Treatment of Open Sinkholes" be included in the plans.

Little to no durable rock was encountered during the subsurface investigation. Therefore, Select Rock Quantities were not calculated, and a little amount of durable rock will be available from roadway excavation for construction purposes.

There will be an insufficient amount of durable rock on the project for a 2-ft rock roadbed. Therefore, chemical (cement) stabilization of the subgrade has been recommended.

In areas where the chemical stabilization is not feasible (such as crossovers, tie-ins, etc.) a two (2) feet rock roadbed consisting of Kentucky Coarse Aggregate # 2's, 3's or 23's wrapped with a Type I Geotextile Fabric will be required. The rock roadbed shall be extended

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under curb and gutter. Where rock roadbed is used sections of 4-inch perforated drainpipe (approximately 4 feet long) shall be placed transversely in the bottom of the granular material to drain the rock roadbed. Longitudinal edge drains or other preferred methods may be used, in lieu of the transversely place perforated pipe, to drain the rock roadbed.

Depending on time of construction and/or seasonal fluctuations in the water table wet and/or soft foundation soils may be encountered. Therefore, a working platform for embankment construction will be required in these areas consisting of 2 feet of Kentucky Coarse Aggregate # 2's, 3's or 23's. The working platform shall be underlain with Geotextile Fabric, Type IV. Positive drainage shall be maintained to prevent trapping water within the roadway embankment. The actual thickness may need to be adjusted by the Engineer during construction. For quantity estimating purposes only, a 2-foot working platform shall be calculated for 300 feet of embankment.

A stability analysis was performed for the proposed embankment at station 119+00. The analysis indicated that all embankments can be constructed on 2H:1V side slopes or flatter.

A stability analysis was performed for the proposed cut at station 92+00. The analysis indicated, for the cut limits from station 90+00 to station 96+50, that the cut slopes must be constructed with 2.5H:1V slopes for both sides. All other cut slopes shall be constructed on 2H:1V slopes.

8. Data describing existing discharge water quality (if any) (1) & (2)
9. Receiving water name (1) Lovvorn Creek, Pennsylvania Run
10. TMDLs and Pollutants of Concern in Receiving Waters: (1 DEA)
11. Site map – Project layout sheet plus the erosion control sheets in the project plans that depict Disturbed Drainage Areas (DDAs) and related information. These sheets depict the existing project conditions with areas delineated by DDA (drainage area bounded by watershed breaks and right of way limits), the storm water discharge locations (either as a point discharge or as overland flow) and the areas that drain to each discharge point. These plans define the limits of areas to be disturbed and the location of control measures. Controls will be either site specific as designated by the designer or will be annotated by the contractor and resident engineer before disturbance commences. The project layout sheet shows the surface waters and wetlands.

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12. Potential sources of pollutants:

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

B. Sediment and Erosion Control Measures:

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

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

2. Following award of the contract, the contractor and resident engineer will annotate the erosion control sheets showing location and type of BMPs for each of the DDAs that will be disturbed at the outset of the project. This annotation will be accompanied by an order of work that reflects the order or sequence of major soil moving activities. The remaining DDAs are to be designated as "Do Not Disturb" until the contractor and resident engineer prepare the plan for BMPs to be employed. The initial BMP's shall be for the first phase (generally Clearing and Grubbing) and shall be modified as needed as the project changes phases. The BMP Plan will be modified to reflect disturbance in additional DDA's as the work progresses. All DDA's will have adequate BMP's in place before being disturbed.
3. As DDAs are prepared for construction, the following will be addressed for the project as a whole or for each DDA as appropriate:
 - Construction Access – This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary mulch and/or vegetation.

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

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- Finish Work (Paving, Seeding, Protect, etc.) – A final BMP Plan will result from modifications during this phase of construction. Probably changes include:
 - Removal of Silt Traps Type B from ditches and drainways if they are protected with other BMP's which are sufficient to control erosion, i.e. Erosion Control Blanket or Permanent Seeding and Protection on moderate grades.
 - Permanent Seeding and Protection
 - Placing Sod
 - Planting trees and/or shrubs where they are included in the project
- BMP's including Storm Water Management Devices such as velocity dissipation devices and Karst policy BMP's to be installed during construction to control the pollutants in storm water discharges that will occur after construction has been completed are: **(1) The Erosion Control sheets are included in the Highway Plan set.**

C. Other Control Measures

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

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

3. Hazardous Waste

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

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4. Spill Prevention

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

➤ **Good Housekeeping:**

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

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

➤ **Hazardous Products:**

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

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

The following product-specific practices will be followed onsite:

➤ **Petroleum Products:**

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

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

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

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

➤ **Fertilizers:**

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

➤ **Paints:**

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

➤ **Concrete Truck Washout:**

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

➤ **Spill Control Practices**

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

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

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

D. Other State and Local Plans

This BMP plan shall include any requirements specified in sediment and erosion control plans, storm water management plans or permits that have been approved by other state or local officials. Upon submittal of the NOI, other requirements for surface water protection are incorporated by reference into and are enforceable under this permit (even if they are not specifically included in this BMP plan). This provision does not apply to master or comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit issued for the construction site by state or local officials. **(1) – None specified in plan set**

E. Maintenance

1. The BMP plan shall include a clear description of the maintenance procedures necessary to keep the control measures in good and effective operating condition.
- Maintenance of BMPs during construction shall be a result of weekly and post rain event inspections with action being taken by the contractor to correct deficiencies.
 - Post Construction maintenance will be a function of normal highway maintenance operations. Following final project acceptance by the cabinet, district highway crews will be responsible for identification and correction of deficiencies regarding ground cover and cleaning of storm water BMPs. The project manager shall identify any BMPs that will be for the purpose of post construction storm water management with specific guidance for any non-routine maintenance. **(1) – None specified in plan set**

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F. Inspections

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

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

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G. Non – Storm Water discharges

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

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

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

H. Groundwater Protection Plan (3)

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

- Contractors statement: (3)

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

- _____ 2. (e) land treatment or land disposal of a pollutant;
- _____ 2. (f) Storing, ..., or related handling of hazardous waste, solid waste or special waste, ..., in tanks, drums, or other containers, or in piles, (This does not include wastes managed in a container placed for collection and removal of municipal solid waste for disposal off site);
- _____ 2. (g) Handling of materials in bulk quantities (equal or greater than 55 gallons or 100 pounds net dry weight transported held in an individual container) that, if released to the environment, would be a pollutant;
- _____ 2. (j) Storing or related handling of road oils, dust suppressants, ..., at a central location;
- _____ 2. (k) Application or related handling of road oils, dust suppressants or deicing materials, (does not include use of chloride-based deicing materials applied to roads or parking lots);

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

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

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

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

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

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

Contractor and Resident Engineer Plan certification

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

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

Resident Engineer and Contractor Certification:

(2) Resident Engineer signature

Signed _____ title _____,
Typed or printed name² signature

(3) Signed _____ title _____, _____
 Typed or printed name¹ _____ signature

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

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

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Sub-Contractor Certification

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

Subcontractor

Name:
Address:
Address:

Phone:

The part of BMP plan this subcontractor is responsible for implementing is:

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

Signed _____title_____, _____
Typed or printed name¹signature

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



Andy Beshear
GOVERNOR

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 Sower Boulevard
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John S. Lyons
SECRETARY

Anthony R. Hatton
COMMISSIONER

May 8, 2026

Matthew Bullock
KYTC District 5
8310 Westport Rd
Louisville, KY 402423042

Re: KYR10 Coverage Acknowledgment
KPDES No.: [KYR10U606](#)
[5-481.00](#)
Permit Type: [Construction Stormwater](#)
AI ID: [189842](#)
[Jefferson](#) County, Kentucky

Dear [Matthew Bullock](#) :

The discharges associated with the Notice of Intent you submitted have been approved for coverage under the "Kentucky Pollutant Discharge Elimination System (KPDES) General Permit for Storm Water Discharges Associated with Construction Activities (KYR100000)" master general permit. Your coverage becomes effective on the date of this letter. This coverage automatically terminates two years from the effective date of your coverage unless an extension is requested prior to the termination date, or the Division of Water revokes coverage, whichever comes first. During this period of coverage all discharges shall comply with the conditions of the KYR100000 master general permit. This permit and links to the eNOI (and permit coverage extension) and eNOT forms can be found on our website:

<https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/KYR10PermitPage.pdf>.

Any person aggrieved by the issuance of a permit final decision may demand a hearing pursuant to KRS 224.10-420(2) within thirty (30) days from the date of the issuance of this letter. Any demand for a hearing on the permit shall be filed in accordance with the procedures specified in KRS 224.10-420, 224.10-440, 224.10-470, and the regulations promulgated thereto. The request for hearing should be submitted in writing to the Energy and Environment Cabinet, Office of Administrative Hearings, 211 Sower Boulevard, Frankfort, Kentucky 40601 and the Commonwealth of Kentucky, Energy and Environment Cabinet, Division of Water, 300 Sower Boulevard, Frankfort, Kentucky 40601. For your record keeping purposes, it is recommended that these requests be sent by certified mail. The written request must conform to the appropriate statutes referenced above.

Any questions concerning the general permit and its requirements should be directed to me at [502-782-7076](tel:502-782-7076) or email me at Robin.Snider@ky.gov

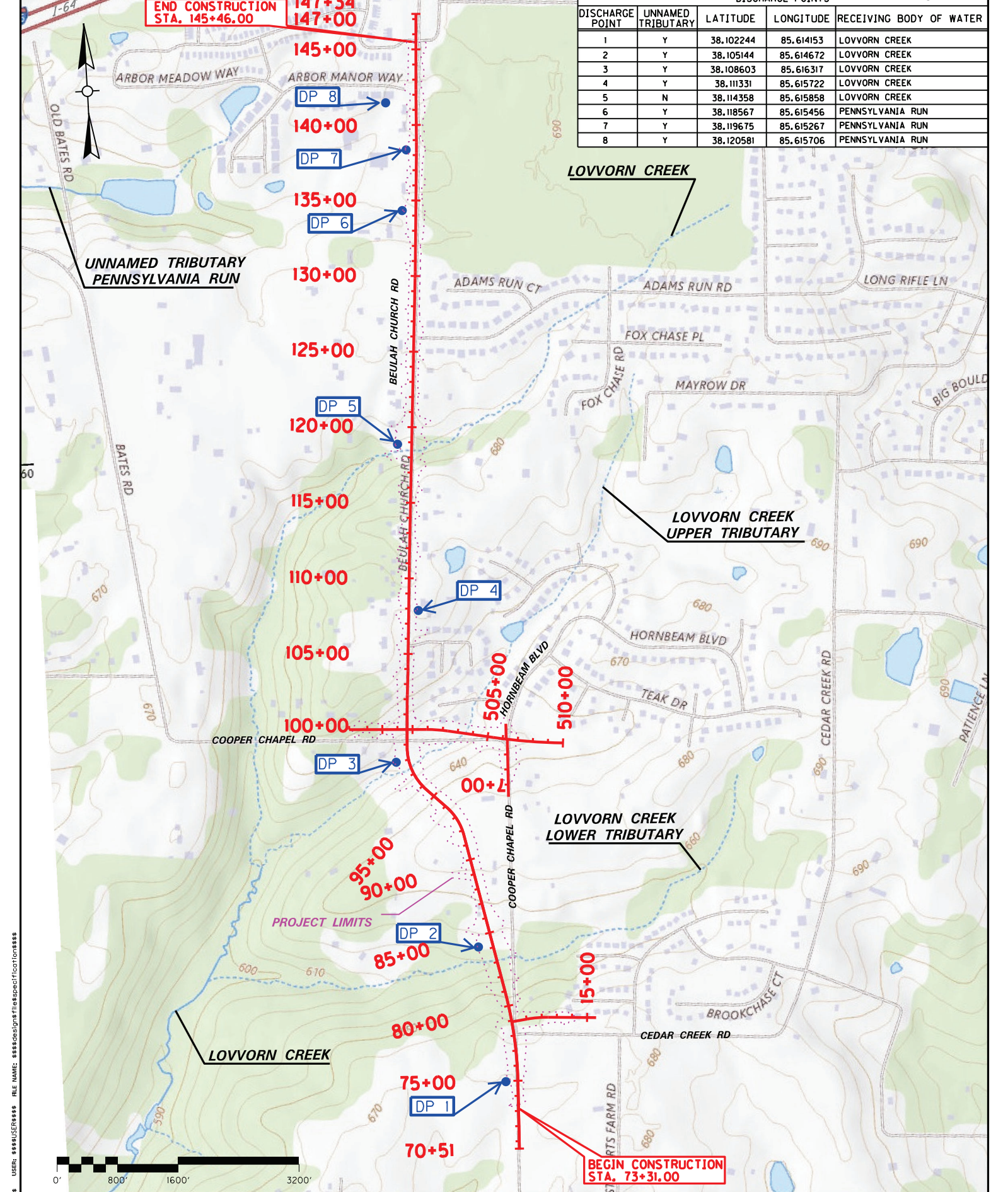
Construction Site GPS Coordinates: [38.111281, -85.615918](#)
Receiving Water: [Lovvorn Creek](#)

Sincerely,

A handwritten signature in black ink that reads "Robin M. Snider".

Robin Snider
Surface Water Permits Branch
Division of Water

cc: [Kourosh Namin](#) , eNOI Preparer
[Todd Giles](#), Louisville Regional Office

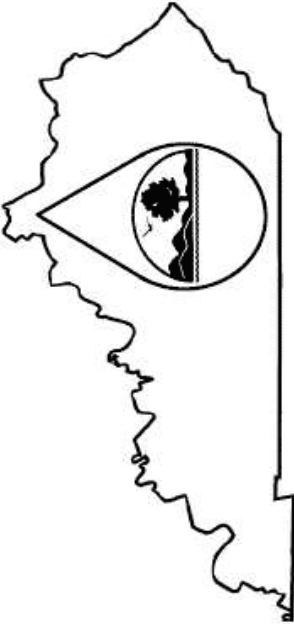


DISCHARGE POINTS				
DISCHARGE POINT	UNNAMED TRIBUTARY	LATITUDE	LONGITUDE	RECEIVING BODY OF WATER
1	Y	38.102244	85.614153	LOVVORN CREEK
2	Y	38.105144	85.614672	LOVVORN CREEK
3	Y	38.108603	85.616317	LOVVORN CREEK
4	Y	38.111331	85.615722	LOVVORN CREEK
5	N	38.114358	85.615858	LOVVORN CREEK
6	Y	38.118567	85.615456	PENNSYLVANIA RUN
7	Y	38.119675	85.615267	PENNSYLVANIA RUN
8	Y	38.120581	85.615706	PENNSYLVANIA RUN

Thank you for submitting your information via the Kentucky Department for Environmental Protection eForms website. Please save a copy of this submittal for your records. We recommend saving a copy as a .mht, .html, or .htm file.

The Submittal ID for this transaction is 578752 and was submitted by Matt Bullock on May 06, 2026 10:04 AM Eastern Time.

If you need to contact EEC regarding your submission, please reference your Submittal ID. The eForm Submittal ID allows you to use the data from this form as a template. In addition, you may download a copy of your submittal by returning to the details page.

	KENTUCKY POLLUTION DISCHARGE ELIMINATION SYSTEM (KPDES) Notice of Intent (NOI) for coverage of Storm Water Discharge Associated with Construction Activities Under the KPDES Storm Water General Permit KYR100000 Click here for Instructions (Controls/ KYR10%20Instructions.pdf) Click here to obtain information and a copy of the KPDES General Permit. (https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/KYR10PermitPage.pdf) (*) indicates a required field; (✓) indicates a field may be required based on user input or is an optionally required field	
Reason for Submittal: (*) Application for New Permit Co ✓	Agency Interest ID: Agency Interest ID	Permit Number: (✓) KPDES Permit Number
If change to existing permit coverage is requested, describe the changes for which modification of coverage is being sought: (✓) 		
ELIGIBILITY:		

Stormwater discharges associated with construction activities disturbing individually one (1) acre or more, including, in the case of a common plan of development, contiguous construction activities that cumulatively equal one (1) acre or more of disturbance.			
COVERAGE: Applicants shall complete and submit the eNOI-SWCA a minimum of seven (7) days before the proposed date for commencement of construction activities. Applicants shall receive written notification from the Division of Water before being authorized to discharge under the terms of the KYR10 General Permit.			
EXCLUSIONS: The following are excluded from coverage under this general permit: 1) Are conducted at or on properties that have obtained an individual KPDES permit for the discharge of other wastewaters which requires the development and implementation of a Best Management Practices (BMP) plan; 2) Any operation that the DOW determines an individual permit would better address the discharges from that operation; 3) Any project that discharges to an Impaired Water listed in the most recent Integrated Report, §305(b) as impaired for sediment and for which an approved TMDL has been developed.			
SECTION I -- FACILITY OPERATOR INFORMATION (PERMITTEE)			
Company Name:(✓) KYTC DISTRICT 5	First Name:(✓) Matt	M.I.: N	Last Name:(✓) Bullock
Mailing Address:(*) 8310 Westport Road	City:(*) Louisville	State:(*) Kentucky	Zip:(*) 40242
eMail Address:(*) matt.bullock@ky.gov	Business Phone:(*) 502-210-5400		Alternate Phone: Phone
Additional Facility Operator information(Co-Permittee) required ?(*) No			
SECTION II -- GENERAL SITE LOCATION INFORMATION			
Project Name:(*) 5-481.00		Status of Owner/ Operator (*)	SIC Code(*) 1611 Highway and S

State Government			
Company Name:(✓)	First Name:(✓)	M.I.:	Last Name:(✓)
KYTC DISTRICT 5	Matt	M	Bullock
Site Physical Address:(*)			
Beulah Church Road, (Cedar Creek to I-265), Louisville, KY			
City:(*)	State:(*)	Zip:(*)	
Louisville	Kentucky	40228	
County:(*)	Latitude(decimal degrees)(*)		Longitude(decimal degrees)(*)
Jefferson	DMS to DD Converter (https://www.fcc.gov/media/radio/dms-decimal) 38.111281 5 or 6 decimal places		-85.615918 5 or 6 decimal places
SECTION III -- SPECIFIC SITE ACTIVITY INFORMATION			
Section III requires part A or part B to be completed.			
Project Description:(*)			
Beulah Church Road widening in Jefferson County, Kentucky			
Was the pre-development land used for agriculture ?(*)		Will there be demolition of any structure built or renovated before January 1, 1980 ?	
No		Yes	
Select the type of construction site (check all that apply)(*)			
☐ Single-Family Residential			
☐ Multi-Family Residential			

☐ Commercial ☐ Industrial ☐ Institutional ☒ Highway or Road ☐ Utility ☐ Other	
a. For single projects provide the following information	
Total Number of Acres in Project:(✓) 32	Total Number of Acres Disturbed:(✓) 23.1
Anticipated Start Date:(✓) 10/1/2026	Anticipated Completion Date:(✓) 10/31/2028
b. For common plans of development provide the following information	
Total Number of Acres in Project:(✓) # Acre(s)	Total Number of Acres Disturbed:(✓) # Acre(s)
Number of individual lots in development, if applicable:(✓) # lot(s)	Number of lots in development:(✓) # lot(s)
Total acreage of lots intended to be developed:(✓) Project Acres	Number of acres intended to be disturbed at any one time: (✓) Disturbed Acres
Anticipated Start Date:(✓)	Anticipated Completion Date:(✓)

List Building Contractor(s) at the time of Application:(✓)

Company Name

SECTION IV -- INFORMATION IS ALWAYS REQUIRED FOR ONSITE POINT OF DISCHARGE AND RECEIVING WATER ?

Complete the following table if the permitted site discharges to a water body. Please note that if you enter a row in hte below table, all columns are required to be filled out.

Unnamed Tributary?: Does discharge enter an unnamed tributary prior to entering a named receiving water?

Latitude in decimal degrees: Format must be between 36.490000 and 39.150000, with a minimum of 5 decimal points of accuracy.

Longitude in decimal degrees: Format must be between -89.580000 and -81.960000, with a minimum of 5 decimal points of accuracy.

Receiving Water Name: Receiving water name must be from the following list of possible receiving waters.(click here for a list (Controls/ReceivingStream.htm)). If the discharge flows into an unnamed tributary, please enter the first "named" receiving water for which the unnamed tributary(ies) eventually flows into.

Discharge Point(s):(*)

Unnamed Tributary?	Longitude	Receiving Water Name
Yes	38.102244	Lowvorn Creek
Yes	38.105144	Lowvorn Creek
Yes	38.108603	Lowvorn Creek
Yes	38.111331	Lowvorn Creek
No	38.114358	Lowvorn Creek
Yes	38.118567	Pennsylvania Run
Yes	38.119675	Pennsylvania Run
Yes	38.120581	Pennsylvania Run



This grid can be edited either directly on this page or by editing the information in an excel sheet.

If you would like to edit this information in an excel sheet, first use the right button (export) to download the sheet. After adding your data, save the sheet, and use the left button (import) to import the same file to this grid.			
SECTION V -- Section V MUST BE COMPLETED IF WITHIN A MS4 AREA			
Name of MS4: MSD MS4			
SECTION VI -- WILL THE PROJECT REQUIRE CONSTRUCTION ACTIVITIES IN A WATER BODY, FLOODPLAIN OR THE RIPARIAN ZONE?			
Will the project require construction activities in a water body or the riparian zone?:	(*)	Yes	
If Yes, describe scope of activity:(✓)		We are constructing new culverts, headwalls, and ir	
Is a Clean Water Act 404 permit required?:(*)		Yes	
Is a Clean Water Act 401 Water Quality Certification (*) required?:		Yes	
SECTION VII -- NOI PREPARER INFORMATION			
First Name:(*)	M.I.:	Last Name:(*)	Company Name:(*)
Kourosh	N	Namin	KYTC DISTRICT 5
Mailing Address:(*)	City:(*)	State:(*)	Zip:(*)
8310 Westport Road	Louisville	Kentucky	40242
eMail Address:(*)	Business Phone:(*)		Alternate Phone:
kourosh.namin@ky.gov	502-764-0078		Phone
SECTION VIII -- ATTACHMENTS			
Facility Location Map:(*)		Upload file	

Supplemental Information:		Facility_Location_Map-5-481.pdf	
Upload file		Supplemental_information_5-481.pdf	
SECTION IX -- CERTIFICATION			
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.			
Signature: (*) Matt Bullock		Title: (*) Executive Director	
First Name: (*) Matt		Last Name: (*) Bullock	
M.I.: MI			
eMail Address: (*) matt.bullock@ky.gov		Business Phone: (*) 502-210-5400	
		Alternate Phone: Phone	
		Signature (*) Date: 5/6/2026	
Click to Save Values for Future Retrieval Click to Submit to EEC			

KENTUCKY TRANSPORTATION CABINET
COMMUNICATING ALL PROMISES (CAP)

Item No. 5 - 481

County: Jefferson

Route: 864

Project Manager: KEITH DOWNS

5/28/26

CAP #	Date of Promise	Promise made to:	Location of Promise:	CAP Description
1	5/28/26	James H. and Patricia C. Terry Living Trust	P-021	• Grounds returned to finish grade & seeded in any and all locations where it has been disturbed due to excavating and construction. • Road contractor to reconnect outflow from Green Septic System to the storm sewer being installed with the road construction project.
2	5/28/26	Woodridge Crossings HOA, Inc	P-027	• (Compensation) for fence within acquisition areas on Parcels 28, 29, 31 & 41.
3	5/28/26	Patricia C. Terry	P-030	• Creek/ditch line along Cooper Chapel at current entrance cleaned up, leaving as many healthy trees as possible, allowing for proper drainage that doesn't present any extreme dangers to the public. • KYTC to stub in new driveway for the lot from new road/ Beulah Church side (as shown on plans). • Property owners to retain ownership of both severed left and severed right areas.
4	5/28/26	Eritrean Cherqos Orthodox Ch. Corp.– (Condemnation)	P-032	• Relocate entrance and make 24 feet wide (modified plans were prepared in condemnation to reflect the design change).
5	5/28/26	Joseph and Victoria D. Codispoti	P-035	• Contractor shall complete work within acquisition area in accordance with the applicable portions of Sections 212 and 213 of the current Kentucky Transportation Cabinet's Standard Specifications for Road and Bridge Construction.
6	5/28/26	Eric and Janna Amin	P-040	• The owner has been compensated for a Green wastewater treatment system. After this is installed, the effluent is to drain into the ditch, which is to be maintained continually before and during construction, until the system can be connected to the storm sewer with construction of subject project. • The existing exposed aggregate sidewalk in temporary easement will be labeled as "Do Not Disturb" on the plans. • The existing electronic gate has been compensated (for – to the owner) by KYTC. The owner has retained this electronic gate for a \$5,000 salvage value and (the gate) is to be removed within 90 days of right of way closing (August 30, 2021). If not removed within the 90 days, the owner assumes all responsibility to damage or the gate being removed due to utility or construction work without additional compensation. • Old septic tank and laterals are no longer active on the parcel.
7	5/28/26	Shirley B. Rothman	P-063	• Property owner requested just a curb cut from Station 114+71.50 to Station 114+88.50. Do not install the 12 foot driveway. • The tree located at Station 115+93 shall not be removed.
8	5/28/26	Arthur R. and Virginia K. Walls	P-068	• Highway slope will transition from 2:1 to 4:1 over approximate Station 119+05 to Station 119+25. • Concrete apron will be widened from 12 feet to 24 feet and asphalt drive will be widened to 24 feet and will taper down to 12 feet over approximately 25 feet from the concrete apron. • Storm sewer will outlet through the headwall of the rectangular concrete box culvert.

KENTUCKY TRANSPORTATION CABINET
COMMUNICATING ALL PROMISES (CAP)

Item No. 5 - 481

County: Jefferson

Route: 864

Project Manager: KEITH DOWNS

5/28/26

CAP #	Date of Promise	Promise made to:	Location of Promise:	CAP Description
9	5/28/26	Jimmy D. and Ruth L. Williams	P-075	• This entrance will be configured as a 24' wide residential entrance, but will utilize the commercial entrance pavement schedule.
10	5/28/26	Church of God	P-087	• All parties agree that the septic system (including lateral fields) is not to be impacted by this road construction project. • The existing large rock, located at approximately STA 137+22 and 36' from the existing right of way, shall not be disturbed.
11	5/28/26	LG&E	Beulah Church Road Widening Project	Due to shallow rock, LG&E has set temporary anchors for now. When KYTC/CONTRACTOR starts their work in this area, the CONTRACTOR will have to contact LG&E to request temporary pole bracing for the pole located at STA. 78+30.21 50.91'RT so the guying can be removed. After the CONTRACTOR has cut to final grade, LG&E can go back and set the permanent anchors and guying. LG&E/KU (Electric) 820 West Broadway Louisville, KY 40202 Emergency: (502) 589-1444 Caroline Justice Office: (502) 627-3708 Caroline.Justice@LGE-KU.com

Contract Id: _____ Contractor: _____

Section Engineer: _____ District & County: _____

DESCRIPTION	UNIT	QTY LEAVING PROJECT	QTY RECEIVED@BB YARD
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.**

PART II

SPECIFICATIONS AND STANDARD DRAWINGS

STANDARD SPECIFICATIONS

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 2026* and *Standard Drawings, Edition of 2025*.

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

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the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

5.0 PAYMENT. The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02671	Portable Changeable Message Sign	Each

Effective June 15, 2012

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs. Section references herein are to the Department’s Current Standard Specifications for Road and Bridge Construction.

2.0 MATERIALS.

2.1 Turf Reinforcement Mat (TRM). Use a Turf Reinforcement Mat defined as permanent rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh and/or other elements, processed into a three-dimensional matrix of sufficient thickness and from the Department’s List of Approved Materials. Mats must be 100% UV stabilized materials. For TRMs containing degradable components, all physical property values must be obtained on the non-degradable portion of the matting exclusively. Ensure product labels clearly show the manufacturer or supplier name, style name, and roll number. Ensure labeling, shipment and storage follows ASTM D-4873. The Department will require manufacturer to provide TRMs that are machine constructed web of mechanically or melt bonded nondegradable fibers entangled to form a three dimensional matrix. The Department will require all long term performance property values in table below to be based on non degradable portion of the matting alone. Approved methods include polymer welding, thermal or polymer fusion, or placement of fibers between two high strength biaxially oriented nets mechanically bound by parallel stitching with polyolefin thread. Ensure that mats designated in the plans as Type 4 mats, are not to be manufactured from discontinuous or loosely held together by stitching or glued netting or composites. Type 4 mats shall be composed of geosynthetic matrix that exhibits a very high interlock and reinforcement capacities with both soil and root systems and with high tensile modulus. The Department will require manufacturer to use materials chemically and biologically inert to the natural soil environments conditions. Ensure the blanket is smolder resistant without the use of chemical additives. When stored, maintain the protective wrapping and elevate the mats off the ground to protect them from damage. The Department will not specify these materials for use in heavily acidic coal seam areas or other areas with soil problems that would severally limit vegetation growth.

2.2 Classifications

The basis for selection of the type of mat required will be based on the long term shear stress level of the mat of the channel in question or the degree of slope to protect and will be designated in the contract. The Type 4 mats are to be used at structural backfills protecting critical structures, utility cuts, areas where vehicles may be expected to traverse the mat, channels with large heavy drift, channels with high shear stresses, and where higher factors of safety, very steep slopes and/or durability concerns are needed as determined by project team and designer and will be specified in the plans by designer.

Properties	Type 1	Type 2	Type 3	Type 4
Maximum Slope (H:V)	1:1	1:1	0.5:1	0.5:1
Un-vegetated Shear	≥ 2.0 lbs/ft² (≥ 96 Pa)	≥ 2.0 lb/ft2 (≥ 96 Pa)"	≥ 2.0 lb/ft2 (≥ 96 Pa)	≥ 2.0 lb/ft2 (≥ 96 Pa)

Stress ^{b, c, d} ASTM D6460				
Vegetated Shear Stress ^{c, d, e, f} ASTM D6460	≥ 6.0 lbs/ft ² (≥ 287 Pa)	≥ 8.0 lb/ft2 (≥ 383 Pa)	≥ 10.0 lb/ft2 (≥ 479 Pa)	≥ 12.0 lb/ft2 (≥ 575 Pa)
Seedling Emergence ^d ASTM D7322	≥ 250%	≥ 250%	≥ 250%	≥ 250%
MD Material Tensile Strength ^{d, f} ASTM D6818	≥ 150 lbs/ft (≥ 2.2 kN/m)	≥ 175 lbs/ft (≥ 2.6 kN/m)	≥ 200 lbs/ft (≥ 2.9 kN/m)	≥ 1,500 lbs/ft (≥ 21.9 kN/m)
TD Material Tensile Strength ^{d, f} ASTM D6818	≥ 150 lbs/ft (≥ 2.2 kN/m)	≥ 175 lbs/ft (≥ 2.6 kN/m)	≥ 200 lbs/ft (≥ 2.9 kN/m)	≥ 1,500 lbs/ft (≥ 21.9 kN/m)
Mass Per Unit Area ^d ASTM D6566	≥ 8.0 oz/yd ² (≥ 271 g/m ²))	≥ 8.0 oz/yd ² (≥ 271 g/m2)	≥ 8.0 oz/yd ² (≥ 271 g/m2)	≥ 8.0 oz/yd2 (≥ 271 g/m2)
Material Thickness ^d ASTM D6525	≥ 0.25 in (≥ 6.35 mm)	≥ 0.25 in (≥ 6.35 mm)	≥ 0.25 in (≥ 6.35 mm)	≥ 0.25 in (≥ 6.35 mm)
UV Stability ^{c, e} ASTM D4355	≥ 80% @ 500 hrs	≥ 80% @ 500 hrs	≥ 80% @ 1,000 hrs	≥ 90% @ 1,000 hrs

- a. For Type 4 mats, property values tested per ASTM D6818 and D6525 are reported as minimum average roll values (MARVs). MARVs are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
- b. Required minimum shear stress TRM (un-vegetated) can sustain without physical damage or excess erosion (> 12.7 mm (0.5 in.) soil loss during successive, minimum 30 minute flow events in large scale testing.
- c. Acceptable large-scale testing protocol may include ASTM D6460, or other independent testing deemed acceptable by the engineer. Large-scale performance testing typically involves limited soil types and vegetative stands, therefore it is recommended that an appropriate factor of safety be used in design and product selection (see Guidance Document for further information).
- d. Typical values are calculated as the average value, it yields a 50% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
- e. Required minimum shear stress TRM (fully vegetated) can sustain without physical damage or excess erosion (> 12.7 mm (0.5 in.) soil loss during successive, minimum 30 minute flow events in large scale testing.
- f. For TRMs containing degradable components, property values must be obtained on the non-degradable portion of the matting alone.

NOTE: TRMs are typically used in hydraulic applications, such as high flow ditches and channels, steep slopes, stream banks, and shorelines, where erosive forcers may exceed the limits of natural, unreinforced vegetation or in areas where limited vegetation establishment is anticipated.

2.3 Quality Assurance Sampling, Testing, and Acceptance

- A) Performance Testing: The Department will require AASHTO’s NTPEP index testing. The Department will also require the manufacturer to perform internal MARV testing at a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory for tensile strength, tensile elongation, mass per unit area, and thickness once every 24,000 yds of production or whatever rate is required to ensure

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97.7% confidence under ASTM D4439& 4354. The Department will require Full scale testing for slope and channel applications shear stress shall be done under ASTM D 6459, ASTM D 6460-07 procedures.

- B) Provide TRM listed on the Department's List of Approved Materials. Prior to inclusion on the LAM, the manufacturer of TRM must meet the physical and performance criteria as outlined in the specification and submit a Letter Certifying compliance of the product under the above ASTM testing procedures and including a copy of report from Full Scale Independent Hydraulics Facility that Fully Vegetated Shear Stress meets shear stress requirements tested under D6459 and D6460-07.
- C) Contractors will provide a Letter of Certification from Manufacturer stating the product name, manufacturer, and that the product MARV product unit testing results meets Department criteria. Provide Letters once per project and for each product.
- D) Acceptance shall be in accordance with ASTM D-4759 based on testing performed by a Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP) accredited laboratory using Procedure A of ASTM D-4354.

Current mats meeting the above criteria are shown on the Department's List of Approved Materials. Mats that exceed the criteria for KYTC Types 1-4 are available. Contact an erosion control material supplier for more information.

2.4 Fasteners. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils as directed by Engineer or Manufacturer's Representative. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. Provide a Manufacturer's Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from the Manufacturer approving the installation. When there is a conflict between the Department's criteria and the Manufacturer's criteria, construct using the more restrictive. The Engineer and Manufacturer's Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer's recommendations and the following as minimum installation technique:

3.1 Site Preparation. Smoothly grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, roots, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil.

3.2 Installation. Install mats according to Standard Drawing Sepias "Turf Mat Channel Installation" and "Turf Mat Slope Installation." Install mats at the specified elevation and alignment. Anchor the mats with staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils as directed by the Engineer or Manufacturer's Representative. The mat should be in direct contact with the soil surface. Infill and overfill the mat with a minimum of ½" of soil as directed by the Manufacturer.

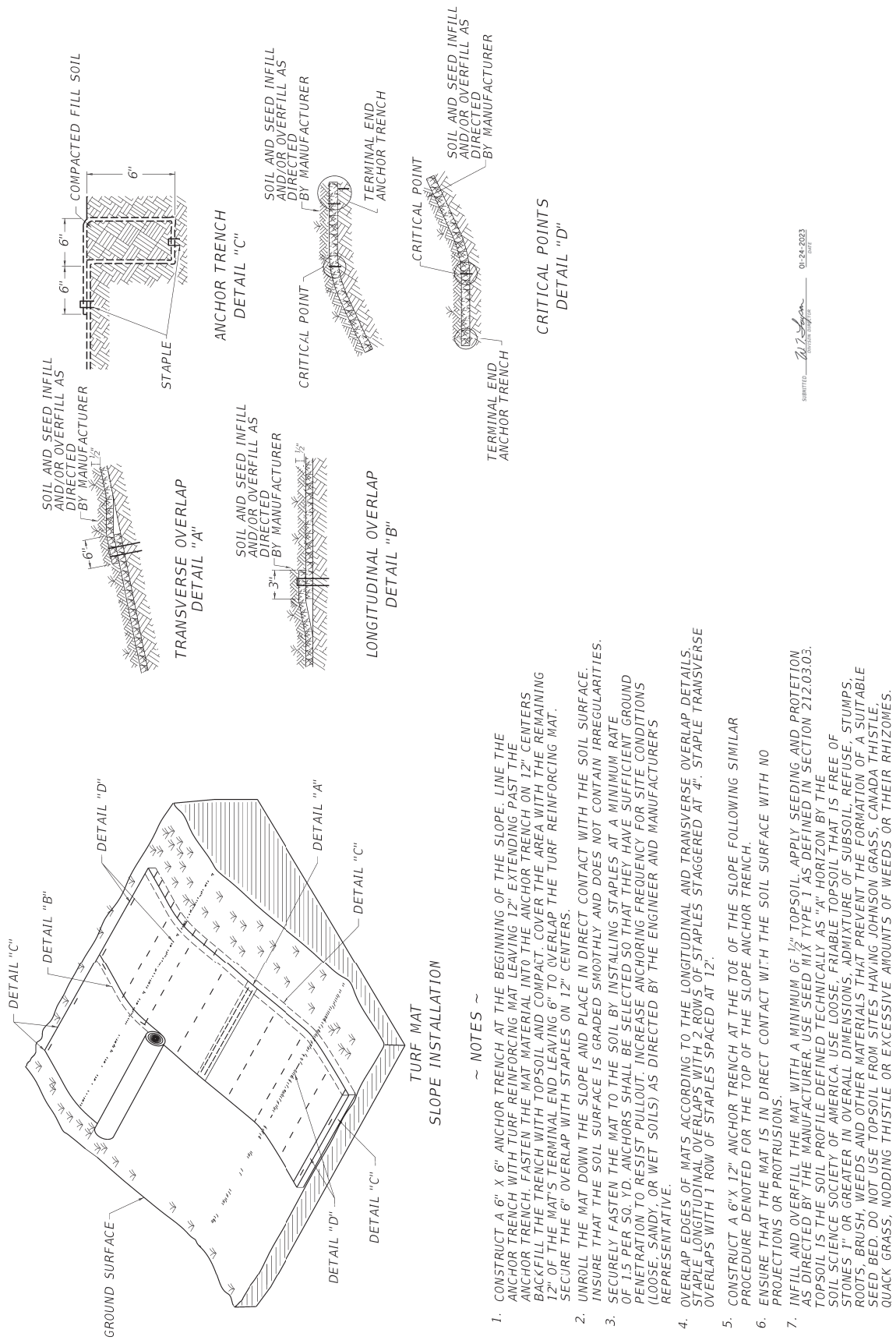
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4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed, providing a Manufacturer’s Representative, topsoil, or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat. Seeding and protection will be an incidental item.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
23274EN11F	Turf Reinforcement Mat 1	Square Yard
23275EN11F	Turf Reinforcement Mat 2	Square Yard
23276EN11F	Turf Reinforcement Mat 3	Square Yard
23277EN11F	Turf Reinforcement Mat 4	Square Yard

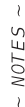
June 29, 2023



- ~ NOTES ~
1. CONSTRUCT A 6" X 6" ANCHOR TRENCH AT THE BEGINNING OF THE SLOPE. LINE THE ANCHOR TRENCH WITH TURF REINFORCING MAT LEAVING 12" EXTENDING PAST THE ANCHOR TRENCH. FASTEN THE MAT MATERIAL INTO THE ANCHOR TRENCH ON 12" CENTERS. BACKFILL THE TRENCH WITH TOPSOIL AND COMPACT. COVER THE AREA WITH THE REMAINING 12" OF THE MAT'S TERMINAL END LEAVING 6" TO OVERLAP THE TURF REINFORCING MAT. SECURE THE 6" OVERLAP WITH STAPLES ON 12" CENTERS.
 2. UNROLL THE MAT DOWN THE SLOPE AND PLACE IN DIRECT CONTACT WITH THE SOIL SURFACE. INSURE THAT THE SOIL SURFACE IS GRADED SMOOTHLY AND DOES NOT CONTAIN IRREGULARITIES.
 3. SECURELY FASTEN THE MAT TO THE SOIL BY INSTALLING STAPLES AT A MINIMUM RATE OF 15 PER SQ. YD. ANCHORS SHALL BE SELECTED SO THAT THEY HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. INCREASE ANCHORING FREQUENCY FOR SITE CONDITIONS (LOOSE, SANDY, OR WET SOILS) AS DIRECTED BY THE ENGINEER AND MANUFACTURER'S REPRESENTATIVE.
 4. OVERLAP EDGES OF MATS ACCORDING TO THE LONGITUDINAL AND TRANSVERSE OVERLAP DETAILS. STAPLE LONGITUDINAL OVERLAPS WITH 2 ROWS OF STAPLES STAGGERED AT 4". STAPLE TRANSVERSE OVERLAPS WITH 1 ROW OF STAPLES SPACED AT 12".
 5. CONSTRUCT A 6" X 12" ANCHOR TRENCH AT THE TOE OF THE SLOPE FOLLOWING SIMILAR PROCEDURE DENOTED FOR THE TOP OF THE SLOPE ANCHOR TRENCH.
 6. ENSURE THAT THE MAT IS IN DIRECT CONTACT WITH THE SOIL SURFACE WITH NO PROJECTIONS OR PROTRUSIONS.
 7. INFILL AND OVERFILL THE MAT WITH A MINIMUM OF 1/2" TOPSOIL. APPLY SEEDING AND PROTECTION AS DIRECTED BY THE MANUFACTURER. USE SEED MIX TYPE 1 AS DEFINED IN SECTION 212.03.03. TOPSOIL IS THE SOIL PROFILE DEFINED TECHNICALLY AS "A" HORIZON BY THE SOIL SCIENCE SOCIETY OF AMERICA. USE LOOSE, FRIABLE TOPSOIL THAT IS FREE OF STONES 1" OR GREATER IN OVERALL DIMENSIONS, ADMIXTURE OF SUBSOIL, REFUSE, STUMPS, ROOTS, BRUSH, WEEDS AND OTHER MATERIALS THAT PREVENT THE FORMATION OF A SUITABLE SEED BED. DO NOT USE TOPSOIL FROM SITES HAVING JOHNSON GRASS, CANADA THISTLE, QUACK GRASS, NODDING THISTLE OR EXCESSIVE AMOUNTS OF WEEDS OR THEIR RHIZOMES.

0-24-2023
DATE
SUBMITTED
212
DESIGNER

COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	DRAWING TITLE: SEPIA 22 - TURF MAT SLOPE INSTALLATION	
	ITEM NO.	COUNTY OF
	SHEET NO.	



ANCHORING FREQUENCY	SLOPE GRADE
1.5 ANCHORS/50YD	UP TO 2H:1V
2.0 ANCHORS/50YD	2H:1V TO 1H:1V
3.0 ANCHORS/50YD	STEEPER THAN 1H:1V AND CHANNEL BOTTOMS

W. T. Lujan
DIVISION DIRECTOR

SPECIAL NOTE FOR BARCODE LABEL ON PERMANENT SIGNS

1.0 DESCRIPTION. Install barcode label on sheeting signs. Section references herein are to the Department’s Standard Specifications for Road and Bridge Construction, current edition.

2.0 MATERIALS. The Department will provide the Contractor with a 2 inch x 1 inch foil barcode label for each permanent sheeting sign. A unique number will be assigned to each barcode label.

The Contractor shall contact the Operations and Pavement Management Branch in the Division of Maintenance at (502) 564-4556 to obtain the barcode labels.

3.0 CONSTRUCTION. Apply foil barcode label in the lower right quadrant of the sign back. Signs where the bottom edge is not parallel to the ground, the lowest corner of the sign shall serve as the location to place the barcode label. The barcode label shall be placed no less than one-inch and no more than three inches from any edge of the sign. The barcode must be placed so that the sign post does not cover the barcode label.

Barcodes shall be applied in an indoor setting with a minimum air temperature of 50°F or higher. Prior to application of the barcode label, the back of the sign must be clean and free of dust, oil, etc. If the sign is not clean, an alcohol swab shall be used to clean the area. The area must be allowed to dry prior to placement of the barcode label.

Data for each sign shall include the barcode number, MUTCD reference number, sheeting manufacturer, sheeting type, manufacture date, color of primary reflective surface, installation date, latitude and longitude using the North American Datum of 1983 (NAD83) or the State Plane Coordinates using an x and y ordinate of the installed location.

Data should be provided electronically on the TC 71-229 Sign Details Information and TC 71-230 Sign Assembly Information forms. The Contractor may choose to present the data in a different format provided that the information submitted to the Department is equivalent to the information required on the Department TC forms. The forms must be submitted in electronic format regardless of which type of form is used. The Department will not accept PDF or handwritten forms. These completed forms must be submitted to the Department prior to final inspection of the signs. The Department will not issue formal acceptance for the project until the TC 71-229 and TC-230 electronic forms are completed for all signs and sign assemblies on the project.

4.0 MEASUREMENT. The Department will measure all work required for the installation of the barcode label and all work associated with completion and submission of the sign inventory data (TC 71-229 and TC 71-230).

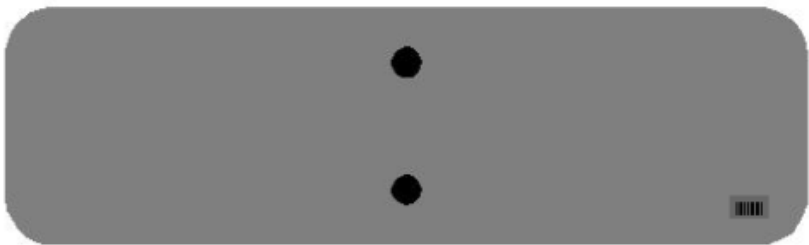
The installation of the permanent sign will be measured in accordance to Section 715.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

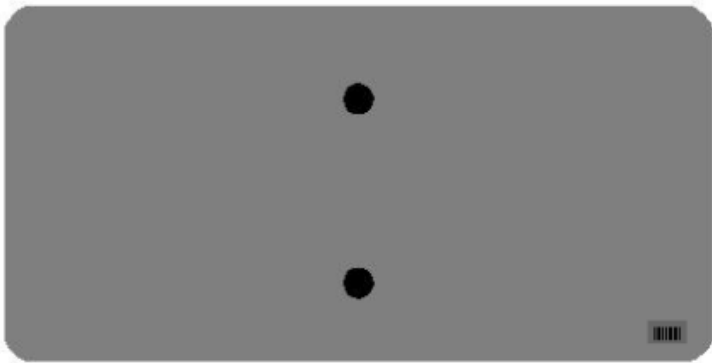
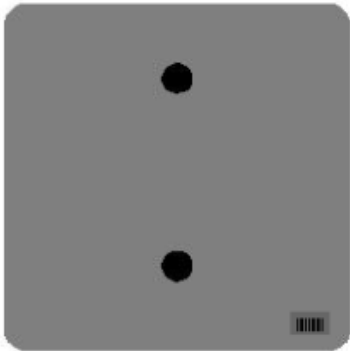
<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
24631EC	Barcode Sign Inventory	Each

The Department will not make payment for this item until all barcodes are installed and sign inventory is complete on every permanent sign installed on the project. The Department will make payment for installation of the permanent sign in accordance to Section 715. The Department will consider payment as full compensation for all work required under this special note.

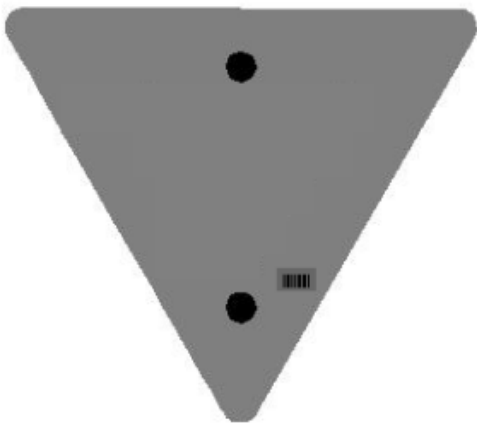
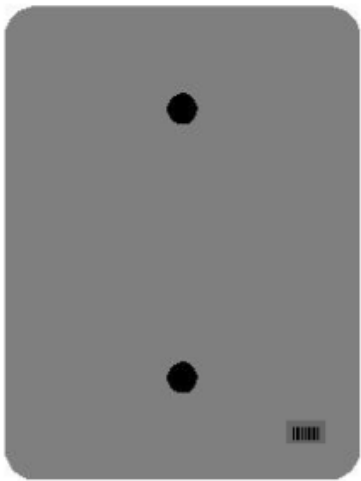
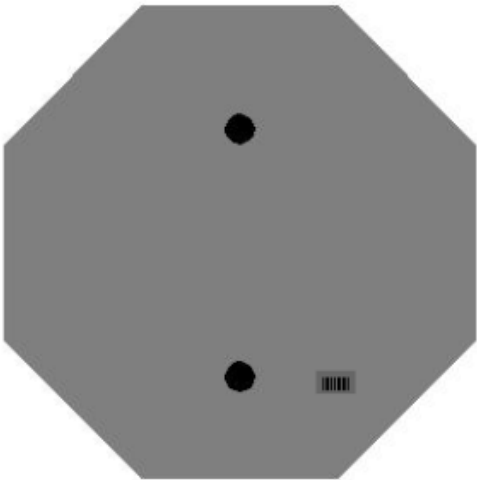
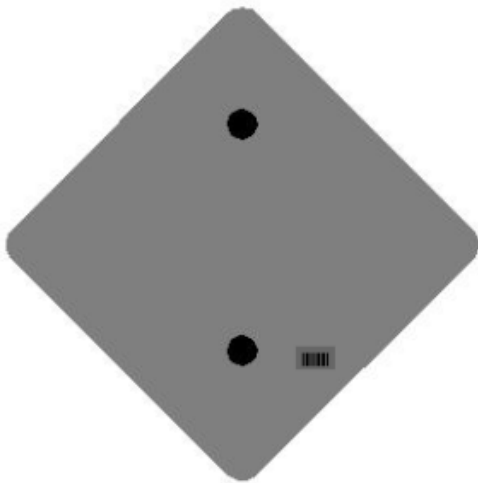
One Sign Post



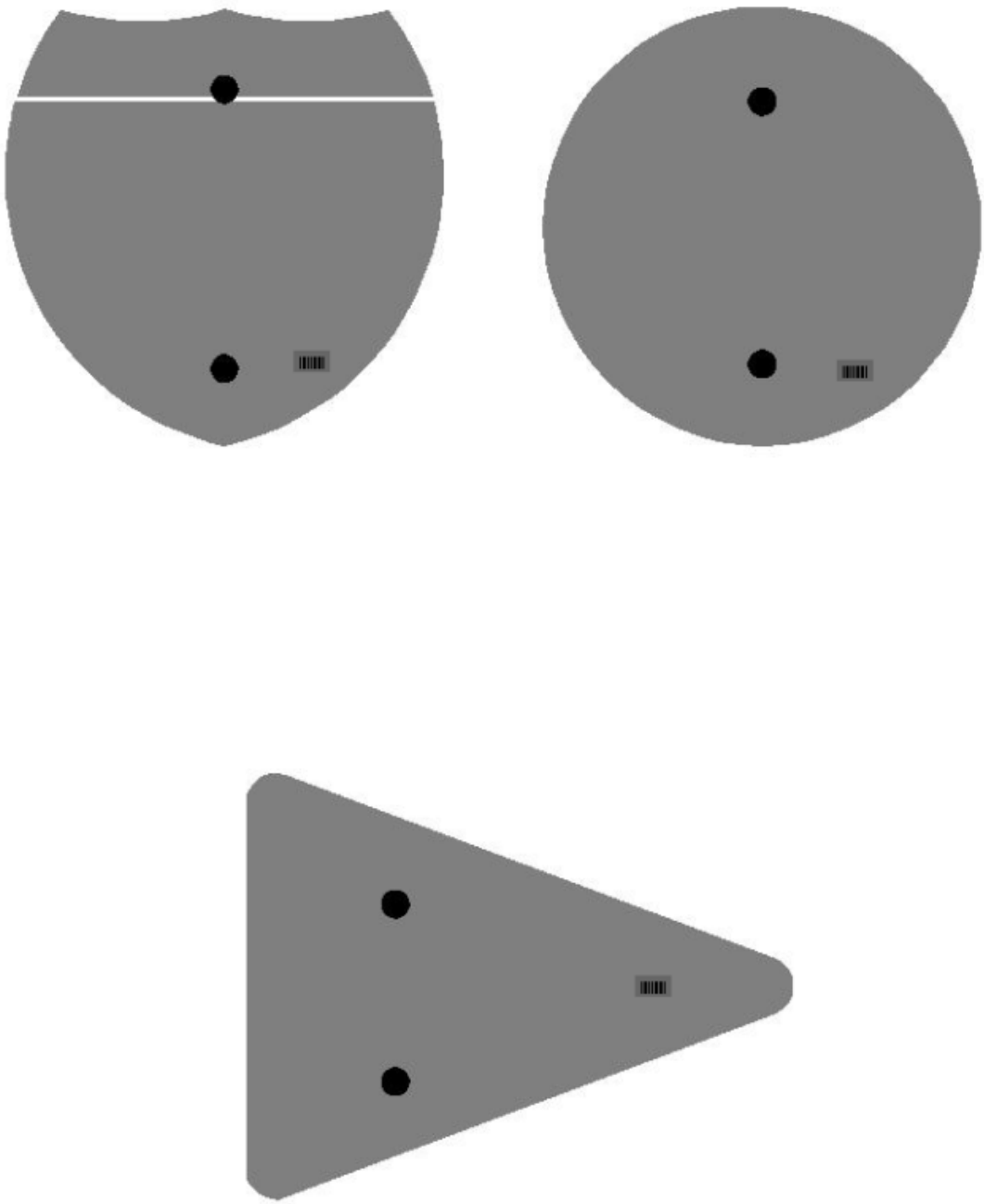
↑
2" Wide Post



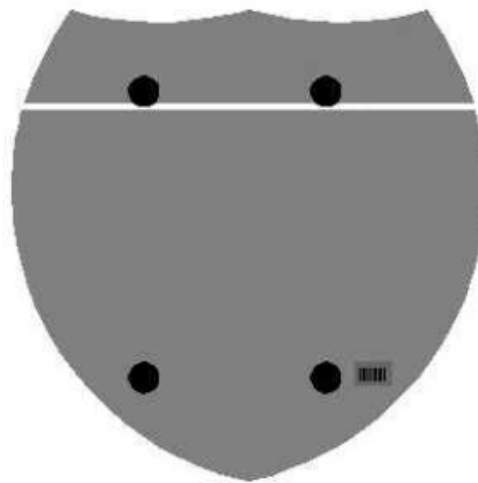
One Sign Post



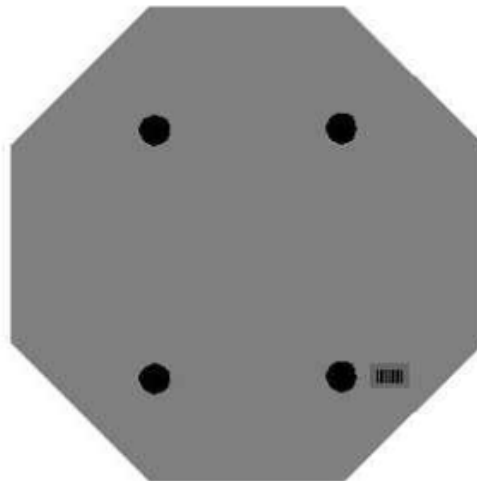
One Sign Post



Double Sign Post

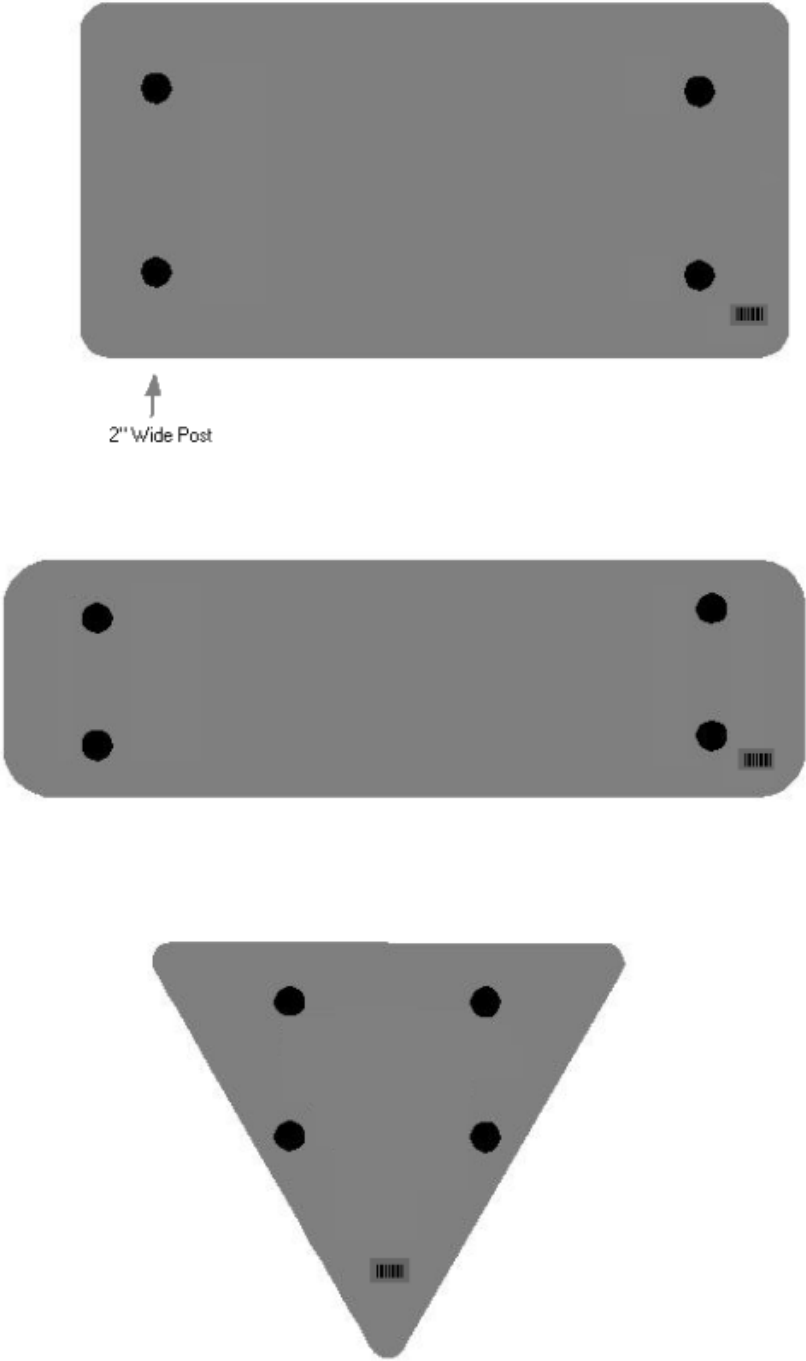


Interstate
Shield



48" Stop

2 Post Signs



SPECIAL NOTE FOR LONGITUDINAL PAVEMENT JOINT ADHESIVE

1. DESCRIPTION. This specification covers the requirements and practices for applying an asphalt adhesive material to the longitudinal joint of the surface course of an asphalt pavement. Apply the adhesive to the face of longitudinal joint between driving lanes for the first lane paved. Then, place and compact the adjacent lane against the treated face to produce a strong, durable, waterproof longitudinal joint.
2. MATERIALS, EQUIPMENT, AND PERSONNEL.

2.1 Joint Adhesive. Provide material conforming to Subsection 2.1.1.

2.1.1 Provide an adhesive conforming to the following requirements:

Property	Specification	Test Procedure
Viscosity, 400 ° F (Pa·s)	4.0 – 10.0	ASTM D 4402
Cone Penetration, 77 ° F	60 – 100	ASTM D 5329
Flow, 140 ° F (mm)	5.0 max.	ASTM D 5329
Resilience, 77 ° F (%)	30 min.	ASTM D 5329
Ductility, 77 ° F (cm)	30.0 min.	ASTM D 113
Ductility, 39 ° F (cm)	30.0 min.	ASTM D 113
Tensile Adhesion, 77 ° F (%)	500 min.	ASTM D 5329, Type II
Softening Point, ° F	171 min.	AASHTO T 53
Asphalt Compatibility	Pass	ASTM D 5329

Ensure the temperature of the pavement joint adhesive is between 380 and 410 °F when the material is extruded in a 0.125-inch-thick band over the entire face of the longitudinal joint.

2.2. Equipment.

2.2.1 Melter Kettle. Provide an oil-jacketed, double-boiler, melter kettle equipped with any needed agitation and recirculating systems.

2.2.2 Applicator System. Provide a pressure-feed-wand applicator system with an applicator shoe attached.

2.3 Personnel. Ensure a technical representative from the manufacturer of the pavement joint adhesive is present during the initial construction activities and available upon the request of the Engineer.

3. CONSTRUCTION.

3.1 Surface Preparation. Prior to the application of the pavement joint adhesive, ensure the face of the longitudinal joint is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the joint face by the use of compressed air.

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Ensure this preparation process occurs shortly before application to prevent the return of debris on the joint face.

3.2 Pavement Joint Adhesive Application. Ensure the ambient temperature is a minimum of 40 ° F during the application of the pavement joint adhesive. Prior to applying the adhesive, demonstrate competence in applying the adhesive according to this note to the satisfaction of the Engineer. Heat the adhesive in the melter kettle to the specified temperature range. Pump the adhesive from the melter kettle through the wand onto the vertical face of the cold joint. Apply the adhesive in a continuous band over the entire face of the longitudinal joint. Do not use excessive material in either thickness or location. Ensure the edge of the extruded adhesive material is flush with the surface of the pavement. Then, place and compact the adjacent lane against the joint face. Remove any excessive material extruded from the joint after compaction (a small line of material may remain).

3.3 Pavement Joint Adhesive Certification. Furnish the joint adhesive's certification to the Engineer stating the material conforms to all requirements herein prior to use.

3.4 Sampling and Testing. The Department will require a random sample of pavement joint adhesive from each manufacturer's lot of material. Extrude two 5 lb. samples of the heated material and forward the sample to the Division of Materials for testing. Reynolds oven bags, turkey size, placed inside small cardboard boxes or cement cylinder molds have been found suitable. Ensure the product temperature is 400°F or below at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of Pavement Joint Adhesive in linear feet. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of Pavement Joint Adhesive, the cleaning of the joint face, or furnishing and placing the adhesive. The Department will consider all such items incidental to the Pavement Joint Adhesive.
5. PAYMENT. The Department will pay for the Pavement Joint Adhesive at the Contract unit bid price and apply an adjustment for each manufacturer's lot of material based on the degree of compliance as defined in the following schedule. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

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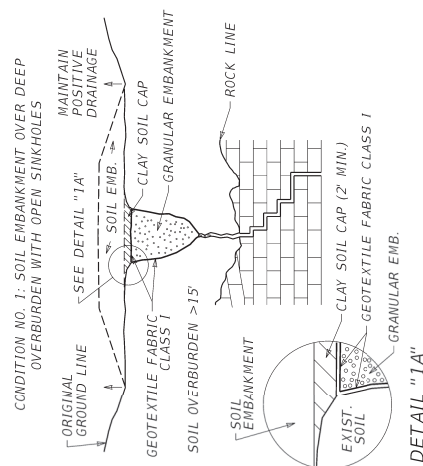
Pavement Joint Adhesive Price Adjustment Schedule						
Test	Specification	100% Pay	90% Pay	80% Pay	50% Pay	0% Pay
Joint Adhesive Referenced in Subsection 2.1.1						
Viscosity, 400 ° F (Pa•s)			3.0-3.4	2.5-2.9	2.0-2.4	≤1.9
ASTM D 3236	4.0-10.0	3.5-10.5	10.6-11.0	11.1-11.5	11.6-12.0	≥ 12.1
Cone Penetration, 77 ° F			54-56	51-53	48-50	≤ 47
ASTM D 5329	60-100	57-103	104-106	107-109	110-112	≥ 113
Flow, 140 ° F (mm) ASTM D 5329	≤ 5.0	≤ 5.5	5.6-6.0	6.1-6.5	6.6-7.0	≥ 7.1
Resilience, 77 ° F (%) ASTM D 5329	≥ 30	≥ 28	26-27	24-25	22-23	≤ 21
Tensile Adhesion, 77 ° F (%) ASTM D 5329	≥ 500	≥ 490	480-489	470-479	460-469	≤ 459
Softening Point, ° F AASHTO T 53	≥ 171	≥ 169	166-168	163-165	160-162	≤ 159
Ductility, 77 ° F (cm) ASTM D 113	≥ 30.0	≥ 29.0	28.0-28.9	27.0-27.9	26.0-26.9	≤ 25.9
Ductility, 39 ° F (cm) ASTM D 113	≥ 30.0	≥ 29.0	28.0-28.9	27.0-27.9	26.0-26.9	≤ 25.9

Code
20071EC

Pay Item
Joint Adhesive

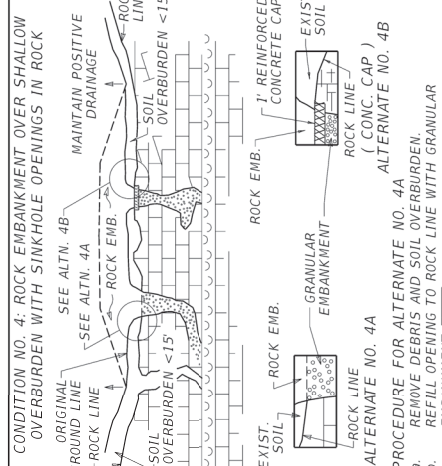
Pay Unit
Linear Foot

May 7, 2014

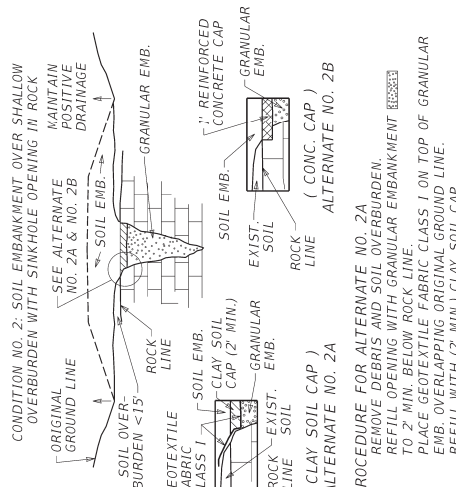


PROCEDURE:

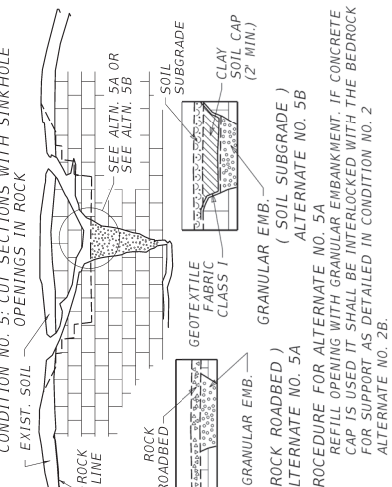
- REMOVE DEBRIS. DO NOT EXCAVATE SOIL OVERBURDEN.
- LINE OPENING WITH GEOTEXTILE FABRIC CLASS 1.
- REFILL WITH GRANULAR ENKAMMENT. ⁽¹⁰³⁵³¹³⁾
- PLACE GEOTEXTILE FABRIC CLASS 1 ON TOP OF GRANULAR ENKAMMENT. ⁽¹⁰³⁵³¹³⁾
- REFILL WITH (2" MINIMUM) CLAY SOIL CAP.



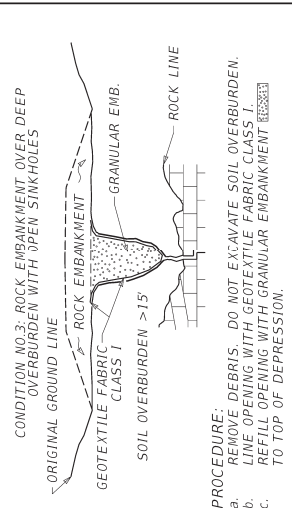
PROCEDURE FOR ALTERNATE NO. 4B
REMOVE DEBRIS AND SOIL OVERBURDEN.
REFILL OPENING WITH GRANULAR EMBANKMENT ^{100% 55}
TO 1 MIN. BELOW ROCK LINE.
CONST. 1" REINFORCED CONC. CAP. CAP SHOULD BE
INTERLOCKED WITH ROCK FOR CAP.



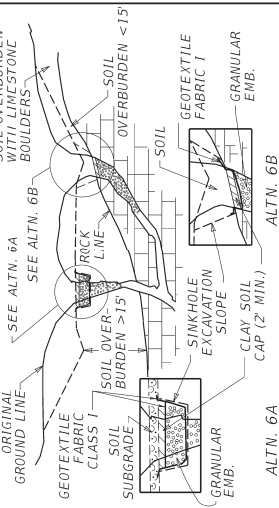
PROCEDURE FOR ALTERNATE NO. 2B
REMOVE DEBRIS AND SOIL OVERBURDEN.
REFILL OPENING WITH GRANULAR EMBANKMENT ~~TO~~ ~~TO~~
TO 1' MIN. BELOW ROCK LINE.
CONSTRUCT 1' REINFORCED CONCRETE CAP.
CAP SHOULD BE INTERLOCKED WITH ROCK FOR SUPPORT



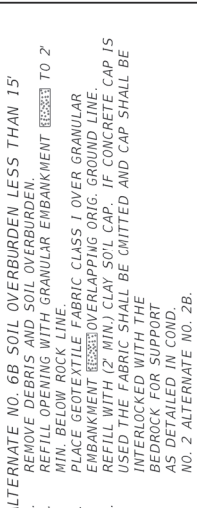
PROCEDURE FOR ALTERNATE NO. 5B
REFILL OPENING WITH GRANULAR EMBANKMENT.
TO 2" MINIMUM BELOW SOIL SUBGRADE.
PLACE GEOTEXTILE FABRIC CLASS 1 OVER GRANULAR
EMBANKMENT. ~~REPEAT~~
REFILL WITH (2" MIN.) CLAY¹ SOIL CAP. IF CONCRETE CAP IS
USED THE FABRIC SHALL BE OMITTED AND CAP SHALL BE
INTERLOCKED WITH THE BEDROCK FOR SUPPORT AS DETAILED
IN COND. NO. 2 ALTERNATE NO. 2B.



SINKHOLE OPENINGS IN SOIL



ALTERNATE NO. 6A SOIL OVERBURDEN GREATER THAN 15"
REMOVE DEBRIS. DO NOT EXCAVATE SOIL OVERBURDEN.
LINE OPENING WITH GEOTEXTILE FABRIC CLASS 1.
PLACE GEOTEXTILE FABRIC CLASS 1 OVER GRANULAR
EMBANKMENT ~~255555~~ OVERLAPPING ORIG. GROUND LINE
REFILL WITH 12" MIN. CLAY SOIL CAP. IF ROCK SURGRADE
IS USED, OMIT SOIL CAP AND FABRIC UNDERLYING SOIL CAP



THE CONCRETE CAP SHALL BE CLASS "B" CONC. AND CONTAIN 0. 8 REINFORCING BARS LAPPED AT 12" CTRS. IN BOTH DIRECTIONS AND LOCATED 3" FROM THE BOTTOM SURFACE OF THE CAP.

SUBMITTED Wade C. Cost DIVISION DIRECTOR 02-08-2023 DATE

SUBMITTED Maikel Cruz 02-08-2023
DIVISION DIRECTOR DATE

PART III

EMPLOYMENT, WAGE AND RECORD REQUIREMENTS

CONTRACT PROVISIONS FOR
FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Davis-Bacon and Related Act Provisions
- IV. Contract Work Hours and Safety Standards Act Provisions
- V. Subletting or Assigning the Contract
- VI. Safety: Accident Prevention
- VII. False Statements Concerning Highway Projects
- VIII. Implementation of Clean Air Act and Federal Water Pollution Control Act
- IX. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- X. Certification Regarding Use of Contract Funds for Lobbying
- XI. Use of United States-Flag Vessels

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only).

I. GENERAL

1. Historically, contracting agencies using Federal-aid highway funds were required to ensure Form FHWA-1273 was physically incorporated into all contracts and subcontracts. Effective June 10, 2026, this requirement was eliminated [91 FR 25492]. Future use of Form FHWA-1273 is now optional on the part of the contracting agency using Federal-aid highway funds. FHWA continues to make Form FHWA-1273 available as a convenience to contracting agencies. Contracting agencies must continue to ensure compliance with the provisions cited in Form FHWA-1273 in accordance with the provisions regardless of the use of Form FHWA-1273. Accordingly, the contracting agency retains the authority to determine whether the contractor must use Form FHWA-1273 to physically incorporate required contract provisions in each subcontract and in lower tier contracts. Where permitted by the contracting agency, the contractor may choose other ways to include required contract provisions in each subcontract, besides incorporating Form FHWA-1273. Contract provisions in Form FHWA-1273 are not required to be physically included in subcontracts for design services on Federal-aid design-build contracts, or in purchase orders, rental agreements and other agreements for supplies or services.

The applicable provisions 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 or design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's

immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION

The contractor and all subcontractors must comply with the following policies: 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27, including any amendments thereto.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27, including any amendments thereto.

The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract.

1.Assurances Required:

a. The requirements of 49 CFR Part 26, including any amendments thereto, and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient 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, including any amendments thereto, 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 recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
 - (2) Assessing sanctions;
 - (3) Liquidated damages; and/or
 - (4) Disqualifying the contractor from future bidding as non-responsible.
- c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E, including any amendments thereto, are incorporated by reference. 49 CFR Part 21.

III. 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), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

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 (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), 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 basic hourly 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. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. 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 must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in

paragraph 4. of this section. 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 classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must 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. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

- (i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;
- (ii) The classification is used in the area by the construction industry; and
- (iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must 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 be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate 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 used 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) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) 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 will be sent by the contracting officer by email to DBAconformance@dol.gov. 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.

(4) 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 will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The 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.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must 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.

d. Fringe benefits not expressed as an hourly rate. 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 may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. Unfunded plans. 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, in accordance with the criteria set forth in § 5.28, 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.

f. Interest. In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. Withholding requirements. The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered

necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and 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.

b. Priority to withheld funds. The Department has priority to funds withheld or to be withheld in accordance with paragraph 2.a. of this section or Section IV, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its repurchase costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. Basic record requirements (1) Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; 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 [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number

of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section 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 [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must 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.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working 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 [29 CFR part 3](#); and

(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(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH-347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, 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, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices (1) Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform 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 (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must 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, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must 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 this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with [29 CFR part 30](#), including any amendments thereto.

c. 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 III. 23 CFR 230.111(e)(2). 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 journeyworkers 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 as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs (1) through (11) of this section, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 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 as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, 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 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 [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

IV. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), 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 watchpersons 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. 29 CFR 5.5.

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 and interest from the date of the underpayment. 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 watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* 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.

* \$33 as of January 15, 2025 (See 90 FR 1859) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section III paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its procurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

V. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

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" in paragraph 1. of this section 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: (based on longstanding interpretation)

(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. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph 1. of this section 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. Pursuant to 23 CFR 635.116(c), 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. (based on longstanding interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however,

contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VI. 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 Part 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. 23 CFR 635.108.

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 Part 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). 29 CFR 1926.10.

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).

VII. 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 Part 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 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

VIII. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

IX. 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. 2 CFR 180.220 and 1200.220.

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. 2 CFR 180.320.

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. 2 CFR 180.325.

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. 2 CFR 180.345 and 180.350.

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, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient 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 recipient or subrecipient 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. 2 CFR 180.330.

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. 2 CFR 180.220 and 180.300.

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. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. 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 System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

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 CFR 180.325.

* * * * *

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 CFR 180.335;

(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, 2 CFR 180.800;

(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, 2 CFR 180.700 and 180.800; 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. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. 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). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant 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. 2 CFR 180.365.

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, Subpart I, 180.900 – 180.1020, 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 recipient or subrecipient 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 recipient or subrecipient 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. 2 CFR 1200.220 and 1200.332.

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. 2 CFR 180.220 and 1200.220.

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 System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

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. 2 CFR 180.325.

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

X. 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 Part 20, App. A.

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.

XI. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. 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. 46 CFR 381.7.

2. 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 (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS** (40 U.S.C. sections 14501(d) and 14701
and the Appalachian Regional Commission Code as
authorized under 40 U.S.C. section 14302)

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 40 U.S.C. 14501 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

The Executive Branch Code of Ethics created by Kentucky Revised Statutes (KRS) Chapter 11A, effective July 14, 1992, establishes the ethical standards that govern the conduct of all executive branch employees. The Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

A present or former public servant listed in KRS 11A.010(9)(a) to (g) shall not, within one (1) year following termination of his or her 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 one (1) year, he or she personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his or her 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 to obtain private benefits.

If you have worked for the executive branch of state government within the past year, 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, 1025 Capital Center Drive, Suite 105, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: March 11, 2025

"General Decision Number: KY20260038 05/18/2026

State: Kentucky

Construction Types: Highway

Counties: Kentucky Counties of
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

Modification Number Publication Date
0 01/02/2026
1 05/18/2026

BRIN0004-003 06/01/2024
Rates Fringes
BRICKLAYER (BRECKENRIDGE COUNTY).....\$ 33.70 16.57

BRKY0001-005 06/01/2024
Rates Fringes
BRICKLAYER (BULLITT, CARROLL, GRAYSON, HARDIN,
HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON,
OLDHAM, SHELBY, SPENCER, & TRIMBLE COUNTIES).....\$ 35.00 17.13

BRKY0002-006 06/01/2024
Rates Fringes
BRICKLAYER (BRACKEN, GALLATIN, GRANT, MASON &
ROBERTSON COUNTIES).....\$ 35.00 17.13

BRKY0007-004 06/01/2024
Rates Fringes
BRICKLAYER (BOYD, CARTER, ELLIOT, FLEMING, GREENUP,
LEWIS & ROWAN COUNTIES).....\$ 41.05 21.79

BRKY0017-004 06/01/2024
Rates Fringes
BRICKLAYER (ANDERSON, BATH, BOURBON, BOYLE, CLARK,
FAYETTE, FRANKLIN, HARRISON, JESSAMINE, MADISON,
MERCER, MONTGOMERY, NICHOLAS, OWEN, SCOTT,
WASHINGTON & WOODFORD COUNTIES).....\$ 35.00 17.13

CARP0064-001 04/01/2025
Rates Fringes
PILEDRIVERMAN.....\$ 34.39 24.06
DIVER.....\$ 51.21 24.06
CARPENTER.....\$ 33.89 24.06

ELEC0212-008 06/02/2025
Rates Fringes
ELECTRICIAN (BRACKEN, GALLATIN AND GRANT COUNTIES)..\$ 38.05 22.97

ELEC0212-014 11/27/2023
Rates Fringes
SOUND & COMMUNICATION TECHNICIAN (BRACKEN, GALLATIN
& GRANT COUNTIES).....\$ 27.20 14.54

ELEC0317-012 06/02/2025
Rates Fringes
ELECTRICIAN: WIREMEN (BOYD, CARTER, ELLIOT & ROWAN
COUNTIES).....\$ 41.15 29.35

ELEC0369-007 05/27/2025
Rates Fringes
ELECTRICIAN (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:;).....\$ 40.96 22.44

ELEC0575-002 05/29/2023
Rates Fringes
ELECTRICIAN (FLEMING, GREENUP, LEWIS & MASON
COUNTIES).....\$ 37.00 22.26

ENGI0181-018 07/01/2025
Rates Fringes
POWER EQUIPMENT OPERATOR 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.....\$ 38.37 19.60
POWER EQUIPMENT OPERATOR GROUP 3 ALL OFF ROAD
MATERIAL HANDLING EQUIPMENT, INCLUDING ARTICULATING
DUMP TRUCKS; GREASER ON GREASE FACILITIES SERVICING
HEAVY EQUIPMENT 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.....\$ 39.14 19.60
POWER EQUIPMENT OPERATOR 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 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.....\$ 38.69 19.60
POWER EQUIPMENT OPERATOR 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;
PILEDRIIVER; 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 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.....\$ 41.55 19.60

IRON0044-009 06/01/2025
Rates Fringes
IRONWORKER: STRUCTURAL (BRACKEN, GALLATIN, GRANT,
HARRISON, ROBERTSON, BOURBON (NORTHERN THIRD,
INCLUDING TOWNSHIPS OF JACKSON, MILLERSBURG, RUDEL
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, TILT.....\$ 37.77 23.90
IRONWORKER: FENCE ERECTOR (BRACKEN, GALLATIN,
GRANT, HARRISON, ROBERTSON, BOURBON (NORTHERN
THIRD, INCLUDING TOWNSHIPS OF JACKSON, MILLERSBURG,
RUDEL 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, T.....\$ 35.88 23.90

IRON0070-006 06/01/2025
Rates Fringes
IRONWORKER (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 &.....\$ 36.17 25.80-----

IRON0769-007 06/01/2025
Rates Fringes
IRONWORKER ZONE 3.....\$ 41.70 29.59
IRONWORKER ZONE 2.....\$ 40.10 29.59
IRONWORKER ZONE 1.....\$ 39.70 29.59

LAB00189-003 07/01/2025
Rates Fringes
LABORERS: 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 (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).....\$ 27.77 19.66
LABORERS: 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
(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).....\$ 27.17 19.66
LABORERS: GROUP 2 BATTER BOARD MAN (SANITARY &
STORM SEWER); BRICKMASON TENDER; MORTAR MIXER
OPERATOR; SCAFFOLD BUILDER; BURNER & WELDER;
BUSHAMMER; CHAIN SAW OPERATOR; CONCRETE SAW
OPERATOR; DECKHAND SCOW MAN; DRY CEMENT HANDLER;
ENVIRONMENTAL - NUCLEAR, RADIATION, TOXIC &
HAZARDOUS WASTE - LEVEL C; FORKLIFT OPERATOR FOR
MASONARY; FORM SETTER; GREEN CONCRETE CUTTING; HAND
OPERATED GROUTER & GRINDER MACHINE OPERATOR;
JACKHAMMER; PAVEMENT BREAKER; PAVING JOINT MACHINE;
PIPELAYER; PLASTIC PIPE FUSION; POWER DRIVEN
GEORGIA BUGGY & WHEEL BARROW; POWER POST HOLE
DIGGER; PRECAST MANHOLE SETTER; WALK-BEHIND TAMPER;
WALK-BEHIND TRENCHER; SAND BLASTER; CONCRETE
CHIPPER; SURFACE GRINDER; VIBRATOR OPERATOR; WAGON
DRILLER (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).....\$ 27.12 19.66
LABORERS: 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 (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).....\$ 26.87 19.66

LAB00189-008 07/01/2025
Rates Fringes
LABORERS: 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
(ANDERSON, BULLITT, CARROLL, HARDIN, HENRY,
JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM,
SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES).....\$ 27.77 19.66
LABORERS: 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
(ANDERSON, BULLITT, CARROLL, HARDIN, HENRY,
JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM,
SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES).....\$ 27.17 19.66
LABORERS: GROUP 2 BATTER BOARD MAN (SANITARY &
STORM SEWER); BRICKMASON TENDER; MORTAR MIXER
OPERATOR; SCAFFOLD BUILDER; BURNER & WELDER;
BUSHAMMER; CHAIN SAW OPERATOR; CONCRETE SAW
OPERATOR; DECKHAND SCOW MAN; DRY CEMENT HANDLER;

ENVIRONMENTAL - NUCLEAR, RADIATION, TOXIC &
HAZARDOUS WASTE - LEVEL C; FORKLIFT OPERATOR FOR
MASONARY; FORM SETTER; GREEN CONCRETE CUTTING; HAND
OPERATED GROUTER & GRINDER MACHINE OPERATOR;
JACKHAMMER; PAVEMENT BREAKER; PAVING JOINT MACHINE;
PIPELAYER; PLASTIC PIPE FUSION; POWER DRIVEN
GEORGIA BUGGY & WHEEL BARROW; POWER POST HOLE
DIGGER; PRECAST MANHOLE SETTER; WALK-BEHIND TAMPER;
WALK-BEHIND TRENCHER; SAND BLASTER; CONCRETE
CHIPPER; SURFACE GRINDER; VIBRATOR OPERATOR; WAGON
DRILLER (ANDERSON, BULLITT, CARROLL, HARDIN,
HENRY, JEFFERSON, LARUE, MARION, MEADE, NELSON,
OLDHAM, SHELBY, SPENCER, TRIMBLE & WASHINGTON
COUNTIES).....\$ 27.12 19.66
LABORERS: 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 (ANDERSON,
BULLITT, CARROLL, HARDIN, HENRY, JEFFERSON, LARUE,
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER,
TRIMBLE & WASHINGTON COUNTIES).....\$ 26.87 19.66

LAB00189-009 07/01/2025
Rates Fringes
LABORERS: 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
(BRECKINRIDGE & GRAYSON COUNTIES).....\$ 27.77 19.66
LABORERS: 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
(BRECKINRIDGE & GRAYSON COUNTIES).....\$ 27.17 19.66
LABORERS: GROUP 2 BATTER BOARD MAN (SANITARY &
STORM SEWER); BRICKMASON TENDER; MORTAR MIXER
OPERATOR; SCAFFOLD BUILDER; BURNER & WELDER;
BUSHAMMER; CHAIN SAW OPERATOR; CONCRETE SAW
OPERATOR; DECKHAND SCOW MAN; DRY CEMENT HANDLER;
ENVIRONMENTAL - NUCLEAR, RADIATION, TOXIC &
HAZARDOUS WASTE - LEVEL C; FORKLIFT OPERATOR FOR
MASONARY; FORM SETTER; GREEN CONCRETE CUTTING; HAND
OPERATED GROUTER & GRINDER MACHINE OPERATOR;
JACKHAMMER; PAVEMENT BREAKER; PAVING JOINT MACHINE;
PIPELAYER; PLASTIC PIPE FUSION; POWER DRIVEN
GEORGIA BUGGY & WHEEL BARROW; POWER POST HOLE
DIGGER; PRECAST MANHOLE SETTER; WALK-BEHIND TAMPER;
WALK-BEHIND TRENCHER; SAND BLASTER; CONCRETE
CHIPPER; SURFACE GRINDER; VIBRATOR OPERATOR; WAGON
DRILLER (BRECKINRIDGE & GRAYSON COUNTIES).....\$ 27.12 19.66
LABORERS: 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 (BRECKINRIDGE &
GRAYSON COUNTIES).....\$ 26.87 19.66

PAIN0012-005 06/11/2005
Rates Fringes
PAINTER: SPRAY (BATH, BOURBON, BOYLE, CLARK,

FAYETTE, FLEMING, FRANKLIN, HARRISON, JESSAMINE,
MADISON, MERCER, MONTGOMERY, NICHOLAS, ROBERTSON,
SCOTT & WOODFORD COUNTIES).....\$ 21.80 5.90
PAINTER: SANDBLASTING & WATERBLASTING (BATH,
BOURBON, BOYLE, CLARK, FAYETTE, FLEMING, FRANKLIN,
HARRISON, JESSAMINE, MADISON, MERCER, MONTGOMERY,
NICHOLAS, ROBERTSON, SCOTT & WOODFORD COUNTIES).....\$ 22.05 5.90
PAINTER: ELEVATED TANKS; STEEPLEJACK WORK; BRIDGE &
LEAD ABATEMENT (BATH, BOURBON, BOYLE, CLARK,
FAYETTE, FLEMING, FRANKLIN, HARRISON, JESSAMINE,
MADISON, MERCER, MONTGOMERY, NICHOLAS, ROBERTSON,
SCOTT & WOODFORD COUNTIES:).....\$ 22.30 5.90
PAINTER: BRUSH & ROLLER (BATH, BOURBON, BOYLE,
CLARK, FAYETTE, FLEMING, FRANKLIN, HARRISON,
JESSAMINE, MADISON, MERCER, MONTGOMERY, NICHOLAS,
ROBERTSON, SCOTT & WOODFORD COUNTIES).....\$ 21.30 5.90
PAINTER: BRIDGE/EQUIPMENT TENDER AND/OR CONTAINMENT
BUILDER (BATH, BOURBON, BOYLE, CLARK, FAYETTE,
FLEMING, FRANKLIN, HARRISON, JESSAMINE, MADISON,
MERCER, MONTGOMERY, NICHOLAS, ROBERTSON, SCOTT &
WOODFORD COUNTIES:).....\$ 18.90 5.90

PAIN0012-017 05/01/2015
Rates Fringes
PAINTER, HEAVY & HIGHWAY BRIDGES - GUARDRAILS -
LIGHTPOLES - STRIPING: SPRAY (BRACKEN, GALLATIN,
GRANT, MASON & OWEN COUNTIES).....\$ 23.89 9.06
PAINTER, HEAVY & HIGHWAY BRIDGES - GUARDRAILS -
LIGHTPOLES - STRIPING: SANDBLASTING & WATER
BLASTING (BRACKEN, GALLATIN, GRANT, MASON & OWEN
COUNTIES).....\$ 24.14 9.06
PAINTER, HEAVY & HIGHWAY BRIDGES - GUARDRAILS -
LIGHTPOLES - STRIPING: ELEVATED TANKS; STEEPLEJACK
WORK; BRIDGE & LEAD ABATEMENT (BRACKEN, GALLATIN,
GRANT, MASON & OWEN COUNTIES).....\$ 24.39 9.06
PAINTER, HEAVY & HIGHWAY BRIDGES - GUARDRAILS -
LIGHTPOLES - STRIPING: BRUSH & ROLLER (BRACKEN,
GALLATIN, GRANT, MASON & OWEN COUNTIES).....\$ 23.39 9.06
PAINTER, HEAVY & HIGHWAY BRIDGES - GUARDRAILS -
LIGHTPOLES - STRIPING: BRIDGE EQUIPMENT TENDER AND
CONTAINMENT BUILDER (BRACKEN, GALLATIN, GRANT,
MASON & OWEN COUNTIES).....\$ 20.73 9.06

PAIN0118-004 06/01/2018
Rates Fringes
PAINTER: SPRAY, SANDBLAST, POWER TOOLS, WATERBLAST
& STEAM CLEANING (ANDERSON, BRECKINRIDGE, BULLITT,
CARROLL, GRAYSON, HARDIN, HENRY, JEFFERSON, LARUE,
MARION, MEADE, NELSON, OLDHAM, SHELBY, SPENCER,
TRIMBLE & WASHINGTON COUNTIES:).....\$ 23.00 12.52
PAINTER: BRUSH & ROLLER (ANDERSON, BRECKINRIDGE,
BULLITT, CARROLL, GRAYSON, HARDIN, HENRY,
JEFFERSON, LARUE, MARION, MEADE, NELSON, OLDHAM,
SHELBY, SPENCER, TRIMBLE & WASHINGTON COUNTIES).....\$ 22.00 12.52

PAIN1072-003 12/01/2024
Rates Fringes
PAINTERS: POWER GENERATING FACILITIES (BOYD,
CARTER, ELLIOTT, GREENUP, LEWIS AND ROWAN COUNTIES).\$ 34.29 23.95
PAINTERS: BRIDGES; LOCKS; DAMS; TENSION TOWERS &
ENERGIZED SUBSTATIONS (BOYD, CARTER, ELLIOTT,
GREENUP, LEWIS AND ROWAN COUNTIES).....\$ 37.53 23.95

PLUM0248-003 06/01/2025
Rates Fringes
PLUMBER AND STEAMFITTER (BOYD, CARTER, ELLIOTT,
GREENUP, LEWIS & ROWAN COUNTIES).....\$ 42.75 25.76

PLUM0392-007 06/01/2025
Rates Fringes
PLUMBERS AND PIPEFITTERS (BRACKEN, CARROLL (EASTERN
HALF), GALLATIN, GRANT, MASON, OWEN & ROBERTSON
COUNTIES).....\$ 43.30 27.40

PLUM0502-003 08/01/2024
Rates Fringes

PLUMBER (BRECKINRIDGE, BULLITT, CARROLL (WESTERN
HALF), FRANKLIN (WESTERN THREE-FOURTHS), GRAYSON,
HARDIN, HENRY, JEFFERSON, LARUE, MARION, MEADE,
NELSON, OLDHAM, SHELBY, SPENCER, TRIMBLE &
WASHINGTON COUNTIES).....\$ 41.90 24.89

SUKY2010-160 10/08/2001
Rates Fringes
TRUCK DRIVERS: GROUP 4 Euclid & Other Heavy
Earthmoving Equipment & Lowboy; Articulator Cat;
5-Axle Vehicle; Winch & A-Frame when used in
transporting materials; Ross Carrier; Forklift when
used to transport building materials; & Pavement
Breaker.....\$ 16.96 7.34
TRUCK DRIVERS: GROUP 3 Single Axle Dump; Flatbed;
Semi-trailer or Pole Trailer when used to pull
building materials and equipment; Tandem Axle Dump;
Distributor; Mixer; & Truck Mechanic.....\$ 16.86 7.34
TRUCK DRIVERS: GROUP 2 Greaser; Tire Changer; &
Mechanic Tender.....\$ 16.68 7.34
TRUCK DRIVERS: GROUP 1 Mobile Batch Truck Tender...\$ 16.57 7.34

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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
<https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject
to the Davis-Bacon Act that were awarded on or between January 1,
2015 and January 29, 2022, and that have not been renewed or
extended on or after January 30, 2022. Executive Order 13658 does
not apply to contracts subject only to the Davis-Bacon Related Acts
regardless of when they were awarded. If a contract is subject to
Executive Order 13658, the contractor must pay all covered workers
at least \$13.65 per hour (or the applicable wage rate listed on this
wage determination, if it is higher) for all hours spent performing on
the contract from May 11, 2026, through December 31, 2026. The
applicable Executive Order minimum wage rate will be adjusted annually.
Additional information on contractor requirements and worker
protections under Executive Order 13658 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) (iii)).

The body of each wage determination lists the classifications
and wage rates that have been found to be prevailing for the
type(s) of construction and geographic area covered by the wage
determination. The classifications are listed in alphabetical
order under rate identifiers indicating whether the particular
rate is a union rate (current union negotiated rate), a survey
rate, a weighted union average rate, a state adopted rate, or a
supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than
SU, UAVG, SA, or SC denotes that a union rate was
prevailing for that classification in the survey. Example:
PLUM0198-005 07/01/2024. PLUM is an identifier of the union

whose collectively bargained rate 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. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ♦SU♦ identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the 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. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

♦SU♦ wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ♦SA♦ identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ♦SA♦ identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:
Branch of Wage Surveys

Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail 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 an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail 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 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.

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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

PART IV

BID ITEMS

261519

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	13,144.00	TON		\$	
0020	00008		CEMENT STABILIZED ROADBED	40,350.00	SQYD		\$	
0030	00018		DRAINAGE BLANKET-TYPE II-ASPH	8,097.00	TON		\$	
0040	00020		TRAFFIC BOUND BASE	2,800.00	TON		\$	
0050	00078		CRUSHED AGGREGATE SIZE NO 2 SUBGRADE STAB.- GEOTECH NOTE 10	1,800.00	TON		\$	
0060	00100		ASPHALT SEAL AGGREGATE	19.00	TON		\$	
0070	00103		ASPHALT SEAL COAT	3.00	TON		\$	
0080	00214		CL3 ASPH BASE 1.00D PG64-22	14,116.00	TON		\$	
0090	00356		ASPHALT MATERIAL FOR TACK	8.00	TON		\$	
0100	00358		ASPHALT CURING SEAL	45.00	TON		\$	
0110	00388		CL3 ASPH SURF 0.38B PG64-22	3,560.00	TON		\$	
0120	02101		CEM CONC ENT PAVEMENT-8 IN	1,934.00	SQYD		\$	
0130	02542		CEMENT	749.00	TON		\$	
0140	02602		FABRIC-GEOTEXTILE CLASS 1	3,000.00	SQYD		\$	
0150	02702		SAND FOR BLOTTER	106.00	TON		\$	
0160	20071EC		JOINT ADHESIVE	7,215.00	LF		\$	
0170	24970EC		ASPHALT MATERIAL FOR TACK NON- TRACKING	42.00	TON		\$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0180	00078		CRUSHED AGGREGATE SIZE NO 2 DRAINAGE BLANKET FOR GEOTECH NOTES 12 &13	10,400.00	TON		\$	
0190	01015		INSPECT & CERTIFY EDGE DRAIN SYSTEM	1.00	LS		\$	
0200	01810		STANDARD CURB AND GUTTER	13,517.00	LF		\$	
0210	01875		STANDARD HEADER CURB	64.00	LF		\$	
0220	01987		DELINEATOR FOR G/R BI DIRECTIONAL WHITE	22.00	EACH		\$	
0230	02014		BARRICADE-TYPE III	20.00	EACH		\$	
0240	02091		REMOVE PAVEMENT	879.00	SQYD		\$	
0250	02159		TEMP DITCH	8,721.00	LF		\$	
0260	02160		CLEAN TEMP DITCH	17,442.00	LF		\$	
0270	02230		EMBANKMENT IN PLACE	75,846.00	CUYD		\$	
0280	02242		WATER	900.00	MGAL		\$	
0290	02351		G/R-W BEAM-S FACE TL-3	1,537.50	LF		\$	
0300	02360		G/R TERMINAL SECTION NO 1	9.00	EACH		\$	
0310	02367		G/R END TREATMENT TYPE 1	4.00	EACH		\$	
0320	02370		G/R END TREATMENT TYPE 2M	1.00	EACH		\$	
0330	02381		REMOVE G/R	300.00	LF		\$	
0340	02391		G/R END TREATMENT TYPE 4A	2.00	EACH		\$	
0350	02404		SEPTIC TANK TREATMENT	3.00	EACH		\$	
0360	02429		RIGHT-OF-WAY MONUMENT TYPE 1	80.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0370	02430		RIGHT-OF-WAY MONUMENT TYPE 1A	6.00	EACH		\$	
0380	02432		WITNESS POST	3.00	EACH		\$	
0390	02471		FILL AND CAP SINKHOLE	4.00	EACH		\$	
0400	02483		CHANNEL LINING CLASS II	331.00	TON		\$	
0410	02484		CHANNEL LINING CLASS III	684.00	TON		\$	
0420	02545		CLEARING AND GRUBBING APPROXIMATELY 31.95 ACRES	1.00	LS		\$	
0430	02562		TEMPORARY SIGNS	1,463.00	SQFT		\$	
0440	02603		FABRIC-GEOTEXTILE CLASS 2	17,333.00	SQYD		\$	
0450	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		\$	
0460	02651		DIVERSIONS (BY-PASS DETOURS) DIVERSION 1	1.00	LS		\$	
0470	02651		DIVERSIONS (BY-PASS DETOURS) DIVERSION 2	1.00	LS		\$	
0480	02671		PORTABLE CHANGEABLE MESSAGE SIGN	5.00	EACH		\$	
0490	02690		SAFELOADING	18.00	CUYD		\$	
0500	02701		TEMP SILT FENCE	8,721.00	LF		\$	
0510	02703		SILT TRAP TYPE A	64.00	EACH		\$	
0520	02704		SILT TRAP TYPE B	64.00	EACH		\$	
0530	02705		SILT TRAP TYPE C	96.00	EACH		\$	
0540	02706		CLEAN SILT TRAP TYPE A	382.00	EACH		\$	
0550	02707		CLEAN SILT TRAP TYPE B	382.00	EACH		\$	
0560	02708		CLEAN SILT TRAP TYPE C	573.00	EACH		\$	
0570	02720		SIDEWALK-4 IN CONCRETE	7,760.00	SQYD		\$	
0580	02721		REMOVE CONCRETE SIDEWALK	67.00	SQYD		\$	
0590	02726		STAKING	1.00	LS		\$	
0600	02731		REMOVE STRUCTURE EXIST. RCBC STA. 118+87	1.00	LS		\$	
0610	02731		REMOVE STRUCTURE EXIST. RCBC STA. 502+70	1.00	LS		\$	
0620	02731		REMOVE STRUCTURE EXIST. RCBC STA. 84+10	1.00	LS		\$	
0630	05950		EROSION CONTROL BLANKET	2,420.00	SQYD		\$	
0640	05952		TEMP MULCH	108,616.00	SQYD		\$	
0650	05953		TEMP SEEDING AND PROTECTION	54,308.00	SQYD		\$	
0660	05963		INITIAL FERTILIZER	6.00	TON		\$	
0670	05964		MAINTENANCE FERTILIZER	6.00	TON		\$	
0680	05985		SEEDING AND PROTECTION	108,616.00	SQYD		\$	
0690	05990		SODDING	10,406.00	SQYD		\$	
0700	05992		AGRICULTURAL LIMESTONE	69.00	TON		\$	
0710	06406		SBM ALUM SHEET SIGNS .080 IN	356.00	SQFT		\$	
0720	06407		SBM ALUM SHEET SIGNS .125 IN	100.00	SQFT		\$	
0730	06410		STEEL POST TYPE 1	1,093.00	LF		\$	
0740	06412		STEEL POST MILE MARKERS	2.00	EACH		\$	
0750	06510		PAVE STRIPING-TEMP PAINT-4 IN	17,442.00	LF		\$	
0760	06514		PAVE STRIPING-PERM PAINT-4 IN	2,741.00	LF		\$	
0770	06515		PAVE STRIPING-PERM PAINT-6 IN	37,570.00	LF		\$	
0780	06550		PAVE STRIPING-TEMP REM TAPE-W	8,721.00	LF		\$	
0790	06551		PAVE STRIPING-TEMP REM TAPE-Y	8,721.00	LF		\$	
0800	06555		PAVE STRIPING-DUR TY 1-4 IN Y	100.00	LF		\$	
0810	06565		PAVE MARKING-THERMO X-WALK-6 IN	1,250.00	LF		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0820	06568		PAVE MARKING-THERMO STOP BAR-24IN	281.00	LF		\$	
0830	06569		PAVE MARKING-THERMO CROSS-HATCH	1,044.00	SQFT		\$	
0840	06573		PAVE MARKING-THERMO STR ARROW	8.00	EACH		\$	
0850	06574		PAVE MARKING-THERMO CURV ARROW	54.00	EACH		\$	
0860	06610		INLAID PAVEMENT MARKER-MW	76.00	EACH		\$	
0870	06612		INLAID PAVEMENT MARKER-BY	298.00	EACH		\$	
0880	10020NS		FUEL ADJUSTMENT	39,329.00	DOLL	\$1.00	\$	\$39,329.00
0890	10030NS		ASPHALT ADJUSTMENT	71,600.00	DOLL	\$1.00	\$	\$71,600.00
0900	20191ED		OBJECT MARKER TY 3	6.00	EACH		\$	
0910	20550ND		SAWCUT PAVEMENT	254.00	LF		\$	
0920	20782NS714		PAVE MARKING THERMO-BIKE	8.00	EACH		\$	
0930	23158ES505		DETECTABLE WARNINGS	447.00	SQFT		\$	
0940	23252ES717		PAVE MARK TY 1 TAPE STOP BAR-12 IN	10.00	LF		\$	
0950	23261EC		PAVE MARK-THERMO-X-WALK-24 IN	115.00	LF		\$	
0960	23274EN11F		TURF REINFORCEMENT MAT 1	5,051.00	SQYD		\$	
0970	23625EC		PAVE MARK THERMO-6 IN W CAT TRAXX YELLOW	20.00	LF		\$	
0980	24601EC		INSTALL HISTORICAL SIGN	1.00	EACH		\$	
0990	24631EC		BARCODE SIGN INVENTORY	85.00	EACH		\$	
1000	24814EC		PIPELINE INSPECTION	5,295.00	LF		\$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1010	00078		CRUSHED AGGREGATE SIZE NO 2 FOR PERF PIPE HEADWALLS	10.00	TON		\$	
1020	00440		ENTRANCE PIPE-15 IN	277.00	LF		\$	
1030	00441		ENTRANCE PIPE-18 IN	78.00	LF		\$	
1040	00443		ENTRANCE PIPE-24 IN	184.00	LF		\$	
1050	00464		CULVERT PIPE-24 IN	34.00	LF		\$	
1060	00520		STORM SEWER PIPE-12 IN	170.00	LF		\$	
1070	00521		STORM SEWER PIPE-15 IN	2,247.00	LF		\$	
1080	00522		STORM SEWER PIPE-18 IN	6,962.00	LF		\$	
1090	00524		STORM SEWER PIPE-24 IN	483.00	LF		\$	
1100	00526		STORM SEWER PIPE-30 IN	69.00	LF		\$	
1110	00528		STORM SEWER PIPE-36 IN	85.00	LF		\$	
1120	00980		SLOTTED DRAIN PIPE-12 IN	10.00	LF		\$	
1130	01000		PERFORATED PIPE-4 IN	682.00	LF		\$	
1140	01005		PERFORATED PIPE EDGE DRAIN-4 IN	12,920.00	LF		\$	
1150	01010		NON-PERFORATED PIPE-4 IN	510.00	LF		\$	
1160	01024		PERF PIPE HEADWALL TY 2-4 IN	6.00	EACH		\$	
1170	01028		PERF PIPE HEADWALL TY 3-4 IN	3.00	EACH		\$	
1180	01032		PERF PIPE HEADWALL TY 4-4 IN	1.00	EACH		\$	
1190	01200		PIPE CULVERT HEADWALL-12 IN	1.00	EACH		\$	
1200	01202		PIPE CULVERT HEADWALL-15 IN	2.00	EACH		\$	
1210	01204		PIPE CULVERT HEADWALL-18 IN	8.00	EACH		\$	
1220	01208		PIPE CULVERT HEADWALL-24 IN	3.00	EACH		\$	
1230	01210		PIPE CULVERT HEADWALL-30 IN	1.00	EACH		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1240	01212		PIPE CULVERT HEADWALL-36 IN	1.00	EACH		\$	
1250	01451		S & F BOX INLET-OUTLET-24 IN	2.00	EACH		\$	
1260	01456		CURB BOX INLET TYPE A	7.00	EACH		\$	
1270	01480		CURB BOX INLET TYPE B	70.00	EACH		\$	
1280	01529		DROP BOX INLET TYPE 6D	8.00	EACH		\$	
1290	01544		DROP BOX INLET TYPE 11	8.00	EACH		\$	
1300	01568		DROP BOX INLET TYPE 13S	2.00	EACH		\$	
1310	01577		DROP BOX INLET TYPE 14	33.00	EACH		\$	
1320	01581		DROP BOX INLET TYPE 16G	1.00	EACH		\$	
1330	01767		MANHOLE TYPE C	2.00	EACH		\$	
1340	02607		FABRIC-GEOTEXTILE CLASS 2 FOR PIPE	13,759.00	SQYD	\$2.00	\$	\$27,518.00
1350	08100		CONCRETE-CLASS A (INTERMEDIATE ANCHORS)	1.19	CUYD		\$	
1360	20166ES810		TEMPORARY PIPE	600.00	LF		\$	

Section: 0004 - BRIDGE - STRUCTURE NO. 28169 STA. 84+17.17 11'X5' RCBC

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1370	08002		STRUCTURE EXCAV-SOLID ROCK	131.00	CUYD		\$	
1380	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1390	08100		CONCRETE-CLASS A	202.70	CUYD		\$	
1400	08150		STEEL REINFORCEMENT	27,216.00	LB		\$	

Section: 0005 - BRIDGE - STRUCTURE NO. 28170 STA. 98+29.42 13'X4' RCBC

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1410	08002		STRUCTURE EXCAV-SOLID ROCK	65.00	CUYD		\$	
1420	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1430	08100		CONCRETE-CLASS A	170.90	CUYD		\$	
1440	08150		STEEL REINFORCEMENT	16,045.00	LB		\$	

Section: 0006 - BRIDGE - STRUCTURE NO. 28171 STA. 118+94.23 8'X5' RCBC

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1450	08002		STRUCTURE EXCAV-SOLID ROCK	11.40	CUYD		\$	
1460	08003		FOUNDATION PREPARATION	1.00	LS		\$	
1470	08100		CONCRETE-CLASS A	138.70	CUYD		\$	
1480	08150		STEEL REINFORCEMENT	12,634.00	LB		\$	

Section: 0007 - BRIDGE - STRUCTURE NO. 28172 STA. 502+21.06 8'X4' RCBC

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1490	02403		REMOVE CONCRETE MASONRY	3.00	CUYD		\$	
1500	08002		STRUCTURE EXCAV-SOLID ROCK	45.00	CUYD		\$	
1510	08003		FOUNDATION PREPARATION	1.00	LS		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1520	08100		CONCRETE-CLASS A	169.70	CUYD		\$	
1530	08150		STEEL REINFORCEMENT	14,319.00	LB		\$	

Section: 0008 - SEWER

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1540	15029		S FORCE MAIN AIR RLS/VAC VLV SPCL 18 INCH	1.00	EACH		\$	
1550	15029		S FORCE MAIN AIR RLS/VAC VLV SPCL 8 INCH	1.00	EACH		\$	
1560	15059		S FORCE MAIN PVC 04 INCH	1,131.00	LF		\$	
1570	15060		S FORCE MAIN PVC 06 INCH	86.00	LF		\$	
1580	15061		S FORCE MAIN PVC 08 INCH	681.00	LF		\$	
1590	15068		S FORCE MAIN SPECIAL 18 INCH PVC	681.00	LF		\$	
1600	15073		S FORCE MAIN TIE-IN 04 INCH	1.00	EACH		\$	
1610	15074		S FORCE MAIN TIE-IN 06 INCH	2.00	EACH		\$	
1620	15075		S FORCE MAIN TIE-IN 08 INCH	2.00	EACH		\$	
1630	15081		S FORCE MAIN TIE-IN SPECIAL 18 INCH	2.00	EACH		\$	
1640	15081		S FORCE MAIN TIE-IN SPECIAL 4 INCH DROP M.H.	1.00	EACH		\$	
1650	15155		S CAP EXISTING MAIN	7.00	EACH		\$	

Section: 0009 - SIGNALIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1660	04820		TRENCHING AND BACKFILLING	80.00	LF		\$	
1670	04845		CABLE-NO. 14/7C	750.00	LF		\$	
1680	04953		TEMP RELOCATION OF SIGNAL HEAD	10.00	EACH		\$	
1690	20093NS835		INSTALL PEDESTRIAN HEAD-LED	4.00	EACH		\$	
1700	21743NN		INSTALL PEDESTRIAN DETECTOR	4.00	EACH		\$	
1710	23222EC		INSTALL SIGNAL PEDESTAL	4.00	EACH		\$	
1720	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	80.00	LF		\$	

Section: 0010 - WATERLINE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1730	14000		W AIR RELEASE VALVE 1 INCH	4.00	EACH		\$	
1740	14003		W CAP EXISTING MAIN	15.00	EACH		\$	
1750	14009		W ENCASEMENT STEEL BORED RANGE 4	245.00	LF		\$	
1760	14010		W ENCASEMENT STEEL BORED RANGE 5	155.00	LF		\$	
1770	14011		W ENCASEMENT STEEL BORED RANGE 6	365.00	LF		\$	
1780	14019		W FIRE HYDRANT ASSEMBLY	13.00	EACH		\$	
1790	14021		W FIRE HYDRANT REMOVE	10.00	EACH		\$	
1800	14023		W FLUSHING ASSEMBLY	1.00	EACH		\$	
1810	14036		W PIPE DUCTILE IRON 06 INCH	105.00	LF		\$	

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LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
1820	14037		W PIPE DUCTILE IRON 08 INCH	220.00	LF		\$	
1830	14039		W PIPE DUCTILE IRON 12 INCH	5,687.00	LF		\$	
1840	14040		W PIPE DUCTILE IRON 16 INCH	1,958.00	LF		\$	
1850	14042		W PIPE DUCTILE IRON 24 INCH	828.00	LF		\$	
1860	14060		W PIPE PVC 08 INCH	2,128.00	LF		\$	
1870	14074		W PLUG EXISTING MAIN	10.00	EACH		\$	
1880	14094		W TIE-IN 06 INCH	1.00	EACH		\$	
1890	14095		W TIE-IN 08 INCH	3.00	EACH		\$	
1900	14097		W TIE-IN 12 INCH	6.00	EACH		\$	
1910	14098		W TIE-IN 16 INCH	4.00	EACH		\$	
1920	14100		W TIE-IN 24 INCH	2.00	EACH		\$	
1930	14105		W VALVE 06 INCH	2.00	EACH		\$	
1940	14106		W VALVE 08 INCH	11.00	EACH		\$	
1950	14108		W VALVE 12 INCH	26.00	EACH		\$	
1960	14109		W VALVE 16 INCH	11.00	EACH		\$	
1970	14111		W VALVE 24 INCH	4.00	EACH		\$	
1980	14148		W SERV COPPER LONG SIDE 3/4 IN	14.00	EACH		\$	
1990	14152		W SERV COPPER SHORT SIDE 3/4 IN	36.00	EACH		\$	
2000	14153		W LEAK DETECTION METER	3.00	EACH		\$	

Section: 0011 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
2010	02568		MOBILIZATION	1.00	LS		\$	
2020	02569		DEMOBILIZATION	1.00	LS		\$	