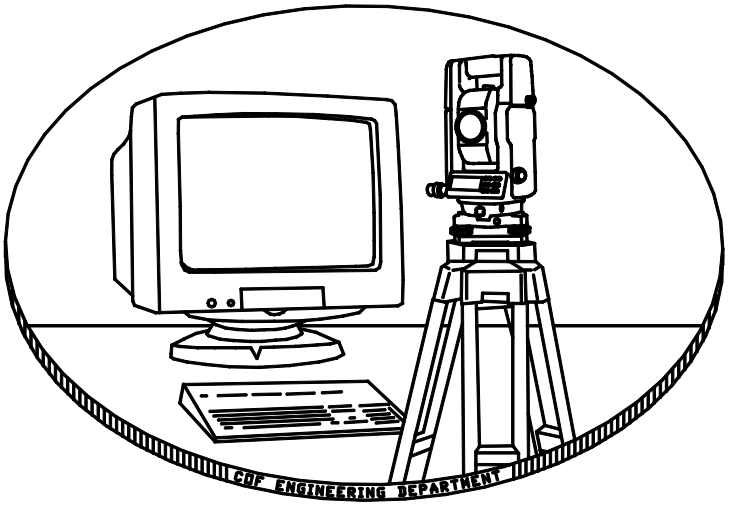
Specifications and Contract Documents
For the
COF 24-10
2024 City of Fulton I-70 Natural Gas Bore Project
Fulton, Missouri



CITY OF FULTON
ENGINEERING DEPARTMENT
18 East Fourth St., Fulton, MO 65251

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INVITATION FOR BIDS

Separate sealed bids for the **I-70 Natural Gas Bore - COF 24-10** for the City of Fulton, Callaway County, Missouri will be received by the City of Fulton City Clerk located at 18 East Fourth Street until 3:00 o'clock P.M., (Local Prevailing Time) **October 21, 2024** and then at said office publicly opened and read aloud. All bids shall be submitted as a hard copy.

This project consists of providing the labor, equipment, and materials, to construct approximately 500 feet of new 8-inch natural gas pipeline approximately eight (8) to twelve (12) feet offset from an existing in-service high-pressure natural gas pipeline by boring under Interstate 70 in Callaway County, Missouri near mile marker 124. The new pipeline will need to be connected to the existing pipeline on both sides of the Interstate without a disruption in service. The existing pipeline under the interstate will then need to be properly abandoned. All work within public right of way shall comply with the Missouri Standard Specifications of Highway Construction.

The City of Fulton anticipates issuing notice to proceed in the fall of 2024 with desired completion in 2024.

The Instructions to Bidders, Bid Proposal Form, Contract for Public Work form, Plans, Specifications, Bid Bond, Performance and Payment Bond forms, and other contract documents may be examined at the following locations:

iSqFt/ATTN: Missouri,4500 Lake Forest Drive, Suite 502, Cincinnati, OH 45242
Builders Assn. of Missouri, 3632 West Truman Blvd., Jefferson City MO 65109
Reed Construction Data, 30 Technology Parkway South, Suite 500, Norcross, GA 30092-2912
Missouri iSqFt Plan room, 78 Weldon Parkway, Maryland Heights, MO 63043
City of Fulton, City Hall, 18 East Fourth. St., Fulton, MO 65251

Copies may be obtained at the office of The City Engineer, City of Fulton, 18 E. Fourth St., Fulton, Missouri 65251, upon payment of a $25.00 nonrefundable fee for each set.

A **pre-bid meeting** will be held on **October 14th, 2024** at Fulton's City Hall located at 18 East 4th Street, Fulton, MO 65251.

Each bidder must deposit with his bid, security in the amount of (5%) of the bid amount, in accordance with the Instructions for Bidders. No Second Tier Subcontracting will be allowed.

The wage rates applicable to this project have been predetermined as required by law and are set forth in this specification.

Effective January 1, 2009 and pursuant to RSMo 285.530 (1), No business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri. The successful bidder must submit a sworn affidavit and documentation affirming the business entity's enrollment and participation in the federal work authorization program and that all of its employees working for the contracted services are not illegal immigrants.

Nondiscrimination in Employment: Bidders on this work will be required to comply with the President's Executive Order Number 11246. Requirements for bidders and contractors under this order are explained is the specifications.

Upon signing the contract, the successful contractor and any subcontractor performing the work shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees.

The City of Fulton, Missouri hereby notifies all bidders that businesses owned and controlled by any socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, ancestry, or national origin in consideration for an award.

The DBE Contract Goal for this project is **0 %**. There is no On the Job Trainee goal.

THE OWNER INTENDS TO AWARD THE CONTRACT TO THE LOWEST, RESPONSIVE, RESPONSIBLE BIDDER. THE OWNER RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, AND TO WAIVE ANY IRREGULARITIES IN THE BEST INTEREST OF THE OWNER

Purchase of American Made Products

The City of Fulton supports the purchase of American made products. Bidders are hereby notified that the City of Fulton shall adhere to the following policy.

a) Where the cost of individual products exceeds $500.00, preference will be given to products manufactured, assembled or produced in the United States when the quality and price are comparable with other goods.

b) Every contract for public works construction or maintenance in excess of $1,000 shall contain a provision to use American products in the performance of the contract whenever the quality and price are comparable with other goods.

Withdrawal of Bids

Any bidder may withdraw his bid at any time prior to the scheduled time for termination of bidding. No bidder may withdraw his bid for a period of **thirty (30) days** after the scheduled time for termination of bidding.

Should any bidder find any discrepancies in the specifications or be in doubt as to their meaning, he shall request clarifications, and written explanation will be sent to all concerned. Point of contact is: Ted Christensen, Platte Landing Utility Services, LLC ((816) 500-8886 for technical questions or Kyle Bruemmer, P.E., City Engineer (573) 592-3111 for contract questions.

_____ _____

Date

City Engineer
Kyle Bruemmer, P.E.

NOTICE TO CONTRACTORS

Sealed bids, addressed to the City of Fulton, Missouri for the proposed work will be received by the City of Fulton City Clerk at City Hall until 3:00 p.m. (prevailing local time) on **October 21, 2024,** and at that time will be publicly opened. Bids should be delivered to: 18 East 4th Street, Fulton, Missouri 65251. A **pre-bid meeting** will be held on **October 14th, 2024** at 3:00 p.m. (prevailing local time) at the same address.

(1) **PROPOSED WORK:** The proposed work, hereinafter called the "Work", includes: Providing the labor, equipment, and materials, to construct approximately 500 feet of new 8-inch natural gas pipeline approximately eight (8) to twelve (12) feet offset from an existing in-service high-pressure natural gas pipeline by boring under Interstate 70 in Callaway County, Missouri near mile marker 124. The new pipeline will need to be connected to the existing pipeline on both sides of the Interstate without a disruption in service. The existing pipeline under the interstate will then need to be properly abandoned. All work within public right of way shall comply with the Missouri Standard Specifications of Highway Construction.

(2) **COMPLIANCE WITH CONTRACT PROVISIONS**: The bidder, having examined and being familiar with the local conditions affecting the work, and with the contract, contract documents, including the current version of the Missouri Highways and Transportation Commission's "Missouri Standard Specifications for Highway Construction," and "Missouri Standard Plans for Highway Construction" (if applicable), their revisions, and the request for bid, including appendices, the special provisions and plans, hereby proposes to furnish all labor, materials, equipment, services, etc., required for the performance and completion of the work. All references are to the Missouri Standard Specifications for Highway Construction, as revised, unless otherwise noted. These supplemental bidding documents contain all current revisions to the bound printed versions and have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project. Please note that within the above-listed documents, the term "Commission" shall be replaced with, "City of Fulton", and the term "Engineer" is a reference to the Engineer of Record for the City of Fulton.

(3) **PERIOD OF PERFORMANCE**: Prior to award, a notice to proceed date will be negotiated. The ability to perform this work in a timely manner will help determine which bidder is the lowest, responsive, responsible bidder. The City of Fulton anticipates issuing notice to proceed in the fall of 2024 with a desired completion in 2024. Contractor agrees to commence work on or before the negotiated date specified in the written "Notice to Proceed". If the bid is accepted, the bidder agrees that work shall be diligently prosecuted at such rate and in such manner as, in the judgment of the engineer, is necessary for the completion of the work within the time specified as follows:

35 Consecutive Calendar Days, Completion Date:_____, 202_

(4) **LIQUIDATED DAMAGES**: The bidder agrees that, should the bidder fail to complete the work in the time specified or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages to be recovered shall be as follows:

Liquidated damages per day **$ 2,000.00**

(5) **BID GUARANTY**: Each bid shall be accompanied by a certified cashier's check or a satisfactory bid bond executed by the bidder and an acceptable Surety company, naming the Owner as Oblige, in the amount of not less than five percent (5%) of the Base bid plus any Alternates ("Bid Security"). If the bidder fails to enter into a Contract with the Owner on the terms stated in his bid, or fails to furnish Performance and Payment Bonds as required by the Contract Documents, the amount of the Bid Security shall be forfeited to the Owner as liquidated damages, not as a penalty.

The Owner will have the right to retain the Bid Security of bidders to whom an award is being considered until either, (a) the Owner-Contractor Agreement has been executed and the Performance and Payment Bonds have been furnished, (b) the specified time has elapsed so that bids may be withdrawn, or (c) all bids have been rejected.

(6) **ANTIDISCRIMINATION**: The Contracting Authority hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

(7) **PREVAILING WAGE (STATE):** This contract requires payment of the prevailing hourly rate of wages for each craft or type of work required to execute the contract as determined by the Missouri Department of Labor and Industrial Relations. For work performed anywhere on this project, the contractor and the contractor's subcontractors shall pay these wage rates. The applicable state wage rates for this contract are detailed in **"Annual Wage Order No. 31", Section 014, for Callaway County.** This Annual Wage Order can be found at the Missouri Department of Labor and Industrial Relations website at the following link: **https://laborwebapps.mo.gov/dls/prevailingwage**

These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

(8) **WORKER ELIGIBILITY REQUIREMENTS:** Execution of the construction contract for this project is dependent upon the awarded bidder providing an Affidavit of Compliance AND E-Verify Memorandum-of-Understanding (MOU) between the bidder and Department of Homeland Security to the Contracting Authority as required by section 285.530 RSMo. The cover page and signature page of the E-Verify MOU and the Affidavit must be submitted prior to award of this contract.

A sample Affidavit of Compliance can be found at the Missouri Attorney General's website at the following link:
https://ago.mo.gov/wp-content/uploads/affidavit_of_compliance-1.pdf

All bidders must also be enrolled in the E-Verify Program, and include their MOU prior to contract execution. Bidders who are not enrolled will need to go to the following website link and select "Enroll in the Program" to get started. After completing the program, they will receive their E-Verify MOU with Department of Homeland Security.

This document will need to be printed out and kept on file so that a copy can be attached to the Affidavit of Compliance.
http://www.dhs.gov/files/programs/gc_1185221678150.shtm

This requirement also applies to subcontractors and contract labor, but this contract only requires submittal of the verification documents for the prime contractor. It is the prime contractor's responsibility to verify the worker eligibility of their subcontractors in order to protect their own company from liability as required by section 285.530 RSMo.

(9) **OSHA TEN HOUR TRAINING REQUIREMENTS:** Missouri Law, 292.675 RSMO, requires any awarded contractor and its subcontractor(s) to provide a ten-hour Occupational Safety and Health Administration (OSHA) Construction Safety Program (or a similar program approved by the Missouri Department of Labor and Industrial Relations as a qualified substitute) for their on-site employees (laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement). The awarded contractor and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties, for Non-Compliance include contractor forfeiture to the Contracting Authority in the amount of $2,500, plus $100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO.

(10) **BUY AMERICA REQUIREMENTS:** Construction contracts shall assure compliance with Section 165 of the Surface Transportation Assistance Act of 1982, Section 337 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and 23 CFR 635.410 regarding Buy America provisions on the procurement of foreign products and materials. On all contracts involving Federal-aid, all products of iron, steel, or a coating of steel which are incorporated into the work must have been manufactured in the United States. The Contracting Authority may allow minimal amounts of these materials from foreign sources, provided the cost does not exceed 0.1 percent of the contract sum or $2,500, whichever is greater. The Contractor certifies that these materials are of domestic origin. Additional information regarding the "Buy America" requirements can be found at: **https://www.fhwa.dot.gov/construction/cqit/buyam.cfm**

(11) **ADDENDUM ACKNOWLEDGEMENT**: The undersigned states that the all addenda (if applicable) have been received, acknowledged and incorporated into their bid, prior to submittal. For paper bids, staple addenda to the bid in the appropriate part of the bid.

(12) **SIGNATURE AND IDENTITY OF BIDDER**: The undersigned states that the following provided information is correct and that (if not signing with the intention to bind themselves to become the responsible and sole bidder) they are the agent of, and they are signing and executing this, as the bid of _____ _____, which is the correct LEGAL NAME as stated on the contractor questionnaire (if applicable).

a) The organization submitting this bid is a(n) (1) individual bidder, (2) partnership, (3) joint venture (whether individuals or corporations, and whether doing business under a fictitious name), or (4) corporation. Indicate by marking the appropriate box below.

☐ sole individual ☐ partnership ☐ joint venture
☐ corporation, incorporated under laws of state of_____.

b) If the bidder is doing business under a fictitious name, indicate below by filling in the fictitious name

_____

Executed by bidder this _____ day of _____ 20___.

THE BIDDER CERTIFIES THAT THE BIDDER AND ITS OFFICIALS, AGENTS, AND EMPLOYEES HAVE NEITHER DIRECTLY NOR INDIRECTLY ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS BID, AND THAT THE BIDDER INTENDS TO PERFORM THE WORK WITH ITS OWN BONAFIDE EMPLOYEES AND SUBCONTRACTORS, AND DID NOT BID FOR THE BENEFIT OF ANOTHER CONTRACTOR.

THE BIDDER ACKNOWLEDGES THAT THIS IS AN UNSWORN DECLARATION, EXECUTED UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND/OR FALSE DECLARATION UNDER THE LAWS OF MISSOURI, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS. THE FAILURE TO PROVIDE THIS CERTIFICATION IN THIS BID MAY MAKE THIS BID NON-RESPONSIVE, AND CAUSE IT TO BE REJECTED.

THE BIDDER CERTIFIES THAT THE BIDDER'S COMPANY KNOWINGLY EMPLOYS ONLY INDIVIDUALS WHO ARE AUTHORIZED TO WORK IN THE UNITED STATES IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE LAWS AND ALL PROVISIONS OF MISSOURI EXECUTIVE ORDER NO. 07-13 FOR CONTRACTS WITH THE CONTRACTING AUTHORITY.

☐ Check this box ONLY if the bidder REFUSES to make any or all of these certifications. The bidder may provide an explanation for the refusal(s) with this submittal.

_____

Signature of Bidder's Owner, Officer, Partner or Authorized Agent

_____

Please print or type name and title of person signing here

Attest:

_____

Secretary of Corporation if Bidder is a Corporation

Affix Corporate Seal (If Bidder is a Corporation)

NOTE: If bidder is doing business under a fictitious name, the bid shall be executed in the legal name of the individual, partners, joint ventures, or corporation, and registration of fictitious name filed with the secretary of state, as required by sections 417.200 to 417.230 RSMo. If the bidder is a corporation not organized under the laws of Missouri, it shall procure a certificate of authority to do business in Missouri, as required by section

351.572 et seq RSMo. A certified copy of such registration of fictitious name or certificate of authority to do business in Missouri shall be filed with the Missouri Highways and Transportation Commission, as required by the standard specifications.

(13) PROJECT AWARD: This project will be awarded to the lowest, responsive, responsible bidder. The ability to perform this work in a timely manner is a factor in determining which bidder is the lowest, responsive, responsible bidder.

(14) SALES AND USE TAX EXEMPTION: City of Fulton, a tax exempt entity, will furnish a Missouri Project Exemption Certificate as described in Section 144.062 RSMo to the awarded contractor who in turn may use the certificate to purchase materials for a specific project performed for the tax exempt entity. Only the materials and supplies incorporated or consumed during the construction of the project are exempt. The certificate will be issued to the contractor for a specific project for a defined period of time.

(15) INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINITIONS

1.1 **Bidding Documents** include the Invitation to Bid, Notice to Contractors, Instructions to Bidders, the Bid Form and the proposed Contract Documents including any Addenda issued prior to receipt of Bids.

1.2 **Contract Documents** proposed for the Work consists of the Owner-Contractor Agreement, State Wage Determination, Performance and Payment Bond, Job Special Provisions, the Specifications, the Drawings, the Construction Schedule, all Addenda, and all Modifications.

1.3 All definitions set forth in the General Conditions of Owner-Contractor Agreement or in other Contract Documents are applicable to the Bidding Documents.

1.4 **Addenda** are written or graphic instruments issued prior to the execution of the Owner-Contractor Agreement, which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

1.5 A **Bid** is a complete and properly signed proposal to do the Work, or a designated portion thereof, for the sums stipulated therein, submitted in accordance with the Bidding Documents.

1.6 The **Base Bid** is the sum stated in the bid for which the bidder offers to perform the Work described in the Bidding Documents as the base to which work may be added or from which work may be deleted for sums stated in alternate bids.

1.7 An **Alternate Bid** is an amount stated in the bid to be considered in addition to the Base Bid if the corresponding Change in the Work, as described in the Bidding Documents, is accepted.

1.8 A **Unit Price** is an amount stated in the bid as a price per unit of measurement for materials or services as described in the Bidding Documents or in the proposed Contract Documents.

1.9 A **Bidder** is a person or entity who submits a bid.

1.10 A **Sub-Bidder** is a person or entity who submits a bid to a bidder for materials or labor for a portion of the Work.

ARTICLE 2 - BIDDER'S REPRESENTATION

2.1 Each bidder by making a bid represents and warrants that:

2.1.1 They have read and understands the Bidding Documents and his bid is made in accordance therewith.

2.1.2 They have visited and carefully examined the site of the Work, and has familiarized himself with and satisfied himself of the following:

1. the nature and location of the Work;

2. the character, quality and quantity of materials to be encountered;

3. the character and quantity of equipment and facilities needed prior to and during performance of the Work;

4. the local conditions under which the Work is to be performed, including the availability of necessary labor;

5. the requirements for maintaining existing facilities in continuous service, if necessary or required.

2.1.3 They have correlated his examination and observations with the requirements of the proposed Contract Documents.

2.1.4 They have is based upon the materials, products, systems and equipment required by the Bidding Documents.

ARTICLE 3 - BIDDING DOCUMENTS

3.1 COPIES

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Invitation to Bid in the number and for the deposit sum, if any, stated therein. Bidders must complete all contact information requested on the Plan Holders List to obtain the Bidding Documents. The Bidding Documents may also be examined at the locations listed in the Invitation to Bid.

3.1.2 Each bidder shall use a complete set of Bidding Documents in preparing his bid. Bidders shall verify with the City of Fulton Engineer's Office (573-592-3111), 18 E. Fourth St., Fulton, Missouri 65251, all addenda that have been issued for the project prior to bid.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 Bidders shall promptly notify the Owner in writing of any ambiguity, inconsistency or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.

3.2.2 Bidder may request clarification or interpretation of the Bidding Documents by making a written request which shall reach the Owner at least seven (7) days prior to the date for receipt of bids.

3.2.3 Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding on the Owner, and bidders shall not rely upon such interpretations, corrections and changes.

3.2.4 If the Owner determines that clarification of the terms and conditions of the Bidding Documents is necessary, an Addendum will be made available to all bidders setting forth-such clarification.

3.3 SUBSTITUTIONS

3.3.1 The materials, products, systems and equipment described in the Bidding Documents establish a minimum standard of required function, dimension, appearance and quality which must be met by any proposed substitution.

3.3.2 No substitution of the materials, products, systems and equipment described in the Bidding Documents will be considered prior to receipt of bid unless written request for approval has been received by the Owner **at least ten (10) days prior** to the date for receipt of bids. Each such request shall include the name of the material, product, system or equipment for which substitution will be made and a complete description of the proposed substitute including drawings, costs, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, products, systems or equipment or other work that incorporation of the substitute would require shall be included in each such request. The Owner, in its sole discretion, may approve or disapprove the proposed substitute.

3.3.3 If the Owner approves any proposed substitution prior to receipt of bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

3.3.4 No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

3.4 ADDENDA

3.4.1 Addenda will be mailed or delivered to all who are known by the Owner to have received a complete set of Bidding Documents.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 Prior to submitting his bid, each bidder shall verify that they have received all Addenda issued, and shall acknowledge receipt of all such Addenda in their bid. Bidders shall verify directly with the City of Fulton Engineer's Office (573-592-3111), 18 E. Fourth St., Fulton, Missouri 65251.

ARTICLE 4 - BIDDING PROCEDURE

4.1 FORM AND STYLE OF BIDS

4.1.1 Attached to the Contract Documents is a separate, complete set of Bid Forms to be signed and submitted as the Bidder's formal bid. To be considered, a bid shall be properly completed using these Bid Forms.

4.1.2 All blanks on the Bid Form shall be filled in by typewriter or legibly handwritten in ink.

4.1.3 Where so indicated by the make-up of the Bid Form, dollar amounts shall be expressed in both words and figures and in case of discrepancy between the two, the amount written in words shall govern.

4.1.4 Any interlineation, alteration or erasure must be initialed by the signer of the bid.

4.1.5 Where two or more bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of his bid security, state his refusal to accept award of less than the combination of bids if he so stipulates. The Bidder shall make no additional stipulations on the Bid Form nor qualify his bid in any other manner.

4.1.6 Each copy of the bid shall include the legal name of the Bidder and a statement that the Bidder is a sole proprietor, a partnership, a corporation, or some other legal entity. Each copy shall be signed by the person or persons legally authorized to bind the bidder to a contract. A bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

4.1.7 The Owner shall not be responsible in any way for any costs or expenses related to the preparation or submission of any bid.

4.2 BID SECURITY

4.2.1 Each bid shall be accompanied by a certified check or a satisfactory bid bond executed by the bidder and an acceptable Surety company, naming the Owner as Obligee, in the amount of not less than five percent (5%) of the Base bid plus any Alternates ("Bid Security"). If the bidder fails to enter into a Contract with the Owner on the terms stated in his bid, or fails to furnish Performance and

Payment Bonds as required by the Contract Documents, the amount of the Bid Security shall be forfeited to the Owner as Liquidated damages, not as a penalty.

4.2.2 The Owner will have the right to retain the Bid Security of bidders to whom an award is being considered until either, (a) the Owner-Contractor Agreement has been executed and the Performance and Payment Bonds have been furnished, (b) the specified time has elapsed so that bids may be withdrawn, or (c) all bids have been rejected.

4.3 SUBMISSION OF BIDS

4.3.1 Bidders must complete and submit the following for their bid to be considered responsive:

1. A completed, signed and sealed Bid Form acknowledging receipt of all addenda, or acknowledging that there were none.
2. The Bid Bond/Security required by the Project Manual.
3. The proprietary names and the suppliers of principal items or systems of materials and equipment proposed for the Work.
4. A signed Anti-Collusion Statement
5. A signed Subcontractor Approval Form for each and every proposed Subcontractor, or other persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.
6. Completed Contractor Qualification Statement

4.3.2 All copies of the bid, the Bid Security and all documents listed above that are required to be submitted with the bid shall be enclosed in a sealed envelope identified "SEALED BID ENCLOSED" on the face thereof. The envelope shall be addressed and delivered to the City of Fulton City Clerk located at 18 East Fourth Street and shall be identified with the project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof. All bids shall be submitted as a hard copy.

4.3.3 Bids shall be deposited at the designated location prior to the time and date for receipt of bids Indicated in the Invitation to Bid or any extension thereof made by an Addendum. Bids received after the time and date for receipt of bids will be returned unopened.

4.3.4 The bidder shall assume full responsibility for timely delivery at the location designated for receipt of bids.

4.4 MODIFICATION OR WITHDRAWAL OF BID

4.4.1 A bid may not be modified, withdrawn or cancelled by the bidder within **thirty (30) days** following the time and date designated for the receipt of bids, and each bidder so agrees in submitting his bid.

4.4.2 Prior to the time and date designated for receipt of bids, any bid submitted may be modified or withdrawn by notice to the party receiving bids at the place designated for receipt of bids. Such notice shall be in writing over the signature of the bidder.

4.4.3 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids provided that they are then fully in conformance with these Instructions to Bidder.

4.4.4 The amount of the Bid Security shall be in an amount sufficient for the bid as modified or resubmitted.

4.4.6 **PROCUREMENT PROTEST POLICY**

The purpose of this policy is to establish a consistent, equitable process for receiving, reviewing, and responding to protests from Bidders involved in this project's procurement process.

The remedies provided by this policy apply only to individuals or entities that directly participated In this solicitation process, specifically, Bidders.

DEFINITIONS:

Award Notification: The official notification from the City of Fulton to the bidder selected by the city as a result of this solicitation processes.

Bidder: Any person or entity that responds to this project's invitation to bid.

Close of Business: Time by which protests must be filed with the city. Such time is set by the city and it is the responsibility of the protestor to contact the city to determine the time.

PROTEST PRIOR TO BID DUE DATE: After a bid is released, but before the bid due date as defined in the solicitation, a Bidder may submit a written letter of protest on the grounds the bid specifications are:

1. Inadequate
2. Unduly restrictive
3. Ambiguous

PROTEST AFTER AWARD IS RECOMMENDED BUT BEFORE CONTRACT AWARD: After bids are accepted and an award recommendation is made to the governing body for approval, but before approval of a contract for services, a Bidder may submit a written letter of protest. The written letter of protest must set forth one of the following bases for the protest:

1. Arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.
2. Contrary to constitutional right, power, privilege, or immunity.
3. In excess of statutory jurisdiction, authority, or limitations, or short of statutory right.
4. Without observance of procedure required by law.

5. Unsupported by substantial evidence that may include, but is not limited to:
    a. A technical or mathematical mistake or error occurred during the evaluation process.
    b. There is reason to believe that the bids or proposals may not have been independently arrived at in open competition, may have been collusive, or may have been submitted in bad faith; or
    c. An Offeror was not accorded fair and equal treatment with respect to any opportunity for discussion and revision of proposals.

DEADLINES:

1. Bid specification protests: A letter of protest must be received by the soliciting entity by the close of business **ten (10) business days** prior to the due date for bid response.
2. Bid Award Recommendation Protests: The letter of protest must be received by the soliciting entity by close of business within **five (5) days** after the date of award recommendation.

LETTER OF PROTEST REQUIREMENTS:

A protest must:
1. Be specific as to which bid is the subject of protest.
2. Must indicate, with specificity, the grounds for the protest.
3. Must be received within the time limits defined above.
4. Must include a return address and contact information of the protesting party; and
5. Must be submitted via email to the City of Fulton's City Clerk's Office OR delivered in person to the City of Fulton's City Clerk's Office within normal business hours.

Letters of protest that do not meet all five (5) of the requirements above will be rejected.

RESPONSE TO PROTESTS:

All protests will be reviewed and acted upon by the City of Fulton's Director of Administration within **fifteen (15) business days** after the deadline for submitting protests. The City's final decision will be provided to the protestor in writing within **ten (10) business days** following the decision.

If a protest is received for a bid award, the award will be delayed until the city has reviewed the protest and made a final decision regarding the protest.

The City will disclose information regarding the protest to the Missouri Department of Natural Resources.

ARTICLE 5 - CONSIDERATION OF BIDS

5.1 OPENING OF BIDS

5.1.1 Unless stated otherwise in the Invitation to Bid, the properly identified bids received on time will be opened publicly and will be read aloud.

5.2 **REJECTION OF BIDS**

5.2.1 The Owner shall have the right to reject any or all bids, to reject a bid not accompanied by the Bid Security or by other data required by the Bidding Documents, to reject a bid which is in any way incomplete or irregular, and to rebid the Work at a later date, if all bids are rejected.

5.3 **ACCEPTANCE OF BID (AWARD)**

5.3.1 It is the intent of the Owner to award the Contract to the lowest responsive, responsible bidder provided the bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The ability to perform this work in a timely manner is a factor in determining which bidder is the lowest, responsive, responsible bidder.

5.3.2 The Owner shall have the right to accept alternates and to determine the low bidder on the basis of the sum of the base bid and the alternates accepted. Alternates shall be accepted in the order established in the Bid Form Proposal.

ARTICLE 6 - POST BID INFORMATION

6.1 SUBMITTALS

6.1.1 The bidder will be required to establish, to the satisfaction of the Owner, the reliability and responsibility of the persons or entities proposed to furnish and perform the Work.

6.1.2 Persons and entities proposed by the bidder and to whom the Owner has made no objection must be used on the Work for which they were proposed and shall not be changed except with the prior written consent of the Owner.

ARTICLE 7 - AWARD OF CONTRACT

7.1 Following receipt, to the satisfaction of the Owner, of all information required under Paragraph 6.1 above, the Owner shall mail to the successful bidder the Notice of Award of the Contract.

7.2 **Within ten (10) working days** from the date of receipt of the Notice of Award, the successful bidder shall execute and deliver to the Owner the Contract Documents, and shall furnish the Insurance, Hold Harmless, Contractor and Subcontractors Affirmative Action Certifications, Performance Bond, Payment Bond, and Worker Eligibility Documents Requirements (E-Verify) required. In the event the successful bidder fails to execute and deliver the Contract Documents, as aforesaid, the Owner may, at its option, consider the bidder in default and award the Contract to another bidder, in which case the Bid Security of the defaulting bidder shall be forfeited to the Owner as liquidated damages, and not as a penalty.

7.3 The Contract, when executed, shall be deemed to include the entire agreement between the parties thereto, and the Bidder shall not claim any modification thereof resulting from any claimed representation or promise made at any time prior thereto by any officer, agency or employee of the Owner or by any other person.

ARTICLE 8 - PERFORMANCE BOND AND LABOR & MATERIAL PAYMENT BOND

8.1 BOND REQUIREMENTS

8.1.1 The successful bidder shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of the Contract, and also a Labor and Material Payment Bond in an amount not less than one hundred percent (100%) of the Contract Sum as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract. The Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Missouri. The Performance Bond and the Labor and Material Payment Bond may be in one or in separate instruments, however if combined into one the amount shall be for two hundred percent (200%) of the Contract Sum.

8.2 TIME OF DELIVERY AND FORM OF BONDS

8.2.1 The bidder shall deliver the required bonds to the Owner not later than the date of execution of the Owner-Contractor Agreement, or if the Work is to be commenced prior thereto in response to a Letter of Intent, the bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

8.2.2 The bidder shall require the attorney-in-fact who executes the required bonds on behalf of the Surety to affix thereto a certified and current copy of his power of attorney.

ARTICLE 9 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

9.1 FORM TO BE USED

9.1.1 Unless otherwise required in the Bidding Documents, the Owner-Contractor Agreement for the Work shall be in the form attached hereto.

ITEMIZED BID:

The bidder proposes to furnish all labor, materials, equipment, services, etc. required for the performance and completion of the Work, as follows:

City of Fulton
18th East Fourth Street
Fulton, MO. 65251

REQUEST FOR BID

BID PROPOSAL OF

Bidder Name_____

Bidder Address_____

_____

For

COF 24-10
2024 City of Fulton I-70 Natural Gas Bore Project

City of Fulton
Fulton, MO.

BID PROPOSAL FORM

FROM: _____

Herein after called the Bidder

TO: City of Fulton
18 E. Fourth Street
Fulton, Missouri 65251

Herein after called the City of Fulton

FOR: 2024 City of Fulton I-70 Natural Gas Bore Project No. COF 24-10

Description of Work:

This pipeline construction project involves boring an 8-inch steel pipeline under Interstate 70 in Callaway County, Missouri near mile marker 124. The new pipe will be offset from the existing, in-service pipe by approximately eight (8) to twelve (12) feet. The new bore will be deeper than the existing casing and is approximately 500 feet long. Two (2) valves will be installed on each side. The pipe will be pressure tested, purged, tapped, and tied in. The tie in point on the north side of I-70 is approximately 15 feet north of the existing valve. The south tie in point on the south side of I-70 is approximately 40 feet south past the pipeline marker with the intent to remove an original buried flange. The existing casing and carrier pipe will be abandoned with steel plate welded on the ends of the carrier pipe.

The Contractor is to provide pricing for a complete project. The major items and material are listed below. The Contractor is to provide necessary labor for all incidental work to complete the project including but not limited to welder qualification, traffic control, pressure testing, etc. The Contractor is to provide all necessary materials to complete the project including but not limited to matting, shoring/trench box, pressure testing test heads, pig launcher test heads, air compressors, miscellaneous materials, consumables, etc.

A detailed description of the work is included in the Construction Specifications and is herein after called “the work”

The undersigned, having examined and being familiar with the local conditions affecting the work and with the Contract Documents including the Advertisement for Bids, Notice to Contractors, Bonding Requirements, Insurance Requirements, Contractors Qualification Statement, Job Special Provisions, Plans, and the Specifications, including

Addenda number _____ through _____ inclusive,

as issued by the City of Fulton Engineering Department, hereby propose to furnish all labor, materials, equipment, services, etc. required for the performance and completion of the aforementioned work, as follows:

1. In submitting this bid, it is understood that the right is reserved by the City Engineer, City of Fulton, to reject any and all bids and it is agreed that the bids may not be withdrawn for a period of **thirty days** from the specified time for receiving bids.

2. Accompanying this bid is a certified check or cashier's check in the amount of _____ Dollars ($_____) or a 5% Bid Bond payable without condition to the City of Fulton, which it is agreed shall be retained as liquidated damages for the delay and extra expense caused to the City of Fulton if the undersigned fails to execute the Contract and furnish complete insurance certificates, hold harmless document, Affirmative Action document, Performance Bond, Payment Bond, and Worker Eligibility Documents required by the Contract Documents within ten (10) days after award.

3. The Contractor agrees to complete the work within **35** consecutive calendar days from the date of Notice of Proceed is issued. The Contractor further agrees to pay to, or allow the City of Fulton as liquidated damages the sum of **Two Thousand Dollars ($2,000.00)**, for each day thereafter.

4. The Bidder hereby certifies that the following subcontractors will be used in the performance of the work: Note: Failure to list either the Bidder's firm or subcontractors for each category of work identified on the Bid Proposal Form, or the listing of more than one firm for any category without designating the portion of work to be performed by each, shall result in rejection of the Bid Proposal. After bid opening, substitutes of listed firms will not be permitted except as indicated in the Special Job Provisions.

NAME AND ADDRESS OF FIRM	WORK TO BE PERFORMED

5. The Bidder agrees to pay not less than the hourly rate of wages as determined by the Department of Labor and Industrial Relations, State of Missouri, in accordance with Section 290.210 to 290.340 as amended RSMo 1994.

6. The Bidder hereby certifies:

   a: That this Bid Proposal is genuine and is not made in the interest of or on behalf of any undisclosed person, firm corporation, and is not submitted in conformity with any agreement or rules of any group, association or corporation;

   b: That he has not directly or indirectly induced or solicited any other bidder to put in a false or sham proposal;

   c: That he has not solicited or induced any person, firm or corporation to retain from bidding;

   d: That he has not sought by collusion or otherwise to obtain for himself any advantage over any other bidder or over the City of Fulton;

   e: That he will not discriminate against any employee or applicant for employment because of race, creed, color or national origin in with the performance of the work; and

   f: That all manufactured goods or commodities used or supplied in the performance of this contact or any subcontract thereto shall be manufactured, assembled or produced in the United States, unless said goods are not manufactured, assembled or produced in the United States in sufficient quantities to meet the contract requirements or cannot be manufactured, assembled or produced in the United States within the necessary time in sufficient quantities to meet the contract requirements or that obtaining the product manufactured, assembled or produced in the United States would increase the cost of the contract for purchase of the product by more than ten percent.

Dated this _____ day of _____, 20____.

IF AN INDIVIDUAL

_____ _____
Name of Individual Residence Address

_____ _____
Social Security Number Telephone Number

_____
Firm Name if Any

_____ _____
Address for Communications Signature

IF A PARTNERSHIP

_____	(State Names and Residence Address of all Partners)
Name of Partnership	
_____	_____
Partner	Residence Address
_____	_____
Partner	Residence Address
_____	_____
Address for Communications	Federal Tax I.D. Number
_____	_____
Telephone Number	Signature of Either Partner

IF A CORPORATION

_____	Incorporated under the laws of the State of _____
Name of Corporation	
_____	Corporate License No._____
Name and Title of Officer	(If a corporation organized in state other than Missouri, attach Certificate of Authority to do business in the State of Missouri)
_____	_____
Signature of Officer	Federal Tax I.D. Number (ATTEST)
_____	
Address for Communications	
_____	_____
Telephone Number	(SEAL) Secretary

(Each bidder must complete the Bid Proposal Form by signing on the proper signature line above and by supplying the required information called for in connection with the signature. The information called for is necessary in the proper preparation of the Contract and Performance and Payment Bonds. Each bidder must supply the data called for in the accompanying Contractors Qualification Statement.)

BID FORM - ITEMIZED BID SHEET

2024 CITY OF FULTON I-70 NATURAL GAS BORE PROJECT NO. COF 24-10

CITY OF FULTON, MISSOURI

Bid Item	DESCRIPTION	Unit of Measure	PRICE
1	Mobilization and Project Site Controls	Lump Sum	$
2	Erosion & Sedimentation Controls	Lump Sum	$
3	Horizontally Directionally Drilled (HDD) 8 Inch Pipeline with necessary valves, fittings and tie in pipe	Lump Sum	$
4	Open Cut 8 Inch Pipeline with necessary valves, fittings and tie in pipe	Lump Sum	$
5	TDW Hot Tap Two 8-Inch Spherical Tees, Tapping and Purging	Lump Sum	$
6	Photographic Documentation, MTRs, Pressure Test Charts, Weekly Reporting	Lump Sum	$
7	Demobilization from Site and Cleanup	Lump Sum	$
8	Major Pipe Material – provide submittals	Lump Sum	$
Total =			**$**

Alternate Bid Item

9	Open Cut Rock Excavation	Cubic Yard	$

Material Submittals are to be provided and approved prior to purchasing for the valves, pipe, fittings, and saddles (8-inch and 2-inch).

The schedule is weather dependent for load to City, preheat of pipe for welding below 40F, revised coating procedure for below 40F.

Notes: All prices are installed prices, and all described quantities are estimated quantities and may be subject to change.

BID BOND

KNOW ALL BY THESE PRESENTS, That we, _____
(Contractor)

_____

_____ as Principal, hereinafter called the

Principal, and the_____ ,
(Bonding Company)

of _____ , a corporation duly

organized under the laws of the State of _____ , as Surety, hereinafter called the Surety, are held and firmly bound unto the CITY OF FULTON, 18 EAST FOURTH STREET, FULTON, MO. 65251, as Obligee, hereinafter called the Obligee, in the

sum of _____ Dollars ($_____), for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____
(Project Name / Number)

_____

NOW, THEREFORE, if the Obligee shall accept the Bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such Bid, and give such Bond or Bonds as may be specified in the Bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such Bond or Bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said Bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said Bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

IMPORTANT: Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Missouri.

Signed and sealed this _____ day of _____ , 20_____

_____ _____(Seal)
Witness Principal

{ _____
Title

_____
Witness

{ _____

By _____
Attorney-in-Fact

ANTI-COLLUSION STATEMENT

STATE OF _____)
) SS.
COUNTY OF_____)

City of Fulton 2024 Sanitary Sewer Renewal Project #COF 24-02.

_____ being first
Name of person signing
duly sworn, deposes and says that he/she is_____
Title of person signing
of_____

_____
Name and address of Company

and that all statements made and facts set out in the proposal for the above project are true and correct; and that the bidder (The person, firm, association, or corporation making said bid) has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

By_____

By_____

By_____

Sworn to before me this_____ day of _____ 20___.

_____
Notary Public

My Commission Expires_____

SUBCONTRACTOR APPROVAL FORM

This report must accompany and be part of the sealed Bid Proposal.

1. Name of Bidder:_____

2. Address Bidder:_____

_____
City State Zip Phone

3. The above-named Bidder intends to subcontract for materials, service, supplies, specialty contractors, etc., in the following fashion:

Names and Addresses of Subcontractor Which the Contractor Anticipates Utilizing	Nature of Participation	$ Value of Subcontractor

A. Total of Above _____

B. Total Bid Amount _____

Subcontractor Utilization as a % of Total Bid Amount: (A/B x 100)_____

_____
Name-Authorized Officer of Bidder

_____
Signature-Office Bidder

_____
Date

Contractor's Qualification Statement

Required in advance of consideration of award of contract.

The Undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO:

City of Fulton
P.O. Box 130
Fulton, MO 65251

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

(Note: Attach Separate Sheets As Required)

1.0 How many years has your organization been in business as a contractor?

2.0 How many years has your organization been in business under its present business name?

3.0 If a corporation answer the following:

- 3.1 Date of incorporation:
- 3.2 State of incorporation:
- 3.3 President's name:
- 3.4 Vice-president's name(s):
- 3.5 Secretary's or Clerk's name:
- 3.6 Treasurer's name:

4.0 If individual or partnership answer the following:

- 4.1 Date of organization:
- 4.2 Name and address of all partners. (State whether general or limited partnership):

5.0 If other than corporation or partnership, describe organization and name principals:

6.0 We normally perform _____% of the work with our own forces. List trades below:

7.0 Have you ever failed to complete any work awarded to you? If so, note when, where, and why:

8.0 Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, state circumstances:

9.0 List name of project, owner, contract amount, percent complete and scheduled completion of the major construction projects your organization has in process on this date:

10.0 List the name of project, owner, contract amount, date of completion, percent of work with own forces of the major projects your organization has completed in the past five years:

11.0 List the construction experience of the principal individuals of your organization:

12.0 List equipment, machines, etc., giving model, make, year and general condition, that your organization will use to perform the work outlined in the specifications and plans. Indicate whether organization owned or rented.

13.0 Trade References:

14.0 Name of Bonding Company and name and address of agent:

15.0 Dated at this_____day of_____20___

Name of Organization:

By:

Title:

16.0 _____being duly sworn deposes and

says that he (she) is the_____of_____

_____,

Contractor(s) and that answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn before me this _____day of_____20___ .

Notary Public:

My commission Expires:

City of Fulton
18th East Fourth Street
Fulton, MO. 65251

REQUEST FOR BID

BID AWARD FOR

Bidder Name_____

Bidder Address_____

_____

For

COF 24-10
2024 City of Fulton I-70 Natural Gas Bore Project

City of Fulton
Fulton, MO.

NOTICE OF AWARD

To: _____

Date:_____

_____

_____

PROJECT Description: 2024 City of Fulton I-70 Natural Gas Bore

#COF 24-10

The Owner has considered the bid submitted by you for the above described work in response to its Advertisement for Bids dated _____, 2024, and the Information for Bidders.

You are hereby notified that your bid has been accepted for items in the amount of $_____ .

You are required by the Information for Bidders to execute the Agreement and furnish the Insurance, Hold Harmless, Contractor and Subcontractors Affirmative Action Certifications, Performance Bond, Payment Bond, and Worker Eligibility Documents Requirements (E-Verify) required within **ten (10) calendar days** from the date of this notice to you.

If you fail to execute said Agreements and to furnish said bonds within **ten (10) days** from the date of this notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of_____, 2024.

Owner: City of Fulton

By:_____

Name: Kyle Bruemmer, P.E.

Title: City Engineer

ACCEPTANCE OF NOTICE OF AWARD

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____

_____

this the _____ day of _____, 2024.

By:_____

Title:_____

City of Fulton
18th East Fourth Street
Fulton, MO. 65251

CONTRACT

AND

BOND

For

2024 City of Fulton I-70 Natural Gas Bore Project

City of Fulton
Fulton, MO.

CONTRACT FOR PUBLIC WORK

This Contract is made and entered into this_____day of _____, 2024, by and between the City of Fulton, Missouri, (City), and _____
(Contractor)

Whereas, the City Council of the City of Fulton, Missouri did on_____, 2024 award to the Contractor the bid for the 2024 City of Fulton I-70 Natural Gas Bore - COF 24-10.

NOW, therefore, for and in consideration of the awarding of this contract and the work there under by the City to the contractor.

Therefore, the contractor does hereby contract and agree to do and perform said work, above specified and referred to, for the sum of **$**_____and to accept in payment therefore: Monies from the treasury of the City, upon acceptance of said work by the City Council of the City.

The quantities, unit prices, and total amounts are as shown in the itemized Proposal attached hereto as Proposal COF 24-10. Upon completion of the work, adjustments in the contract price shall be made according to actual measurements and at the price shall be per unit specified in the Contract.

It is agreed and understood by the parties hereto, that this Contract is entered into subject to all existing ordinances of the City of Fulton pertaining to the work awarded and subject to the Plans and Specifications and estimates of the costs for work on file in the office of the City Clerk, and which shall be considered a part of this Contract; that all questions arising as to the proper performance of this Contract of such work in accordance with the Plans and Specifications therefore, and estimates thereof, shall be decided by the City Engineer of the City of Fulton, Missouri, or by such competent person appointed by the Mayor and the City Council of the City of Fulton to supervise and superintend such work in the place of and instead of such City Engineer.

That in the case of improper construction, the City reserves the right at any time to suspend, re-let or order an entire reconstruction of the work. Prior to award, a notice to proceed date will be negotiated. The ability to perform this work in a timely manner will help determine which bidder is the lowest, responsive, responsible bidder. Contractor agrees to commence work on or before the negotiated date specified in the written "Notice to Proceed" and to fully complete the project in **35 Calendar Days thereafter**. The City reserves the right at any time to suspend, re-let or order an entire reconstruction of the work awarded and to declare the Contract forfeited, but such suspension, re-letting or reconstruction or forfeiture shall not affect the right of the City to recover all damages and penalties accruing or due it by reason of the Contractor's non-compliance with the Contract. Liquidated damages of **$ 2000.00** per day will be assessed against the Contractor for each day the work remains incomplete following the completion date or extension thereof.

For public works projects in Missouri valued over $75,000, Missouri's Prevailing Wage Law establishes a minimum wage rate. If the project is over $75,000, the Contractor agrees to pay all classes and crafts of labor used in the performance of this Contract the prevailing hourly rate of wages as determined by the Department of Labor and Industrial Relations and Contractor acknowledges that he knows the prevailing hourly rate of wages for all the classes and crafts of labor to be used in the performance of this Contract because he has obtained the prevailing hourly rate of wages from the contents of the **Annual Wage Order No. 31**, Section 014, **for Callaway County**, in which the rate of wages are set forth.

If Missouri's Prevailing Wage Law applies to this contract, the Contractor further agrees that he will keep an accurate record showing the names and occupation of all workmen employed by them in connection with the work to be performed under the terms of this Contract. Record shall show the actual wages paid to said workmen in connection with the work to be performed under the terms of this Contract. Contractor further agrees that the aforementioned accurate record shall be available and open at all reasonable hours for the inspection by the City Engineer or any other authorized employee of the City. In compliance with the Prevailing Wage law, Section 290.262.10 RSMo, not less than the prevailing hourly rate of wages in the Fulton area shall be paid to all workers performing work under this Contract. The Contractor shall forfeit to the City Ten Dollars ($10.00) for each worker employed, for each calendar day, or portion thereof, such worker is paid less than the stipulated rates for any work done under said Contract, by him or any subcontractor under him.

IN WITNESS WHEREOF, the parties have hereunto set their hands this _____, day of

_____, 20____.

CITY OF FULTON, MISSOURI

By_____
Steve F. Myers, Mayor

ATTEST:

_____
Kathie Ratliff, City Clerk

_____
Contractor

By_____

ATTEST:

_____

INSURANCE REQUIREMENTS

CONTRACTOR shall purchase and maintain the following insurance, at CONTRACTOR's expense:

- **Commercial General Liability Insurance** with a minimum limit of $3,000,000 each occurrence / $5,000,000 general aggregate written on an occurrence basis.
- **Comprehensive Business Automobile Liability Insurance** for all owned, non-owned and hired automobiles and other vehicles used by CONTRACTOR with a combined single limit of $1,000,000 minimum.
- **Workers Compensation Insurance** with statutorily limits required by any applicable Federal or state law and Employers Liability insurance with minimum limit of $1,000,000 per accident.

Prior to commencing work, CONTRACTOR shall provide CITY certificates of insurance evidencing the required coverages. CITY's receipt or review of any certificate of insurance reflecting that CONTRACTOR or one of its subcontractors or suppliers has failed or may have failed to comply with any insurance requirement of the contract documents shall not constitute a waiver of any of CITY's insurance rights under the contract documents, with all such rights being fully and completely reserved by the CITY.

CONTRACTOR shall make CITY an additional insured on each policy of insurance that CONTRACTOR is required to maintain under the contract documents. Similarly, CONTRACTOR shall require insurance with the same coverage and limits from its subcontractors and suppliers, and their insurance policies shall be endorsed to name the same additional insureds as required of CONTRACTOR. Each additional insured endorsement shall expressly afford coverage to the additional insureds not only arising out of the named insured's operations or work but also arising out of the named insured's completed operations.

Umbrella or Excess Liability may satisfy minimum liability limits required above for Commercial General Liability under and Umbrellas or Excess Liability policy. There is no minimum Per Occurrence limit of liability under the Umbrellas or Excess Liability: however, the Annual Aggregate limit shall not be less than the highest Each Occurrence limit for either Commercial General Lability or Business Auto Liability. Contractor agrees to endorse the City, its officers, agents, volunteers, lessees, invites, and employees covered as an additional insured on the Umbrellas or Excess Liability and the Certificate of Insurance states that the Umbrella or Excess Liability provides coverage on a "Follow -Form" basis.

All completed operations coverages shall be maintained by CONTRACTOR and its subcontractors or suppliers for five (5) years following the completion of the Work.

Any coverage available to CITY as a named insured shall be secondary, so that the coverage to the CITY as an additional insured on the policies maintained by CONTRACTOR and subcontractors is primary. If any of the required policies provide coverage on a claims-made basis: The retroactive date must be shown and must be before the date of the contract or the beginning of contract work. Insurance must be maintained, and evidence of insurance must be provided for at least five (5) years after completion of the contract of work.

If coverage is canceled or non- renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, the Consultant must purchase "extended reporting" coverage for a minimum of five (5) years after completion of contract work.

CITY reserves the right to selectively trigger any one or more insurance policies that afford CITY coverage, whether as a named insured or as an additional insured.

CONTRACTOR agrees that CITY shall be provided at least **sixty (60) days** advance written notice of any cancellation or rescission of any policy that CONTRACTOR or any of its subcontractors or suppliers is required to maintain under the contract documents.

All policies, including umbrellas or excess, of insurance must be on a primary basis, non-contributory with any other insurance (including primary, excess, self-insurance, or any other basis) carried by the city.

No provision of this agreement shall constitute a waiver of the member's right to assert a defense based on sovereign immunity, official immunity or any other immunity available under law. For any claim or suit seeking damages from the Missouri municipality scheduled in this endorsement because of "bodily injury", "property damage", or "personal and advertising injury" caused by "your work", the coverage provided herein does not apply to any claim or "suit" which is barred by the doctrines of sovereign immunity, qualified immunity, and/or official immunity although defense of such actions will be provided. No provision of this condition of coverage, endorsement, or this policy, will constitute a waiver of this company's right to assert a defense based on the doctrines of sovereign immunity, qualified immunity, and/or official immunity.

If the contractor maintains broader coverage and/or higher limits than the minimums shown, the CITY requires and shall be entitled to the broader coverage and/or high limits maintained by the CONTRACTOR. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the CITY.

HOLD HARMLESS AGREEMENT

Contract Description: 2024 City of Fulton I-70 Natural Gas Bore - COF 24-10

Contract Period: _____

To the fullest extent permitted by law,

CONTRACTOR agrees to indemnify, defend and hold harmless the CITY, its officers, agents, volunteers, lessees, invitees and employees from and against all suits, claims, damages, losses, and expenses, including but not limited to attorneys' fees, court costs, or alternative dispute resolution costs arising out of or related to any such suit, claim, damage, loss or expense involving an injury to a person or persons, whether bodily injury or other personal injury (including death), or involving an injury or damage to property (including loss of use or diminution in value), but only to the extent that such suits, claims, damages, losses or expenses arising from or alleged to have arisen from your (contractor) work or the work of any supplier or subcontractor, or their agents or employees, directly or indirectly, regardless of whether caused in part by the negligence or wrongdoing of CITY or any of its agents or employees.

Provided CITY has paid CONTRACTOR all sums then earned by and payable to CONTRACTOR under this Contract (exclusive of any retention amounts properly withheld under the terms of this Contract), CONTRACTOR shall indemnify and hold CITY harmless from all suits, claims, damages, costs, expenses and fees (including attorneys' fees and litigation or mediation costs), actual or threatened, arising out of or related to any action actually filed or threatened by supplier or subcontractor, directly or indirectly, of CONTRACTOR, or by any agent or employee of any of them, stemming from any labor, materials or work furnished by that claimant for CONTRACTOR or any supplier or subcontractor, directly or indirectly, of CONTRACTOR.

CITY may investigate and, in CITY's sole discretion, reach a good faith settlement of each such cause of action, and in such event, the foregoing indemnity and hold harmless provisions shall extend to the settlement amount paid by the CITY to the claimant to settle the claim. Any amounts due or to become due CITY under this paragraph shall be automatically credited against any amounts otherwise to be paid to CONTRACTOR Revised December, 2022 under the contract documents. In the alternative to settling an actual or threatened claim directly with the claimant, CITY may issue a check payable jointly to the CONTRACTOR and the claimant for the amount determined by the CITY in good faith to be paid to settle the claim in which case the amount of the joint check shall be credited against the contract price.

CONTRACTOR also agrees to pay for any damages to the premises and equipment caused by use or negligence, excluding normal wear and tear of the premises or equipment.

CONTRACTOR agrees to notify the City of Fulton of any damages or hazardous conditions immediately, and to immediately discontinue use of the equipment or premises until the condition can be corrected.

City of Fulton Representative:_____Date:_____.

Contractor Representative: _____Date: _____.

CONTRACTOR/SUBCONTRACTOR CERTIFICATION
REGARDING AFFIRMATIVE ACTION

Project: _____

Job No. _____

Route: _____

County: _____

Certification Regarding Affirmative Action and Equal Opportunity: The Bidder (prospective prime contractor) or proposed subcontractor certifies:

1. Affirmative Action Program: That it has developed and has on file at each of its establishments affirmative action programs pursuant to 41 CFR Part 60-2.

2. Equal Opportunity Clause: That it has participated in a previous contract or subcontract subject to the equal opportunity clause set forth in 41 CFR Part 69-1.1 and executive order no. 11246.

3. Compliance Reports: That it has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs and his designate, or the Equal Employment Opportunity Commission, all reports due under the applicable filing requirements contained in 41 CFR part 60-1.

If the text of the certification above is incorrect, the bidder or subcontractor making the certification shall correct it below:

_____

_____

_____

Note: This certification applies to and must be executed by each bidder (prospective prime contractor) or proposed subcontractor if its proposed contract or subcontract on this project will equal or exceed $10,000 or that contractor or subcontractor has contracts or subcontracts on federally assisted projects in any 12-month period which have or can reasonably be expected to have, an aggregate total value exceeding $10,000 41CFR Part 60-1.5(a)(1). It is a duty and contract obligation of the prime contractor to ensure that each of its subcontractors, which meet this criterion, executes and submits to the commission this certification also.

Date: _____ _____
Company

By:_____

_____
Title

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That

_____

(Name of Contractor)

_____

(Address of Contractor)

a_____ hereinafter called

(Corporation, Partnership or Individual)

Principal, and _____

_____

(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the City of Fulton, City Hall, P.O. Box 130, Fulton, MO 65251, hereinafter called OWNER, in the penal sum of _____ Dollars, $(_____) in lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, successors, and assigns jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ____ day of _____, 2024, a copy of which is hereto attached and made apart hereof for the construction of the 2024 Sanitary Sewer Renewal Project.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guarantee period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunto or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS, WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the _____day of _____, 2024.

ATTEST:

_____ _____
Principal Secretary Principal

(SEAL)

By_____(s)

_____
(Address)

_____ _____
Witness as to Principal

_____
(Address)

_____ _____
Surety

ATTEST:

By_____
Attorney in Fact

_____
Witness to Surety

_____
(Address)

_____

_____ _____
(Address)

_____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where PROJECT is located.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That

_____

(Name of Contractor)

_____

(Address of Contractor)

a_____ hereinafter called (Corporation, Partnership or Individual)

Principal, and _____

(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the City of Fulton, City Hall, P.O. Box 130, Fulton, MO 65251, hereinafter called OWNER, in the penal sum of _____ Dollars, $(_____) in lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, successors, and assigns jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the ____day of_____, 2024, a copy of which is hereto attached and made apart hereof for the construction of the 2024 Sanitary Sewer Renewal Project.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all otherwise, then this obligation shall be void: otherwise to remain in full force and effect.

PROVIDED FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunto or the specifications accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice or any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED FURTHER, that no final settlement between the CITY and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS, WHEREOF, this instrument is executed in three (3) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2024.

ATTEST:

_____ _____
Principal Secretary Principal

(SEAL)

By_____(s)

_____
(Address)

_____ _____
Witness as to Principal

_____
(Address)

_____ _____
Surety

ATTEST:

By_____
Attorney in Fact

_____ _____
Witness to Surety (Address)

_____ _____
(Address)

_____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.
IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where PROJECT is located.

WORKER ELIGIBILITY REQUIREMENTS:

WORKER ELIGIBILITY REQUIREMENTS:

Execution of the construction contract for this project is dependent upon the awarded bidder providing an Affidavit of Compliance AND E-Verify Memorandum-of-Understanding (MOU) between the bidder and Department of Homeland Security to the Contracting Authority as required by section 285.530 RSMo. The cover page and signature page of the E-Verify MOU and the Affidavit must be submitted prior to award of this contract.

A sample Affidavit of Compliance can be found at the Missouri Attorney General's website at the following link:

https://ago.mo.gov/wp-content/uploads/affidavit_of_compliance-1.pdf

All bidders must also be enrolled in the E-Verify Program, and include their MOU prior to contract execution. Bidders who are not enrolled will need to go to the following website link and select "Enroll in the Program" to get started. After completing the program, they will receive their E-Verify MOU with Department of Homeland Security. This document will need to be printed out and kept on file so that a copy can be attached to the Affidavit of Compliance.

http://www.dhs.gov/files/programs/gc_1185221678150.shtm

This requirement also applies to subcontractors and contract labor, but this contract only requires submittal of the verification documents for the prime contractor. It is the prime contractor's responsibility to verify the worker eligibility of their subcontractors in order to protect their own company from liability as required by section 285.530 RSMo.

NOTICE TO PROCEED

To:_____

Date: _____

Project: COF 24-10

You are hereby notified to commence work in accordance with the Agreement dated _____, 2024, on or before, _____, 2024, and you are to complete the work within 35 calendar days thereafter.

The date of completion of all work is therefore_____, 202__.

_____
City of Fulton
City Engineer

ACCEPTANCE OF NOTICE TO PROCEED

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

_____ this the _____

day of _____, 2024.

By:_____

Title:_____

Job Special Provisions

PART 1 - PAYROLL RECORDS

PART 2 - CONTRACT DRAWINGS AND SPECIFICATIONS

PART 3 - CLEAN UP

PART 4 - DAMAGES TO OTHER UTILITIES

Example REQUEST FOR PAYMENT

CHANGE ORDER

RELEASE BY CLAIMANT

CONSTRUCTION SPECIFICATIONS

PART 1 - PAYROLL RECORDS

1.01 - Weekly payroll records shall be submitted to the City. These records shall be presented on payroll forms identifying each employee, with classification, social security number and mailing address. The form shall also indicate the hours worked each day, the hourly rate, itemized deductions, and total amount paid to employee. The above records shall be certified by payroll officer of contractor. Forms used shall be similar to payroll forms used on federal projects. No request for payment will be processed until payroll payments have been submitted.

1.02 - Not less than the prevailing hourly rate of wages specified shall be paid to all workman performing work under this contract. Should the prevailing rate not be equal or exceed, the Contractor shall pay the difference between the rate paid and the stipulated rate to the workman immediately. The Contractor shall also be liable for any penalties assessed by the State of Missouri. All contractor's bonds shall include such provisions as will guarantee the faithful performance of the prevailing hourly wage clause as provided by the contract.

PART 2 - CONTRACT DRAWINGS AND SPECIFICATIONS

2.01 - The Contractor will receive (3) three sets of the contract drawings and specifications at the time of the issuance of the "Notice to Proceed". The Contractor shall maintain at the site, one (1) copy of all Drawings, Specifications, Addenda, Approved Shop Drawings, Change Orders and other Modifications, in good order and marked to record all changes made during construction. These shall be available at all times to the Owner and/or Engineer.

PART 3 - CLEAN-UP

3.01 - All excavation areas shall be backfilled to original grade as near as possible, and all rubble and debris that is not suitable for backfill (rock, tile, old pipe, etc.) hauled off and disposed of.

3.02 - All excavation in lawn areas shall be backfilled and allowed to settle. After the area has had adequate time to settle the area will be filled with good black dirt, seeded, mulched and left smooth.

3.03 - Street Repair

A. All excavations in the paved street areas shall be repaired by the contractor according to MoDOT guidelines. All work in and along streets shall conform to MoDOT guidelines and specifications and have appropriate warning signs and any excavation or mound of dirt, rock, etc., shall be marked with flares or blinking lights along with barricades at all times.

B. The Contractor shall be responsible for notification of MoDOT and emergency response agencies (police, fire department, ambulance, etc.) of any and all street closings or traffic disruptions of any kind.

PART 4 - DAMAGE TO OTHER UTILITIES

4.01 - Contractor is responsible for the notification of all utility companies prior to excavation. The Contractor is responsible for the repairing of any damage to all other utilities; including but not limited to, water, gas, sanitary sewer, storm sewers and telephone cables.
Missouri One Call System, Inc. 1-800-344-7483

CONTRACTOR'S APPLICATION FOR PAYMENT (Example)

2024 City of Fulton I-70 Natural Gas Bore

To: City of Fulton
P.O. Box 130
Fulton, MO 65251

Application No.:
Period To:
Date:
Project No.: COF 24-10

From:

CHANGE ORDERS			
Previous Change Orders			
No.	Date	Additions	Deductions
Change Orders This Pay Request			
TOTALS:			
NET CHANGE ORDERS:			

1. Original Contract Sum	
2. Net Change Orders (+)(-)	
3. Contract Sum to Date	
4. TOTAL COMPLETED	
5. 10% Retainage	
6. Total earned less Retainage (line 4 less line 5)	
7. Less Previous Certificates for Payment (line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE:	
9. Balance to finish, plus Retainage (line 3 less line 6)	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief that the Work covered by this Application for Payment has been completed in accordance with Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner and that current payment shown herein is now due.

BY: DATE:

OWNERS CERTIFICATE AMOUNT CERTIFIED

$

(Attach explanation if amount certified differs from the amount applied for.)

OWNER:

By: Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER

Order No.: _____

Date: _____

Agreement Date: _____

NAME OF PROJECT: 2024 City of Fulton I-70 Natural Gas Bore - COF 24-10

OWNER: City of Fulton

CONTRACTOR: _____

The following changes are hereby made to the Contract Documents: _____

_____

CHANGE TO CONTRACT PRICE:
Original Contract Price

$ _____

Current Contract Price adjusted by previous Change Order

$ _____

The Contract Price due to this Change Order will be (increased) by

$ _____

The new Contract Price including this Change Order will be

$ _____

CHANGE TO CONTRACT TIME:
The Contract Time will be (increased) by _____ calendar days.
The date for completion of all work will be _____.

APPROVALS REQUIRED:
To be effective this Order must be approved by the Federal agency if it changes the scope or objective of the PROJECT, or as may otherwise be required by the SUPPLEMENTAL GENERAL CONDITIONS.

Owner: _____

Engineer: _____

Contractor: _____

RELEASE BY CLAIMANTS

The undersigned, having received payment in full for all labor, materials, supplies, or equipment supplied to the City of Fulton, Contractor, or to any subcontractor, in the construction or repair of the improvements upon the property located at:

_____

_____

,and furnished in the execution and fulfillment of contract between said Contractor and

_____, Owner, dated _____, do (does) hereby release and waive any and all claims, liens, and lien rights, of any kind, nature, or description whatsoever, against said property and the Owner thereof, and against said Contractor.

Lien or Claimant	Work or Materials	Amount	Date

Construction Specifications

City of Fulton

Part I – Commercial Documents: Bidding documents, agreement, contract forms, and sample project forms based upon EJCDC documents.

Part II – Technical Documents: Scope of Work and Construction Specifications for the Work to be performed.

Part III – Appendices: Project specific reports, permits, etc.

Part IV – Contract Drawings: Engineering plans and details.

Part V – Other Documents and References: City references applicable to the Work to be performed.

100-01 DESCRIPTION OF WORK

This pipeline construction project involves boring an 8-inch steel pipeline under Interstate 70 in Callaway County, Missouri near mile marker 124. The new pipe will be offset from the existing, in-service pipe by approximately eight (8) to twelve (12) feet. The new bore will be deeper than the existing casing and is approximately 500 feet long. Two (2) valves will be installed on each side. The pipe will be pressure tested, purged, tapped, and tied in. The tie in point on the north side of I-70 is approximately 15 feet north of the existing valve. The south tie in point on the south side of I-70 is approximately 40 feet south past the pipeline marker with the intent to remove an original buried flange. The existing casing and carrier pipe will be abandoned with steel plate welded on the ends of the carrier pipe.

100-02 BID ITEMS

This Project is being bid with lump sum items. All work depicted in the Contract Documents is included in the items listed below with the exception of items that are explicitly excluded. Any work that is incidental to an item or the general work of the contract which is not specifically described or included in the lump sum item, but which is required for performance and completion of the work required under the Contract, is also included. A schedule of values is required including estimated manhours for each schedule line item and cost.

Bid Item 1 Mobilization and Project Site Controls
Lump sum price to mobilize all labor, equipment and materials to construction site. Includes project scheduling and obtaining permits.

Scope of Bid Item:
1. Performance Insurance bond premiums.
2. Builder's Risk Insurance bond premiums.
3. Crew, materials, and equipment mobilization.
4. Site preparation, tree clearing, grading, and top soil excavation and stockpiling.
5. Provide, install, and maintain construction entrances, construction and temporary fencing, gates, and matting over existing pipeline.
6. Provide, install, and maintain traffic control, including warning signage, barriers, flaggers, etc., in accordance with local, state, and federal regulations and requirements as required during project.
7. Provide sanitation facilities, both sides.

Bid Item 2 Erosion & Sedimentation Controls
Lump sum bid price to provide all erosion and sedimentation controls.

Scope of Bid Item:
1. Provide, install, maintain, inspect, and repair all soil and erosion control measures per MO-DNR best management practices to maintain compliance with MO-DNR SWPPP.
2. Restore all right-of-way and temporary workspace with perennial turf grasses disturbed by construction activity. This includes sod, seeding and straw placement, fertilizing, mulching and watering.
3. For cultivated farmland, top soil will be removed and stock piled, then reapplied when finished. Additional top soil may be required.

4. Remove all erosion and sedimentation control measures, as directed at completion of job.

Bid Item 3 and 4 Pipeline HDD, Approximately 500 feet with necessary valves, fittings and tie in pipe
Lump sum price to install 8-inch pipeline by HDD and necessary valves. Tie in locations may require trench box, sheet pile, or other shoring methods. Nitrogen pressure test with 8 hour chart per City approved test plan. Pipe trench back may be required and is to be included in pricing.

Scope of Bid Item:
1. Excavate and expose existing pipeline. All excavation work including necessary dewatering and/or other water control measures and all sheeting and/or shoring systems required. Includes installation of temporary pipe supports.
2. Unloading, hauling, stringing, welding, coating after passing X-ray, lowering in and using rollers and lifting rollers/cradles during HDD installation.
3. Manage HDD process and/or subcontractor. Provide HDD plan for City approval. Provide necessary equipment for HDD installation. Provide drilled pilot hole profile to confirm bend radius by taking depth and location measurements during drill and drill rod change out.
4. Install two (2) 8-inch valves and two 2-inch blow offs. Use 45s as necessary for valve stem extension height installation relative to existing pipeline. Install pipe bollards and pipe fencing on south side. Install necessary cathodic protection wires and test stations and pipeline markers. Repair the rectifier and anode bed as required if disturbed by construction activity.
5. Perform 8 hour nitrogen pressure test, provide testing plan for City approval. When complete provide necessary material and equipment to run deformation plate, wire brush pigs, and foam pigs until ¼ inch penetration.
6. Backfilling and compaction of the pipeline trench.
7. Installation of pipeline signs and markers.

Bid Item 5 TDW Hot Tap Two 8-Inch Spherical Tees, Tapping and Purging
Lump sum price to install two (2) spherical tees, subcontract labor, tapping assistance and purging.

Scope of Bid Item:
1. Excavation work as necessary to prepare the work area around the line ends. Includes all excavation work including necessary dewatering and/or water control measures and all sheeting and/or shoring systems required.
2. Install spherical tees and Shortt Stops as required and shown on plans. Perform NDE on spherical tees and Shortt Stops. Nitrogen test for the spherical tee at 100 psig for two hours, provide chart.
3. Assist sub contractor with tapping and machine placement and setup and schedule coordination.
4. Purge new line.
5. Stopple and isolate both ends and vent old pipe. Cut out a five foot length on each side, minimum. Install weld caps and X-Ray. Install steel plate on old pipe. The carrier and casing are to remain in place. Install three CP wires on each end of abandoned pipe and land in test station and install three CP wires on the new pipe and land in test station.
6. Backfilling and compaction of the pipeline trench.
7. Note: MODOT may require grouting of carrier pipe, TDB

Bid Item 6 Photographic Documentation, MTRs and Weekly Reporting
Lump sum price to provide photographic documentation of existing conditions, work progress, Material Test Reports, Heat Sheets, and project completion. Provide weekly reporting and percentage of work break down of completion. Provide copies of all worker OQs prior to performing work, provide calibration sheets for all equipment and original pressure test charts, confirm Contractor's DOT pipeline Drug Program compliance.

Bid Item 7 Demobilization from Site and Cleanup
Lump sum price to demobilize all labor, equipment and materials off construction site upon project completion. Also includes top soil reuse, site cleanup, restoration, seeding, and additional top soil.

Scope of Bid Item:
1. Provide final cleanup of ROW and workspaces, including debris removal.
2. Restore residential access drive, landscaping beds, fencing, and all other impacted residential features as specified on the plans.
3. Crew, materials, and equipment demobilization.

Bid Item 8 Major Pipe Material

See material list

Alternate Bid Item 9 Open Cut Rock Excavation

If rock is required to be excavated, provide the necessary equipment to excavate the rock to the required depth with out delay to the project.

103-01 GENERAL REQUIREMENTS

The Contractor shall observe and comply with the following requirements as well as any additional requirements of which he is properly advised by City:

1. Contractor shall maintain and adhere to a written safety program or policy, the objective of which is to safeguard Contractor, City, and other personnel, equipment, property, and the environment. Information pertinent to the application of this policy or program shall be made available to City upon request.

2. Contractor shall observe the City's safety requirements and the provisions and requirements of applicable safety and environmental statutes, regulations, and directives of governmental agencies or authorities at the federal, state, and local level. The Contractor shall ensure that Contractor's employees are properly trained to perform their duties and to comply with any and all regulatory required training including operator qualifications and welding qualifications. Documentation or certification of such training shall be provided to the City.

3. Give proper notice to "one call" excavation notice centers or directly to utilities not served by a center and observe the construction restrictions and requirements imposed by any railroad, telephone company, power company, or other public utility whose property or right-of-way is affected by construction activities, including verification required before excavation or blasting.

4. Furnish all foremen and those with safety responsibilities the City contact names, addresses, and phone numbers per the City's Operation and Maintenance Manual and the City's Emergency Procedures and all related emergency numbers for the area in which construction activities will take place.

5. Contractor shall report to City any accident or incident associated with construction activities.

6. If there is evidence of a leak in the area, Contractor shall immediately stop all construction activity and follow City's Pipeline Emergency Procedures. Contractor shall place all safety precautions outlined by City into effect.

7. Contractor shall instruct all employees to refer all public requests for information about construction activities or events to City.

8. Contractor shall exercise every reasonable precaution to safeguard and prevent damage to City equipment, pipeline(s), and related facilities.

9. Contractor shall not perform ripping, blasting, or boring in close proximity to existing pipelines or other buried facilities unless authorized by City and City provides direct oversight.

10. Locate existing pipeline(s) and buried facilities before performing any work of any nature including, but not limited to, excavating, re-excavating, drilling, or digging post holes for fence repair. The existing 8-inch pipeline will be exposed to positively determine it's location.

11. Contractor shall not operate any equipment over existing pipelines or buried facilities without adequate padding, matting or other provisions to prevent damage to same. The new pull string will be fabricated near the existing, in-service pipeline.

12. Contractor shall not burn brush near existing pipelines or buried facilities or where grading or trenching work is in progress.

13. Contractor shall not use mechanical equipment when excavating within two feet of the existing pipeline or buried facilities. Contractor shall use hand digging or hydrovac for excavation within two feet of the existing pipeline or buried facilities.

14. Contractor shall not operate any swinging, rotating, or reciprocating equipment over or immediately adjacent to individuals, exposed pipelines, or other facilities.

15. Contractor shall protect pipeline vents, markers, test leads, and all other fittings attached to existing pipelines and buried facilities.

16. Contractor shall not place spoil material on brush, vent pipes, markers, or other pipeline appurtenances when trenching.

17. Contractor shall not excavate below the bottom elevation of an existing pipeline where such action would cause sloughing, caving, or undermine the support of the pipeline.

18. Contractor shall not use arc producing apparatus in the immediate vicinity of existing casing vents or test points, nor shall the Contractor make spark producing electrical connections in the immediate vicinity of existing casing vents or test points. If necessary, hazardous area gas monitoring will be conducted prior to such work.

19. Contractor shall determine depth of existing pipelines and buried facilities before cleanup, grading, and terracing work are performed.

20. Contractor shall notify the City immediately when it is known, believed to known, or suspected that damage has occurred to an existing pipeline or other facility.

21. Contractor shall be responsible for damages to the existing pipeline or facilities.

22. Contractor shall work with third party inspection, survey and NDE testing (non-destructive examination) testing companies.

103-02 CONTRACTOR ON SITE DOCUMENTS

The Contractor shall assemble and maintain a set of documents in binder(s) or book(s) such that the information is readily available to all workers assigned to those projects.

103-02-01 CONTRACTOR INJURY NOTIFICATIONS AND PROCEDURES

REQUIRED DOCUMENTS

1. Personal Injury Plan which includes the following:
    a. Emergency # 911
    b. The Site Address and GPS Coordinates
    c. Nearest Hospital and Occupational Health Clinic

2. Pipeline Emergency Notification Plan which includes the following:
    a. City's Dispatch Phone Number
    b. Specific Details to provide to City Dispatcher
    c. Secondary & Final Notifications - Names & Phone Numbers
3. Abnormal Operating Conditions Response which includes the following:
    a. Site location
    b. Pipeline Number & Milepost Number
    c. North or South of Interstate 70
    d. 1st, 2nd, 3rd, & Final Notifications - Names & Phone Numbers
4. Stop Work Authority Policy
5. Job Safety Analyses
6. Site Map: Shows the current locations of the following:
    a. Evacuation Routes & Assembly Points
    b. Fire Extinguishers, First Aid Kits, & Spill Kits

c. Site Access & Approved Parking Areas
d. Environmentally Sensitive Areas (off limits)

7. Excavation Evacuation Plan. Update as required with progression of work.
8. Work Permits & Visitor Logs (City & Contractor)
9. Life Safety Rules
10. Safety Data Sheets
11. Any required Labor Law postings and OSHA postings.

104-01 EVIRONMENTAL PROTECTION

Contractor shall comply with all federal, state, and local regulations which are applicable to construction activity and which have as their purpose the protection of the environment. Contractor shall familiarize all persons under his direction with said regulations.

The Contractor shall observe and comply with this specification as well as any additional requirements of which he is properly advised by City.
Contractor shall observe the City's environmental requirements and the provisions and requirements of applicable environmental statutes, regulations, and directives of governmental agencies or authorities at the federal, state, and local level. Ensure that Contractor's employees are properly trained to perform their duties and to comply with any and all regulatory required training. Documentation or certification of such training shall be made available upon request by City.

Contractor shall install necessary silt fencing, wattles, hay bales for compliance with Storm Water Pollution Protection Plan (SWPPP).

Furnish all foremen and those with environmental responsibilities the City's contact names, addresses, and phone numbers per the City's Abnormal Conditions and Pipeline Emergency Procedures.

Contractor shall refer all public requests for information about construction activities or events to City.

Activities involving fuels, lubricants, and chemicals such as vehicle refueling and equipment maintenance, equipment refueling, including the draining and pumping of lubricants, shall be conducted in a manner to eliminate contamination in case of a spill. Contractor shall immediately clean up any spilled fuels, lubricants, or chemicals to the satisfaction of the City.

Contractor shall transport all waste such as oil, grease, thinner, chemicals, and similar refuse or discarded hazardous materials to an appropriate disposal site in accordance with applicable environmental regulations and as approved by the City.

In wetland areas, Contractor shall not block or impede the normal expected high flows or cause the relocation of the water course in the area in which he is working. Any temporary fills of trench spoils piled in the wetlands shall be removed.

General litter such as empty cans, bottles, and paper containers shall not be buried in the pipeline ditch nor left on the right-of-way. Sanitation and trash collection facilities shall be provided and waste shall be collected and transported to an approved disposal site. The area shall be checked daily for construction litter.

During excavation activities, the Contractor will perform monitoring of the work area. If petroleum impacted soils, including significant odor, staining or free product, are encountered during trenching (i.e., hydrovac, mechanical, manual) digging will cease and the City will be contacted immediately using City's Pipeline Emergency Notification plan.

The work area will be assessed and evaluated to determine the extent of the impacts and if additional soil samples are required. Analytical data may be needed to determine if the soils will need to be profiled and sent to a City approved landfill for disposal. Trenching will not be able to resume through the area of impacts until the City has determined the extent of impacts, how the soils will be handled and where the soils can be moved.

There is a State of Missouri Conservation Area south of Interstate 70, west of the road. This area is marked "No Access". The Contractor shall instruct crews not to enter this area or park or use machinery in this area.

Contractor shall designate an employee to be responsible for the installation (if required), regular inspection, and maintenance of erosion control measures in accordance with the Contract Documents. Additional requirements may be imposed by the State, County, or City.

105-01 PIPELINE MARKERS

Contractor shall install pipeline marker posts and signs as shown on the construction plans to mark the location of pipeline(s) at public road crossings, railroad crossings, water crossings, and fences that restrict the visibility of upstream or downstream pipeline markers, and pipeline horizontal routing angles known as points of intersection or "PIs".

Also, such markers may be required to mark the location of cathodic protection rectifier connection cables.

Contractor shall confirm the depth of the pipeline before installing the marker to protect the pipe and coating. Pipeline markers shall be installed plumb and with the face of the sign perpendicular to the long axis of the pipeline(s).

City may direct Contractor to adjust the locations of pipeline marker post and signs that are shown on the construction plans or to install additional pipeline marker posts and signs, in order to meet City's interpretation of the requirements of the Code of Federal Regulations, Title 49, Part 192, Section 707, titled "Line markers for mains and transmission lines."

105-03 CITY SIGNS AND PIPELINE MARKERS, GENERAL

Contractor shall be aware that some pipeline markers may serve dual purposes such as location identification of the pipeline, casing vents, and for housing cathodic protection test leads.

Contractor shall install on pavement special marker warning signs used to mark pipeline(s) located under paved areas as shown on the construction plans.

Contractor shall install aerial pipeline marker posts and signs as shown on the construction plans. These aerial pipeline markers are used for aerial patrol of the pipeline(s).

105-04 PERMANENT MARKING MATERIALS, EQUIPMENT, AND INSTALLATION

The following equipment is necessary to perform permanent marker installation*:*

a. Marker signs
b. Marker posts
c. Tape measure
d. Tools necessary to set a marker post, replace a sign, etc.

Determine the approximate location where the marker will be placed. Locate the pipeline and verify pipeline depth is greater than 3 feet. If the pipeline depth of cover is less than 3 feet do not install pipeline marker and notify the City. If the pipeline depth is greater than 3 feet, select the appropriate marker post. Measure pipeline marker post and place a mark 30 inches from the bottom of the marker post. Install marker over centerline of the pipeline such that the mark on the post is even with or above the ROW surface. Install the marker face plate perpendicular to the path of the pipeline.

106-01 SCHEDULE WITH WORK BREAKDOWN

The Contractor shall prepare and submit, for the Engineer's review and acceptance, a Critical Path Method (CPM) project initial schedule to communicate the Contractor's intentions and proposed plan to accomplish the Work in accordance with requirements of the Contract.

Contractor shall complete and submit for review by the City, a weekly progress report with percentages based on effort completed in the prior week.

106-02 SUBMITTALS

Initial Schedule Submittals

1. Initial Project Schedule: The initial schedule shall depict the sequence in which the Contractor proposes to perform the Work and the dates on which the Contractor contemplates starting and completing all schedule activities required to complete the project. It shall also include, as applicable, any milestones, work or coordination to be performed by sub-contractors or the City.
2. Include submittal schedule along with material lead times and initial coordination with TDW.

3. Initial Project Schedule Narrative: The initial project narrative shall describe the Contractor's detailed work plan of completing the work.

Revised Schedule Submittals

1. Revised Project Schedule: When the current project progress or work plan deviates significantly from the initial project schedule. The Contractor shall submit to the City for review and acceptance a revised project schedule to represent the Contractor's revised plan to complete the remaining work. A revised schedule will be required when:

    a. The Contractor proposes a different approach to his/her work plan that significantly impacts the Initial Project Schedule or Contractor's current work plan deviates significantly from the Initial Project Schedule.

    b. When an activity duration varies by more than 10 percent of original forecast or the substantial completion or final completion dates vary by more than one day.

    c. The City determines that progress of the Work is trending towards unsatisfactory which deviates the substantial completion date significantly from the Initial Project Schedule. In such cases, the City will request a meeting with the Contractor to discuss the progress deficiency to determine the appropriate corrective action as required.

If the Contractor does not provide a revised progress schedule or does not comply with the above revised schedule submittal requirements, there will be a job site stand-down until the revised progress schedule is submitted by Contractor for review and acceptance by City.

Progress Report

1. Weekly Progress Summary
    a. Progress report shall include or comply with the following requirements:
        i. The Contractor shall submit progress report on the first business day of the week for weeks between mobilization and the final completion date.
        ii. Progress report shall be submitted to City via e-mail and shall remain in native file format.
        iii. Contractor shall complete and submit a weekly progress report regardless of work progressed in the prior week, i.e., weather-related delay, non-weather-related delay, standby time, etc.

106-03 DETAILED REQUIREMENTS FOR SCHEDULE SUBMISSIONS

Schedule submissions shall include or comply with following requirements:

1. Work Breakdown Structure (WBS): The schedules shall be organized using a multi-level hierarchical Work Breakdown Structure (WBS). The Contractor shall define a project WBS to allow for a hierarchical organization and breakdown of the Work based on the Contractor's approach and in accordance with the phasing/sequence of construction.

2. Level of Detail: The Contractor shall develop the schedules to an appropriate level of details that allows for the formation of reasonable critical path. The schedule shall show as applicable, Contractor milestones and other key milestones for significant project events such as mobilization, tie-in and substantial completion.

3. Holiday and Weather days: The Contractor shall incorporate the pre-approved standard non-working days in the initial schedule submittal. All subsequent schedules (revised progress schedules, recovery schedules, time extensions, etc.) shall continue to incorporate the pre-approved standard non-working days. Based on the project

geographic location, anticipated adverse weather days shall also be included into the project calendar(s) or into each individual activity. Delays caused by weather are not the basis of a Change Order.

106-04 CHANGE ORDERS

Upon approval of a time related Change Order, or upon receipt by the Contractor of authorization to proceed with additional work, the change shall be reflected in the next submittal of schedule. The Contractor shall show the changed work in the schedule and its impact on other activities.

106-05 RECOVERY SCHEDULE

If the Schedule Update shows a substantial completion date seven (7) calendar days beyond the Contract Substantial Completion date, or a delay of individual milestone completion dates, the Contractor shall within three (3) calendar days, submit to the City the proposed revisions to recover the lost time. As part of this submittal, the Contractor shall provide a written narrative for each revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.

106-06 TIME EXTENSIONS & MITIGATION PLAN

The Contractor is responsible for requesting time extensions for impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Where an event for which either the Contractor or the City is responsible impacts the projected Substantial Completion date, the Contractor shall provide a written mitigation plan, including a Revised Schedule, which explains how (e.g. adjust crew, reasonable overtime, etc.) the impact can be mitigated. The Contractor shall submit its mitigation plan to the City within five (5) calendar days from the date of discovery of such impact.

108-01 SITE SAFETY AND TRAFFIC

Contractor shall take all reasonable precautions during construction to protect public safety, property owners, and the property of others. This includes providing suitable barricading, lighting at night, signage, and flag persons to direct traffic through the disruption area and during periods of reduced visibility.

The Contractor shall plan and perform the Work in such a manner and sequence as will cause as little interference as is practical with vehicular, railroad, pedestrian, and other traffic. The Contractor shall cooperate with any utilities involved in or affected by the project operations.

Contractor shall be responsible to obtain the required traffic permits where normal traffic patterns are to be interrupted on roads and highways due to the Work.

The Contractor shall have the traffic control plans and related permits onsite at all times. All traffic control devices, closures, and plans shall conform to the Manual of Uniform Traffic Control Devices (MUTCD) and local, county, and state standards. All flag person(s) must be properly certified.

A sequence of operations plan detailing lane closures, barriers, traffic signal modifications, and flaggers must be submitted to the City and approved prior to the start of construction.

The Contractor shall give the City seven (7) days' advance written notice of any proposed changes in project activities that will alter vehicular traffic patterns, causing lane shirts, detours, temporary closure of a lane or any other alteration of existing traffic patterns affecting usage by the traveling public.

Where possible, all excavations are to occur outside the paved sections of the roadway. Unprotected excavations within 4 feet of a traveled way shall be either backfilled to grade or completely covered with steel plates at the end of each work day or in a way that is in compliance with applicable regulations. Other protection methods must be approved by the City before use.

If the normal pedestrian pathways are encumbered by the Work, the Contractor shall provide an alternate route. Pedestrian pathways adjacent to the project area shall be clearly marked and maintained.

109-01 FIELD OFFICE DESCRIPTION

The Contractor may install a temporary job trailer or mobile office, but is not required. If a temporary field office is established, the Contractor is responsible for permits, security, maintenance, and insurance. Any costs with a field office are to be included in the bid. Ownership and liability of the office quarters shall remain with the Contractor. Contractor is responsible for: tie-downs, skirting, leveling, lavatory facilities, parking, electrical, and first aid kit.

110-01 EXTENDED LEAVE

Extended leave shall be defined as a period when the Contractor and all associated construction management will be absent from the site for a period of 4 days or more. Examples include holiday breaks, contractor shutdown due to owner request, issues in the field, direction by agencies or emergency situations. Contractor is responsible for planning and executing the temporary shutdown of the jobsite. Contractor shall coordinate with City for any unforeseen extended leave.

Contractor shall submit a written plan and obtain approval a minimum of 1 week prior to a scheduled extended leave.

Contractor representative performing inspections during extended leave periods shall provide a written summary of the inspection and submit to City with a minimum of two photographs of the site conditions after each inspection.

The Contractor extended leave plan shall address, at a minimum, the following:

- Use of barriers for open excavation protection (orange safety fencing, concrete barriers, temporary chain link fencing, Type III traffic barricades, etc.)
- Pipeline support
- Equipment idling or demobilization procedures
- All material storage locations in accordance with manufacturer's recommendations
- Job trailer security
- Any required running pumps, generators, or any other operating mechanical equipment without prior approval by City shall be continuously manned.
- Communication plan between Contractor and City during leave.

201-01 CLEARING, GRUBBING, AND GRADING OF RIGHT OF WAY, GENERAL

The Contractor shall clear and grade right-of-way and associated temporary work space as shown on the Contract Documents. City will provide permanent right-of-way and temporary work space as indicated on the construction drawings for the Contractor's use.

Grading and clearing of the right-of-way shall be performed in such a manner as will minimize interference with existing natural drainage. Where terracing or diversion dams are cut, they will be left open for a minimum amount of time and will be completely restored to their original state before completion of construction. All grading will be finished to maintain the original drainage of water flow conditions as nearly as practical and will conform to the requirements of authorities having jurisdiction.

The depth of the pipeline(s) after right-of-way cleanup and final grading in a typical cut and cover installation shall not exceed ten (10) feet unless approved by City, excluding the HDD.

Contractor shall be responsible for any damages outside of right-of-way and temporary workspace limits.

The Contractor shall perform all grading at road, river, stream, gully crossings, and other locations that is necessary to permit the passage of Contractor and City equipment, cars, and trucks. All environmental controls will be installed as necessary to maintain SWPPP compliance.

Only that amount of right-of-way necessary for actual trenching and laying of pipe shall be used and work shall be performed in such a manner as to minimize damage.

201-02 GRUBBING

Tree stumps within five (5) feet of the centerline of the pipeline(s) shall be uprooted and removed by the Contractor. All uprooted tree stumps must be removed from the right-of-way and disposed of to the satisfaction of City and in accordance with any special right-of-way provisions and applicable laws and regulations.

Tree stumps located further than five (5) feet from the centerline of the pipeline(s) and within City right-of-way shall be cut flush with the ground. Mechanical shredding of limbs and undergrowth is allowable and shredded material may be spread over the right-of-way.

201-04 TIMBER

The Contractor is responsible for the removal and proper disposal of all timber. During work, cut timber shall be cut, de-limbed, and stacked in a manner to facilitate construction and the safe movement of people and equipment. Timber must not be pushed off the right-of-way.

201-05 BURNING ON RIGHT OF WAY

No burning is permitted on the pipeline right-of-way.

201-06 FINAL ROW CLEANUP AND GRADING

Contractor shall clean up, smooth, and final grade right-of-way immediately following backfill operations by relocating all surplus and defective materials to places designated by City and disposing of all construction waste and general refuse.

All rock along the right-of-way shall be disposed of so as not to cause damage to property of City or others including landowners and farming operations.

On all land subject to cultivation, the entire right-of-way shall be plowed to a depth of 10 inches using a chisel plow. On pastureland, the entire right-of-way shall be disked.

For waterway crossings, the Contractor shall restore the streambed to preconstruction conditions. The final determination that there have been no changes in the bottom contours of river will be made by the City and/or the permitting agency, whose decision in the matter shall be binding on the Contractor, and any work required by the Contractor to fulfill this requirement shall be at the Contractor’s expense.

Contractor shall be responsible for all final grading work performed immediately before and during adverse weather or when adverse ground conditions prevail. Contractor assumes full risk of acceptance of the work and may be required by City to repeat such final grading at the Contractor's expense in order to comply with this Specification.

202-01 ENVIRONMENTAL AND EROSION CONTROL

The Contractor shall provide, install, maintain and remove all erosion and sedimentation control measures as detailed in the Contract Documents and called out in the SWPPP, Storm Water Pollution and Prevention Plan. Contractor shall remove erosion and sedimentation control devices after final stabilization and at the end of the project.

City will be responsible for ensuring proper interpretation and enforcement of the erosion and sediment control plan so as to minimize the disturbed area and the duration of exposure to erosion elements. MODNR Best Practices will be followed as well as industry standard state practices. The Mississippi plan is included as a guide.

Contractor shall conduct site inspections after every ½ inch rain event within 24 hours to document compliance with SWPPP including silt fencing or other environmental controls. Contractor shall conduct site inspections every 7 days to document compliance with SWPPP including silt fencing or other environmental controls.

Foreman or on-site safety representative level or higher shall conduct the inspection, and the City inspection representative will also document SWPPP compliance. If modifications are required after inspection, Contractor shall coordinate with City for immediate action plan. City shall be notified immediately by Contractor of any breach of security, theft, or vandalism.

Prior to forecasted hurricane and flooding conditions, Contractor shall coordinate with City develop and execute an action plan.

202-03 EROSION AND SEDIMENTATION CONTROL, GENERAL

Contractor shall ensure that soil disturbances are minimized and confined to the work limits indicated on drawings and in the specifications by limiting the grading activity as much as possible, restricting the amount of open trench, backfilling as soon as practical, and installing soil erosion control measures as applicable. These measures will be installed as early in the construction period as possible, and Contractor shall supplement, protect, and repair these installations as required to keep them functional during construction.

Contractor shall stabilize all construction site entrance and exit roadways used by Contractor and/or City to reduce the tracking of sediment, debris, and rock onto public roadways by all vehicles and equipment leaving the site. Contractor shall continuously monitor the condition of public roadways adjacent to all construction site entrance and exit point. Contractor shall consider the following as best management practices:

- Limit the number of entrance/exit points to the construction site
- Designate combination or single purpose points for entrance only or exit only.
- Limit the speed of vehicles
- Properly grade each construction entrance/exit to prevent runoff leaving construction site
- Route runoff from stabilized entrances/exits through sediment trapping device(s) before allowing discharge
- Design stabilized entrances/exits to support heavier vehicles and equipment
- Select stabilization methods based on longevity, performance, and other site conditions.
- Have the appropriate equipment on site to clean and clear roads of construction dirt and mud clods daily.

Contractor shall maintain and inspect stabilized entrances and exits routinely for damage and repair as needed. Contractor shall clear sediment traps when clogged. Contractor shall remove stabilized entrances and exits prior to final grading.

Contractor shall construct and maintain trench breakers/plugs in trenches located on hillsides or slopes to prevent the loss of soil materials from the bottom of the trench by "washing." Contractor shall provide trench breakers as specified in the construction plans and as requested by City. Each trench breaker shall be constructed as shown on the construction plans and/or as directed by the City.

Dewatering activities shall utilize filter sock or similar approved sediment removal device before ground surface discharge.

Contractor shall open all natural watercourses disturbed by construction. When directed by City, Contractor shall construct furrows and terraces across the pipeline trench to divert the flow of water away from the backfilled trench and into natural drainage courses.

Contractor shall at his own expense repair damage to levees, roadways, lands, private driveways, parking lots and farm terraces caused by settling or washing along right-of-way up to and including date of acceptance by City of work included herein.

202-04 EROSION AND SEDIMENTATION CONTROLS, TURF ESTABLISHMENT

Contractor shall provide accepted and established perennial turf grasses by supplying and placing fertilizer, seed, and mulch in all soil disturbed areas on the right-of-way or elsewhere on adjacent properties. Contractor shall provide sod where designated on Contract Drawings. Contractor shall water seeded areas.

Soil disturbed areas include, but are not limited to, slopes, embankments, lawns, and roadway sides. Soil areas shall be loosened to a depth of not less than 5-inches and receptive for seeding by breaking clods and working the top 2-inches to 3-inches of soil into an acceptable seedbed by disking, using soil pulverizers, or other approved methods.

Contractor shall keep all equipment, vehicles, and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young vegetation. Where such compaction has occurred, the Contractor shall rework the soil to make a suitable seedbed; then re-seed and mulch such areas.

Contractor shall not seed when soil is frozen, extremely wet, or in a condition unsuitable for acceptable seed and perennial grass growth.

For disturbed soil areas to be considered permanently stabilized, the disturbed area must be free from sizable thin or bare spots with 80-percent or greater perennial grass coverage and with a density capable of resisting accelerated erosion and sedimentation. Seeding and mulching alone is not considered permanent stabilization.

Contractor shall keep all seeded areas free from weeds and debris. Clean-up shall include, but not limited to, the removal of all debris from the turf establishment operations.

203-01 EXCAVATION WORK

This procedure describes the controls and methods used when performing excavation activities by hand or with mechanical excavation equipment to support project tasks on existing pipelines or facilities. Additional requirements will be required for excavations greater than twenty feet in depth or those under or adjacent to pipelines, buildings, retaining walls, sidewalks or pavement.

203-02 QUALITY ASSURANCE

Contractor is responsible for compliance with all state, federal, local government, local utility, and one-call system notifications prior to excavation. These notifications may be required even though right-of-way easements have been obtained prior to construction. The notification must be within the time limitations as specified in any of the preceding regulations or practices.

There must be a Competent Person under OSHA's Excavation Standard, 29 CFR 1926.650 – 652, or under local rules and regulations if they are more stringent than the OSHA Standard. It is required that the Excavating Contractor supplies the Competent Person for the excavation activities. The Competent Person shall have necessary training and experience.

The Competent Person is responsible for developing the Site-Specific Excavation Plan with input from Excavation Operator. If more than 10 linear feet of soil is removed from under the pipeline, than additional pipe stabilization will be required and documented in the Site-Specific Excavation Plan.

A project specific plan and site drawing must be prepared and maintained by the Contractor detailing excavation evacuation routes and assembly points. This information shall be maintained and reviewed daily with all personnel on site. If third party soil testing is not performed, the most conservative soil classification shall be used and sloped accordingly.

Contractor shall submit to City a daily Site-Specific Excavation Plan and review with participating individuals. Additional revisions and submittals are required of this document if Work conditions change.

Contractor's Competent Person shall sign and submit an Excavation Soil Testing Form. If no testing is performed to classify the soil, then the most conservative grading and sloping is to be used.

203-04 EXCAVATION PLANNING

The following planning activities shall occur before excavation activities may begin:

1. Duties and responsibilities have been reviewed by personnel filling the listed roles.
2. Excavation precautions have been reviewed by ALL personnel involved in the excavation activities.
3. All permits shall be obtained by Contractor if not identified as City provided in the Scope of Work where required by state/local agencies, including roadways, DOT Right-of-ways, and counties that require excavation permits.
4. If planned excavation will impact property owners, Contractor shall coordinate with City to attempt to contact owners and inform them of pending work.

The following must be verified by the Contractor before excavation activities may begin:

1. The One-Call notification has been made and processed in accordance with local, state, and federal laws and regulations.
2. Verify all foreign lines and City facilities, listed on the One-Call ticket, have been marked in the planned excavation area.
3. The City's pipeline has been located and marked in accordance with City procedures. Adequately marking the line should clearly identify the path of the buried line at least 100 feet beyond the limits of the planned excavation in each direction. Contractor shall pay special attention to marking the pipeline throughout field bends which are identified by pipeline markers at the points of tangency and the point of intersection (PI). In some cases, it is not practical to

install additional temporary markers further than the limits of the planned excavation due to high risk areas such as roadways with high traffic volume or stream crossings.

4. Contractor shall confirm marked pipelines are consistent with Contract Drawings, alignment sheets, and SUE data. If this comparison reveals any discrepancies between Contract Drawings and marked pipelines, Contractor shall resolve the discrepancies before excavation activities begin.

203-05 EXCAVATION PRECAUTIONS

1. Individuals should NOT operate equipment without first being properly trained and being fully alerted to its potential hazards and have Operator Qualifications.
2. The City Dispatcher/Representative must be informed of all actions performed that may potentially affect pipeline operations.
3. If any controls are used to reduce atmospheric contaminants to acceptable levels, the excavation shall be tested continuously for deficiencies in oxygen, toxic vapors, and an explosive atmosphere (OSHA requirement).
4. Excavation Protection
   - Material or equipment that might fall or roll into an excavation must be kept at least 2-feet from the edge of the excavation, located behind retaining barriers, or both.
   - Where necessary to protect personnel against falling rock, soil, or other materials, scaling shall be performed to remove loose material from the sides of excavations and/or Contractor shall install protective barricades.
   - Work on faces of sloped or benched excavations at levels above other personnel is prohibited unless personnel at lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.
5. Water Accumulation
   - Individuals are prohibited from working in excavations where water has accumulated unless adequate protective measures have been taken.
   - Where necessary, diversion ditches, dikes, or other suitable methods will be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.
6. CAUTION must be exercised under the following conditions where soil stability may be significantly degraded:
   - Soil expansion due to freezing or thawing decreases its stability and may result in shoring or support systems not performing adequately.
   - Large excavations that are left open for extended periods are particularly subject to wall collapse due to changes in weather producing either an increase or a decrease in soil moisture content.
   - Existing structures near excavations increase the forces at the excavation walls, particularly if close to the excavation.
   - Passing vehicles, blasting, and operation of excavation equipment or certain tools can loosen soil and increase the possibility of cave-ins.
   - Stockpiled materials near excavation can impact wall stability.
   - Soils subjected to prior excavation and backfilling may not have the cohesive nature of undisturbed soil.
7. Contractor shall perform water lifting or jetting when pipeline is in marshes, lakes, or shallow water and:
   - Excavation is closer than 3 feet from the top of the pipe.
   - Excavation is closer than 2 feet from the side of the pipeline.
8. Contractor shall cease all excavation activities if any of the following conditions are identified:
   - Hazardous atmosphere
   - Potential for cave-ins
   - Indications of failures of protective systems (sloping, shoring, etc.)
   - Designated City Representative becomes unavailable to monitor the excavation work
   - Competent Person becomes unavailable to monitor the excavation work.
   - Hazardous material is discovered including unexploded blasting material, chemicals, pressure vessels, medical waste, etc. Proceed only after consulting with City.
9. If excavation activities shall be stopped for an extended period or left unattended overnight, perform the following actions.
   - Notify City Representative on site.
   - Ensure site security measures are in place.
   - Water control measures have been taken, if necessary.

203-06 TRENCH STABILITY AND SAFETY

1. Access and Egress (OSHA requirement)
   - Where personnel are required to be in excavations greater than 4-feet deep, adequate means of egress in two or more directions, such as ramps (maximum 20% grade for ramp), ladders, steps, or other safe means, must be provided within 25-feet of lateral travel.
   - If structural ramps are used as a means of access or egress, they must be designed by a registered professional engineer that the Contractor hires as part of their bid. Structural members used to form ramps must be of uniform thickness and joined in a manner to prevent tripping or displacement.
2. Sloping (OSHA requirement)
   - Sloping of the walls of the excavation should be performed in accordance with OSHA guidelines depending on the class of soil and soil conditions, such as:
     1) Water
     2) Silty materials
     3) Loose boulders
     4) Evidence of erosion, deep frost action, or slide planes
   - Another option is to use what is called OPTION 1, which means you do not classify the soil, but slope or shore to the most stringent requirements.
3. Excavation below the level of the base or footing of any foundation or retaining wall is prohibited unless one of the following conditions is met (OSHA requirement):
   - A support system or underpinning is provided.
   - The excavation is in stable rock as confirmed by soil testing.
   - A registered professional engineer determines that the structure is sufficiently removed from the excavation and that the excavation will not pose a hazard to employees and provides a stamped report.
4. Excavations under sidewalks or pavement are prohibited unless an appropriately designed support system is provided, or other effective method is used (OSHA requirement).
5. Support systems, (e.g., shoring, bracing, or underpinning) must be used to ensure the stability of adjacent structures such as buildings, walls, sidewalks, roadway embankments, and/or pavements (OSHA requirement).
6. Before a person enters excavations greater than 4-feet in depth or excavations where an oxygen deficient atmosphere exists or could possibly be expected to exist, a "Competent Person" must test the atmosphere using an oxygen/LEL monitor extended down in the excavation (OSHA requirement).

203-07 EXCAVATION PREPARATION ACTIVITIES

1. Complete the following forms:
   - Daily Work Permit and Safety Checklist
   - Job Safety Analysis (JSA)
   - Excavation Soil Testing Form. This is not necessary to complete if type C soil is selected or excavation is less than 4 feet deep.
2. Conduct a walk down of the planned excavation site and evaluate site for the following conditions:
   - Location of excavation: inside fenced area or open land or near a road, etc.
   - Dimensions of planned excavation
   - Soil conditions: wet or muddy soil, sandy soils, poorly compacted soils, subject to vibration
   - Proximity to surface water: ponds, lakes, streams, ditches
   - Location of other underground lines or overhead utilities
   - Site topography (e.g., cross slope along trench area, elevation relative to surrounding area, excessive slope)
   - Proximity to residential areas, roadways, building entrances, livestock
   - Level of vehicular and pedestrian traffic around excavation site
   - Potential for workers or public to fall into excavation
   - Length of time excavation will be open
   - Periods when excavation will be left unattended (i.e. overnight)
   - Expected weather conditions (e.g., rainy or hot and dry)
   - Erosion control methods
3. Implement the following site security measures, as needed, based on the above walk down:
   - Barbed wire for livestock only (Minimum three strands)

- Warning barricades
- Safety fencing (Minimum height of three feet)
- Earth berms
- Barriers
- Flashing lights

4. Implement the following types of excavation protection, as needed:
   - Shoring
   - Sheet Piles
   - Sloping
   - Trench boxes, with tabulated data
   - Work Mats
   - Flat blade or butter bar tack welded to excavation bucket unless approved by City in areas containing rock.
   - Soil moisture stabilization
   - Water diversion (ditches, pumps, etc.)
   - Leveled work areas for excavation equipment for areas with significant cross slope.
   - Entry and exit ramps or ladders: required if excavation will exceed 4 feet in depth.
   - Reflective signs or flashing lights for potential traffic hazards.
5. Obtain fire extinguishers, gas and oxygen monitors and other safety equipment, as required.
6. Ensure excavation equipment is in safe working order.
7. Remove or stabilize any surface obstruction(s) that may create a hazard.
8. Conduct a pre-job brief with all individuals involved in the excavation.

203-08 EXCAVATION OPERATIONS

If a line strike occurs or an anomaly containing visible cracks is observed, immediately stop all excavation activities, and notify City representative of condition, per the Pipeline Emergency Plan.

1. If the planned excavation area changes, all activities shall cease, and this procedure shall be repeated from the beginning. Do not jack hammer concrete unless all sides of the concrete are exposed and the possibility of a power cable and/or piping running through the concrete can be eliminated. Red or dyed concrete indicate high voltage, but the concrete may not look dyed, especially in red clay soils.
2. Confirm depth and horizontal location of pipeline, appurtenances, and adjacent underground structures in at least two places in the planned excavation work area using two of the following methods:
   - Probe Rod
   - Hand Excavation
   - Soft Dig Technology: hydrovac or airvac.

   NOTE: All appurtenances shall be located using Soft Dig Technology.
3. Maintain visual confirmation of the location of pipeline using hand excavation or Soft Dig Technology until the top half of the pipeline is exposed between the 9:00 and 3:00 positions.

   If the pipeline is not located and visually confirmed using these techniques, no mechanical excavation shall begin until a revised written Site-Specific Excavation Plan, which may include a combination of mechanical excavation and soft excavation techniques, is approved by the City.
4. In permitted areas, ensure excavation remains in the permitted footprint.
5. When pipeline has been visually located, ensure mechanical excavation is performed parallel to pipeline using caution around field bends and appurtenances.
   - Ensure excavation equipment is maintained a safe distance from the pipeline and to where the equipment operator can maintain eye contact with the Spotter. Any and all equipment not involved in the excavation shall be maintained downhill and a minimum of 3 feet from the excavation.
   - When exposing a field bend, the outside of the bend should be dug first. If it is not feasible to do so or if multiple PIs exist within the impacted area, a Site Specific Excavation Plan that addresses this complexity is required.
6. Require hand excavation or the use of soft dig technology under any of the following conditions:
   - Excavation closer than 2 feet from top, sides, or bottom of pipeline.
   - Complex excavation involving tight quarters: parallel lines, utility crossings, near appurtenances, etc.
7. Contractor shall not excavate under pipelines using a hoe.

8. If rock is being excavated, install mechanical shielding for the pipeline using oak planks, blasting mats, oversized pipe or sleeve, or similar whenever the pipe is exposed even if there is only a small portion of the pipe that is exposed.
9. If rocks larger than the hoe bucket must be removed, prior to removal, fracture the rocks to a size that the hoe bucket can carry. Be sure to shield pipe as stated above before fracturing rock.
10. If excavation affects an agricultural or residential area where topsoil must be protected, remove top six inches of soil, or until color change indicates subsoil reached, and
place on a separate pile from the excavation spoil pile.
11. Ensure spoil pile is maintained a minimum of two feet from edge of excavation and angle of repose is less than 45º from horizontal.
    - If excavation involves soil contaminated with product, ensure spoil handling and disposal is conducted as directed by the City.

203-09 EXCAVATION, DUTIES AND RESPONSIBILITIES

1. Competent Person *(Excavation Contractor Representative)*
    - Ensures the alignment sheets and other existing pipeline data that identifies pipeline features have been reviewed and are available for reference.
    - Ensures that he or she is at the work site and actively monitoring anytime excavation activities are in progress; otherwise, work stops unless a second competent Person with prior approval is on-site.
        - Work stops during bathroom breaks, meetings, phone calls, being on the other side of the project, etc.
    - Ensures work activities are stopped if there is a concern for injury, pipeline integrity, public safety, or damage to City facilities.
    - Ensures proper one-calls have been made.
    - Ensures compliance with all state one call laws.
    - Ensures state/local permits have been obtained for excavations, if required.
    - Conducts tailgate safety meetings.
    - Ensures Contractor's personnel performing excavation activities have appropriate OQ documentation.
    - Develops the Site-Specific Excavation Plan with input from the Excavation Operator and Spotter. Ensures the plan has been approved by City and is followed.
    - Ensures that the following are completed before work begins:
        - Daily Work Permit and Safety Checklist.
        - Job Safety Analysis.
        - Excavation Soil Testing Form
    - Coordinates commencement of work with City. Ensures communications with City are available.
    - Ensures that all excavation and backfill activities are performed in accordance with this Procedure and all applicable pipeline safety regulations.
    - Remains in the work area and continuously monitors all excavation activities
    - Ensures permanent pipe support and backfill material is satisfactory and meets City specifications.
    - Conducts inspections of excavations daily, before starting work, as needed throughout the workday, and after rainstorms or other change in conditions that may impact the excavation.
    - Inspects excavations for potential cave-ins, indications of failures of protective systems (sloping, shoring, soil cracking, etc.), and hazardous atmospheres or other hazardous conditions.
    - If hazardous conditions are encountered, ensures exposed employees are removed from the hazardous area until necessary safety precautions have been taken.
    - Monitors excavation activities, equipment and water removal, as necessary.
    - Ensures that soil classifications are performed and the need for shoring or similar protective systems is evaluated and implemented.
    - Records data, as required.
    - Determines the effects of operating equipment, traffic, etc. on the excavation.
    - Ensures excavations are clearly marked and properly barricaded, if left open.
    - Ensures spoil material is safely stored at least 2-feet from the edge of excavation.
    - Ensures mechanical equipment not directly involved with the work at the excavation site does not operate closer than 3-feet from the edge of the excavation and is securely parked when not in use.
    - Monitors excavation activities, equipment and water removal, as necessary.
    - Ensure matting and protection of in-service pipeline.

2. Excavation Operator

The Excavation Operator is the contractor employee operating the excavation equipment.

- Is responsible for an accident free workplace.
- Shall perform a Job Hazard Analysis to identify and mitigate hazards in the area of excavation.
- Ensures work activities are stopped if there is a concern for injury, pipeline integrity, public safety, or damage to City facilities.
- Confirms the location of the pipeline using two or more of the following: a line locator, probe rod, hand excavation or soft dig techniques prior to mechanically excavating the planned excavation area.
- Seeks guidance from the Spotter to prevent pipeline damage.
- Safely stores spoil material at least 2-feet from the edge of excavation.
- Provides significant assistance and input in the development of Site-specific Excavation Plan.
- Is responsible for using a Spotter when moving equipment on the job site.
- Reviews and understands this procedure.

3. Spotter

The Spotter is the person spotting the Excavation Operator. The Spotter shall NOT perform other duties other than the duties listed below.

- Is responsible for an accident free excavation.
- Shall be Operator Qualified to perform all covered tasks associated with excavation and backfilling or shall be immediately supervised by an Operator Qualified individual.
- Ensures work activities are stopped if there is a concern for injury, pipeline integrity, public safety, or damage to City facilities.
- Using two methods, confirms the location of the pipeline using a line locator, probe rod, hand excavation or soft dig techniques prior to allowing any mechanically excavating in the planned excavation area.
- The Spotter's most important responsibility is to direct the Excavation Operator to prevent pipeline damage. Spotter is responsible for maintaining required clearance from the top, sides, and bottom of pipeline.
- Remains vigilant as to the potential for hazardous conditions and damage to the pipeline.
- Observes excavation progress and remains vigilant to potential hazards.
- During excavation, repeatedly uses a line locator and a probe rod to re-verify pipe location.
- Reviews and understands this procedure.
- Shall be responsible for guiding and directing backhoe operator while mobilizing and demobilizing to prevent hitting power lines or other obstructions. This is especially necessary when working in congested areas, around power lines and when moving track hoes and cranes around the worksite and when operator is backing or lifting.

203-10 EXCAVATION, JOB SAFETY ANALYSIS GUIDE

This Section can be used as a guide to develop a Job Safety Analysis. This guide is not the JSA, as the JSA will also need to identify any hazards associated with the maintenance or inspection work that will also take place in the excavated area.

EXCAVATION HAZARDS	ACTIONS / CONSIDERATIONS
Proper communication / notification	• Make one-call, notify landowners, and proper authorities • Proper working equipment (radio, cell phone, satellite phone, etc. • Identify Hospitals and medical facilities prior to beginning work.
Line appurtenances	• Have locations staked by survey • Utilize Soft Dig technology
Unknown utilities	• Check surrounding area for markers • Additional probing • Check community for location of gas, electric, and water lines • Make the proper one-calls

EXCAVATION HAZARDS	ACTIONS / CONSIDERATIONS
Traffic	• Road at work/injection site to be closed and barricaded • "Only Authorized Personnel" signage posted • Traffic control personnel (someone to watch for vehicles entering and leaving work site) • Limit access of vehicles to work site • Designated parking area • Construction signs and flashers installed at entrances to work sites
Soil conditions	• Proper sloping, shoring or trench boxes or sheet piles, if needed • Fill out proper Excavation Soil Testing Form
Excavation and handling of soil and pipeline materials	• Store/handle per environmental standard
Groundwater	• Have pumps available and pump water to area designated • Diversion (Flumes, Coffer damns, etc.)
Adjacent pipelines	• Locate, mark and ensure proper cover and protection for other pipelines • Limit amount of activity over pipelines, mat as neessary
Equipment close to excavation	• Have Spotter observe equipment, as it is moving • Have safety personnel monitor equipment movement • Have Excavation Operator follow this procedure
Mud on roadways and work site entrances	• Monitor road condition, and address as necessary • All personnel are responsible for keeping roadways clean
Terrain conditions	• Make sure there is good footing in ditches for worker to move around • Use caution on hillsides, creek banks, etc. • Incorporate protective measures in Site-specific Excavation plan
Ingress and Egress	• Mark and define escape routes • Keep egress routes free of obstructions
Backfilling	• Refer to Backfill Specification and Site-Specific Backfill Plan
Possible atmospheric contamination	• Air monitoring – atmospheric checks • Monitor oxygen and LEL during N_2 injection, cut out sites, and bleed off sites • If LEL is above 3% at work sites controls will be put in place to reduce LEL below 3% before work can progress in the excavation. This is due to the toxicity level of hydrocarbons and gases.
Site security – Fenced areas vs. non-fenced areas	• Refer to this procedure
Erosion control	• Install proper erosion control as needed for weather conditions and compliance with SWPPP
Weather conditions	• Be aware of weather conditions and prepare as necessary, tornados and wild fires.
Pipe supports	• Support every 10-feet unless special conditions exist
Removal and disposal of coating	• Wear proper PPE when removing coating • Dispose of coating per environmental specifications
Critter/Wildlife factor	• Pay attention to surroundings • Have first aid kit available
Water hazards	• Life jackets required near water bodies • Refer to Safety Awareness Manual
Tripping hazard	• Be aware of potential tripping hazards (welding leads and extension cords, rocks, dirt clods) • Maintain proper house keeping
Improperly marked pipe size / lamination	• Ultrasound location to be welded • Mag- particle after welding • X-Ray after tie-ins

EXCAVATION HAZARDS	ACTIONS / CONSIDERATIONS
Product Spill Gas Release	• During blowdown after nitrogen displacements, open valves slowly to check for gaseous atmosphere. • Before starting cold cut, check for gaseous atmosphere. • When considering the use of soft dig technology during a suspected leak or actual leak, verify that the equipment is certified for the application regarding hydrocarbons and gases.
Overhead Power Lines	• Caution operators against contacting overhead power lines • Identify on Site-specific Excavation plan • Set up barriers if practical • Spotter to watch for them with equipment is moving
Waste or Hazardous Material	• Shutdown and consult with safety personnel to determine specific needs including monitoring, PPE, etc. • Work must be stopped, update or develop a JHA before proceeding. Identify possible materials that could be dangerous to life and health that has been discovered. It may be determined that an Industrial Hygienist may need to on site for the duration of the project. Identify the nearest hospitals and have GPS coordinates for the jobsite for easy location for medical personnel if needed.

OTHER TASKS WITH ADDITIONAL HAZARDS:

ADDITIONAL HAZARDS	
WELDING / TAPPING	**ACTIONS / CONSIDERATIONS**
Flying debris	• Proper eye protection • Face shields and goggles • Proper shirts and FR clothing
Ignition source	• Lower Explosive Limit (LEL) / Oxygen monitoring • Manned fire extinguishers
Burns	• Proper procedures and PPE • First Aid Kit available
Cutting and Grinding	• See flying debris • See ignition source • Proper PPE and eye protection • Proper Grinding Disc for Grinders and is in a workable condition • Handles and Guards on Grinders
Electrical hazard	• Inspect cords and equipment • Proper grounding • GFCI
Tapping failure	• Notify City representative • Follow Emergency Response Plan
Drill steel binds	• Inspect drill steel for wear • Use proper tapping procedures
Laminated pipe	• Ultrasound area where cutting or welding for proper pipe thickness • Mag- particle area after welding for cracks
ABRASIVE CLEANING	**ACTIONS / CONSIDERATIONS**
Flying debris	• Proper eye protection • Face shields and goggles • Air hose tie downs and restraints, dead man switch • Supplied air and monitoring with Spotter

ADDITIONAL HAZARDS	
WELDING / TAPPING	**ACTIONS / CONSIDERATIONS**
LIFTING / RIGGING AND PILING / SHORING	**ACTIONS / CONSIDERATIONS**
Overhead Hazard	• Be aware of overhead obstructions • Ensure tag lines are in place • Use proper equipment to not damage pipe
Pinch points	• Be aware of possible pinch point locations such as sleeve material, line-up clamps, etc. • Stay away from moving equipment and only move in to rig once the operator has stopped operating the equipment and is ready to hook up. • Use tag lines to clear yourself from objects being moved.
CASING REMOVAL / ARCH GOUGE	**ACTIONS / CONSIDERATIONS**
Pipeline not properly shielded	• Install shield between pipeline and casing
Flying debris	• Proper eye protection • Face shields and goggles
Ignition source	• Lower Explosive Limit (LEL) / Oxygen monitoring • Manned fire extinguishers
X-Ray	• Maintain clearance from radioactive sources or energized X-Ray equipment
	•
	•
DIGGING ON WORK MATS	**ACTIONS / CONSIDERATIONS**
Slide off mats onto pipeline	• Ensure mats are level and secure to dig on • Ensure area for mats will support equipment
Drop mats on pipeline when moving them	• Ensure mat hook is secure • Ensure mat cables are in good condition

CONSEQUENCES OF HAZARDS:

- Environmental Damage
- Property damage
- Personnel injury
- Equipment damage
- Pipeline damage

203-11 SITE SPECIFIC EXCAVATION PLAN

This section can be used as a guide to develop a Site-Specific Excavation Plan. However, the plan will need to be modified to address any maintenance or inspection work that will take place in the excavated area, as well as the excavation activities. This plan must be prepared daily.

The Competent Person is responsible for developing the Site-Specific Excavation Plan. Input from the Excavation Operator and other team members should be obtained for the Site-Specific Excavation Plan.

All excavations meeting any of the following conditions must be planned and designed by a registered professional engineer trained in an appropriate discipline:

- **Excavations in excess of 20 feet in depth.**
- **Excavations adjacent to structures/improvements/foundations.**

_____ Line: _____ Location: _____

Date: _____ _____ _____

Reason for Excavation: _____

One Call Ticket # _____ Locate Methods used: _____

Excavation Equipment Used Make: _____ Model: _____

EXCAVATION PLAN	**COMMENTS** (or "N/A" if appropriate)
Method of excavation:	
Method of ingress and egress:	
Method of pipe support:	
Protective measures applied to excavation walls:	
Type of pipe shield used:	
Placement of spoil:	
Approximate length of excavation:	
Approximate depth of excavation:	
Approximate width of bottom of ditch (pipe dia. + 2x2 feet + 2xwidth of hoe bucket) :	
Traffic	
Adjacent structures & their condition	
Line appurtenances	
Overhead & underground utilities	
Soil type	
Livestock / wildlife	
Surface/ground water	
Weather	
Topography (slopes, working area, etc.)	
Residential area – children	
Adequate room for spoil piles	
Work mats	
Description of area (rural, city, farm, livestock, etc.)	
Barriers or signs used	
Abnormal events	
PI's	
Other:	
Names of Individuals Assisting in the Development of the Site-Specific Excavation Plan:	
CITY REPRESENTATIVE:	
EXCAVATION OPERATOR	
SPOTTER:	
OQ PERSONNEL PERFORMING TASK:	
Others (Identify Name and Title):	
Printed Name of Competent Person:	
Signature of Competent Person:	

204-01 EXCAVATION AND TRENCHING

Contractor shall excavate trench for new pipeline and work may include all blasting and rock removal and shall furnish all materials and supplies necessary for the completion and maintenance of the trench, including water control, shoring, coffer dams, and sheet piling. Any blasting is to have City prior approval.

Contractor is responsible for compliance with all state, federal, local government, local utility, and one-call system notifications prior to excavation. These notifications may be required even though right-of-way easements have been obtained prior to construction. The notification must be within the time limitations as specified in any of the preceding regulations or practices.

204-03 TRENCHING, GENERAL

Contractor shall employ such equipment and methods that may be required to excavate the trench to the staked line established by City, regardless of the type of soil or rock encountered and regardless of the depth of excavation necessary.

Contractor shall carefully preserve the proposed pipeline centerline stakes set by City after clearing and grading are completed. Contractor shall be liable for any extra expense due to his failure to maintain these stakes. Trenching will not be permitted until the re-staking of the proposed centerline following initial clearing and grading has been completed. Upon excavating the trench, all center line stakes shall be offset by Contractor at approximate right angles to their centerline locations.

The maximum length of trench allowed to remain open shall be based on City safety evaluation, terrain conditions and location.

204-04 TRENCHING THROUGH NORMAL TERRAIN

The trench depth shall be at 42 inches to top of pipe. When these requirements differ from the top of pipe cover requirements shown in Part 192.361 of Title 49 of the Code of Federal Regulations, the most restrictive shall prevail.

Contractor is also cautioned about specific trench width required by City for normal and rock excavation. Contractor shall observe any extra trench depth requirements specified in the construction drawings, details and notes and the construction and permit requirements and procedures. This is particularly relevant at tie ins.

At over-bends and side-bends, Contractor shall excavate the trench to allow proper clearance between the inside bend of the pipe and the bottom or side of the trench.

The trench shall be graded to pass under all existing pipelines, roads, ditches, railroads, trenches, canals, streams, and any other obstruction unless otherwise specified. The trench shall be graded to allow a minimum clearance of 24 inches between the pipe and other foreign lines or other underground facilities except non-conductive drainage tile where 2 inches or more is required.

Waterway crossing trenches shall be excavated to a width and depth in accordance with the construction drawings. The Contractor shall lay the pipe horizontal throughout the bed of the stream at the depth specified. Attention shall be given to the location of the sag bends to see that they are located in the bank beyond any point affected by a change in the stream bank. All trench spoil dredged from the stream by the Contractor shall be placed on the downstream side of the trench or stockpiled on the banks on either side of the stream and protected as required by the construction plans and permits.

City may direct Contractor to use specific equipment and/or sizes to minimize damage caused to shrubbery, trees, or valuable growing timber that are encountered in right-of-way, and where, in the opinion of City, the use of trenching equipment may result in irreparable damage or injury to the property.

Contractor shall provide safe temporary bridges, or leave earth plugs, when trenching across cultivated fields where the landowner or tenant desires to have passageway(s) across the trench for the movement of livestock or farm equipment.

It is the intent of the City to have the Contractor construct on hillsides or slopes trench breakers to prevent the loss of material from the bottom of the trench line by "washing". Each trench breaker shall be built completely across the trench. Contractor shall provide at least the minimum number of trench breakers consisting of concrete pads as shown in the Contract Documents. Contractor shall provide additional trench breakers as required to maintain sediment control and comply with regulations.

204-05 ADDITIONAL DEPTH OF TRENCH

When approaching or crossing roads, highways, drainage ditches, creeks, railroads, canals, rivers, ravines and other water courses, farm terraces, irrigation ditches, and at points where the contour of the earth may require extra depth trenching, and for tie ins and trench back, Contractor shall, as a matter of course and at no additional compensation, excavate to such additional depth as may be necessary.

There are certain other property owners, private or public authorities, or specific right-of-way easements that may also require additional depth trenching beyond that normally employed. In such cases, the need for extra depth trenching shall be so stated either in the construction drawings or permit requirements. Extra depth trench so listed shall not be grounds for extra compensation. Compensation for extra depth trench at the rates specified in the Unit Price Schedule shall be allowed only when extra depth trench is requested in writing by the City.

The City desires to minimize the required number of bends to lay the pipe to conform to the contour of the ground and to maintain normal cover. Additional segmentable ells are provided.

Contractor shall accomplish this by cutting the trench slightly deeper at the crest of ridges and by gradually cutting the trench deeper in approaches to road crossings and small watercourses at no additional cost to City.

204-06 ROCK, RIPPER ROCK TRENCH, AND BLASTED ROCK TRENCH

Rock: as herein designated, shall mean solid rock in its original formation which cannot be removed by any means except drilling, blasting, or ripper.

Ripper Rock Trench: is defined as a trench in a rocky area that can, without drilling or blasting, only be achieved by utilizing a combination of D-9 tractor (or larger) with a ripper and a back hoe.

Blasted Rock Trench: is defined as a trench in solid rock which can only be achieved by drilling and blasting.

Ripper Rock Trench Dimensions	
Depth	The depth of the trench in ripped rock shall be sufficient to accommodate the pipe and provide the minimum "normal excavation" cover required by the table herein plus the additional 12 inches of depth required for padding beneath the pipeline.
Width	Contractor is cautioned that the Ripper Rock Trench width shall be sufficient to accommodate the pipe plus the 12 inches of sand padding on each side.
Length	Maximum length of trench shall be based on City safety evaluation, terrain conditions and location (urban or rural).

Blasted Rock Trench Dimensions	
Depth	The depth of the trench in blasted rock shall be sufficient to accommodate the pipe and provide the minimum "rock excavation" cover required by the table herein plus the additional 12 inches of depth required for padding beneath the pipeline.
Width	Contractor is cautioned that where Blasted Rock Trench is required the width of the trench shall be the width of the pipe plus the 12 inches of sand padding on each side.
Length	Maximum length of trench shall be based on City safety evaluation, terrain

	conditions and location (urban or rural).

205-01 WORK NEAR PIPELINE, PILES AND BLASTING

Contractor shall exercise care when blasting, pile driving, or using vibration inducing equipment near active pipelines. Requirements for carrying out work in these conditions is outlined herein.

The Contractor shall be responsible for any damage incurred and for the overall safety and performance of the blasts. Blasting operations must conform to City requirements, Federal and local jurisdiction regulatory requirements. The City must approve and blasting.

A blasting plan shall be submitted for City approval, when blasting operations will be done within 200 feet of City pipeline or when the scaled distance at a City facility is calculated to be 50 feet or less. Before any blasting is done, Contractor shall prepare and present to the City for approval a "Blasting Plan" detailing shot spacing, size of charge, time delays, etc. Also, Contractor shall obtain any necessary permits, and ensure that occupants of nearby buildings, stores, or places of business have been notified.

Contractor shall give two weeks advance notification to City of blasting encroachment(s) so that City can notify local residents, local officials, and local emergency responders. Contractor shall notify other utility owners having facilities within the blasting area. MODOT approval will also be required for blasting work.

Contractor shall provide to City a detailed technical description of the equipment to be used such that City can review impact of the vibration-induced encroachment. Contractor shall ensure that City has reviewed and authorized this work before proceeding.

205-04 VIBRATION INDUCED OPERATIONS

Contractor shall give advance notification to City of plans to operate equipment that may generate ground vibrations near active pipeline(s).

Construction equipment that can generate ground vibration include static compaction equipment, vibratory pile drivers, pile-extraction equipment, vibratory compaction equipment, impact pile drivers, drop balls, etc.

205-05 BLASTING, GENERAL

City must be notified when Contractor expects to start blasting and be present while it is being done. The Contractor shall blanket all shots sufficiently to keep any rock from being blasted off the right-of-way and to prevent damage or injury from flying stone. If, during blasting operations, loosened rock is scattered over the right-of-way or adjacent property, Contractor shall clean up and haul from the premises or bury such rock to the satisfaction of City, and the landowner and his tenants. The Contractor shall use extra precautions in blasting near drain lines, telephone, telegraph or electrical conduits, water lines, water wells, springs, and pipelines.

Contractor shall use a nonelectric initiation system. The minimum allowable delay time is 8 milliseconds. Blasting methods and materials are to be of the type that eliminates or greatly reduces the possibility of sympathetic detention. Straight dynamite (high nitroglycerin content) and electric initiation systems are not permitted.

Where it is necessary to blast rock near existing facilities, the Contractor will be required to shoot to an open face and further reduce the load factor per delay.

Where stratified or laminated rock is encountered, the load factor shall be reduced to conform to the hazard.

No blasting is allowed within 10 feet of an existing City pipeline. No blasting is allowed between City pipelines unless it can be done to an existing open face. These limits are subject to change provided seismographic results on test blasts provide basis for increase. The maximum allowed peak particle velocity at City's pipeline is 2.0 inches/second.

207-01 BACKFILLING

Backfill activities shall consist of processing, loading, hauling, unloading, placing, and compacting bedding, initial, and final backfill materials.

Contractor shall provide a Site Specific Backfill Plan to the City for use before initiating backfill operations.

Contractor shall present for City approval the proposed method for depositing the trench spoil from over the existing pipeline, if permitted by the Contract Drawings, as backfill on the new pipeline.

Contractor shall acknowledge the approved workplan for backfill and compliance for materials testing. Results of testing will be shared with the City.

The City shall provide compaction and backfill suitability testing.

207-04 BACKFILLING, GENERAL

All trenches or excavations shall be backfilled to its original surface of the ground or proposed grades shown. Contractor shall not place materials on areas that contain standing water, mud, snow, or ice.

Contractor shall remove rocks, hard clods, or other hard objects that are discovered or inadvertently fall into the otherwise suitable materials. Ensure the backfill is free from any metal objects (cans, hand tools, clamps, scrap metal) and non-soil materials. Unsuitable soil materials include silty soils, organic clay soils, waste, timber, roots, wood, waste coating material, waste concrete materials, containers, packaging material, metal frozen materials, vegetation and other deleterious matter.

If the Backfill Plan indicates that the insitu soil material can be made suitable by scarifying, drying or re-compacting, or adding soil amendments such as lime or cement, the Contractor shall be responsible for conditioning the excavated materials as per the Geotechnical Engineer's recommendations.

Contractor shall properly slope and protect the spoil piles from environmental conditions that may affect its moisture content. If after following the Backfill Plan recommendations for adjusting the moisture content of the soil, the materials do not meet the required +/- 3 percent of optimum moisture content, the soil material shall be considered unsuitable.

Contractor shall not construct spoil piles on top of existing pipelines unless noted on design drawings.

When Contractor is required by contract to purchase bedding or backfill materials, Contractor shall not purchase these materials from landowners of City's private easements.

Bedding Gradation

Contractor shall provide suitable bedding material at a depth of 6-inches for normal trenches and 12-inches for rock trenches that has been prepared by either mechanical screening excavated materials on site or by hauling in material from a designated borrow area approved by City.

IF material must be hauled into the project site, add a bid line item.

Initial Backfill Gradation

Initial backfill shall insure filling the space below and up the sides of the pipe to a point at least 12 inches above the pipe with soft, loose earth. Suitable soils for initial backfill shall be free of stones or gravel larger than 2 inches in diameter,

Final Backfill Gradation

Suitable soils for final backfill shall be free of stones or gravel larger than 5 pounds. In cultivated areas, the final backfill material shall conform initial backfill requirements for suitable soils.

207-05 BACKFILLING OPERATIONS

All backfill shall be placed in maximum 6-inch lifts and compacted between lifts unless the backfill plan specifies otherwise. Backfill must be placed, not pushed.

Contractor shall employ any acceptable method approved by City which will insure adequate compaction of the backfill and at the same time not deform the pipe from its normal roundness.

Upon completion of final backfill, Contractor shall use remaining excess soil materials to crown the top of trench line and then spread out remaining soil materials on both sides of the trench in areas which have been disturbed during construction. Contractor shall provide a final grading acceptable to City, the landowner, or tenant, and be suitable for ROW restoration for fertilization and seeding or as required for cultivation.

Contractor shall complete final grading, seeding, and ROW restoration within 30 calendar days after installation of the final backfill.

207-06 BACKFILLING, ROCK TRENCH

All coated pipe, other than concrete coated pipe, installed in a blasted or rock trench line must be placed on City approved supports 10-feet on center with 1-foot minimum clearance above bottom of trench and at a sufficient depth to provide the required cover over the installed line.

Following placement of supports, the trench shall be filled with soft earth padding to the top of the supports. The pipe shall then be placed on the supports and additional soft earth shall be added in 6" lifts until there is 12 inches of padding above the pipe. Contractor shall provide adequate compaction on each side of the pipe to prevent "egging" when the trench is completely backfilled.

At the discretion of the City, some rock, not larger than 5 pounds, may be placed in the backfill after 2.5 feet of fill above the pipe. In cultivated areas, no rock shall be placed in the top of the backfill which would interfere with plowing or cultivating. All surplus rock shall be disposed of by Contractor to the satisfaction of City, landowner, or tenant at no additional compensation.

207-07 BACKFILLING AREAS UNDER FUTURE PAVEMENTS, ROADS, AND DOT RIGHTS-OF-WAY

ENGINEER to verify DOT requirements for materials and compaction.

For paved roads, the roadway section (subgrade, grade, and pavement layers) shall be replaced in-kind and in a manner satisfactory to the City and to the authorities having jurisdiction thereof. Contractor shall provide 95% compaction to depth and width noted on the Contract Drawings. Compaction will be verified using modified proctor testing.

For gravel roads, the top 12 inches of final backfill material shall be well-graded crushed rock or gravel.

During open-trench construction across roadways, Contractor shall minimize the duration of construction activities within the roadway and shall make the worksite safe within the roadway each day before the end of the work day to avoid hazards to night travel.

207-08 BACKFILLING, TERRACES, STREAM CROSSINGS, DRAIN TILE, ETC.

Contractor shall restore the terraces, creek and river banks, and if necessary, reinforce the backfill with earth filled bags, stone, rip-rap, or concrete headwalls as shown on construction drawings. Contractor shall repair all drain tile removed or damaged during construction by a method approved by City and landowner.

Only native soil can be used for wetland and stream backfill. The first six to eight inches of topsoil removed during excavation shall be stockpiled in a spoil bank area as shown on Construction Drawings. The Contractor shall use the stripped topsoil for top dressing in the final grading. The stripped wetland topsoil material shall be free of gravel, rock, etc.

Backfill in the trench shall return as much of the spoil material as practical to the stream in the form of bank rip rap (large rock) and trench backfill (small rock, gravel, sand, and mud). Contractor shall be aware that some jurisdictions require that native rocks in the top lift(s) of backfill. Shot rock spoil may be used in the top lift(s) of backfill and shall not contact the coated pipeline.

207-09 DEPTH OF COVER ON EXISTING PIPELINE

If insufficient depth of cover is discovered during the construction phase, the City may direct Contractor to haul in additional suitable final backfill material and/or top soil materials. Compensation for additional material and top soil material shall be in accordance with the established change order process.

209-01 COMPACTED EARTH, STRUCTURAL FILL

Contractor shall furnish all labor, materials, tools, and equipment necessary for the acquisition and placement of structural earth fill and/or compacted earth material in accordance with these Specifications.

MATERIAL
Structural fill material shall conform to ASTM D3282, Classification of well graded gravel.

TEST STANDARDS
ASTM D-1557: Moisture-Density Relations of Soils Using 10 Lb. rammer and 18 Inch Drop (Modified Proctor)

TESTS
Qualified soils technician shall be employed by the City for the purpose of identifying soils, checking densities, and classifying soils materials during construction. Charges for this service will be paid for by the City. Density tests are to be made in fill areas specifically designated on the drawings.

Contractor shall submit for City approval a written plan for the construction of the earth fill to include the compaction equipment, number of planned lifts, soil moisture control & monitoring, and soil compaction testing allowances.

Muck - Materials unsuitable for foundation because of organic content and saturated to the extent that it is somewhat fluid are designated as muck and must be removed prior to the placement of fills.

209-05 MATERIAL FOR STRUCTURAL EARTH FILL

Only approved material conforming to ASTM D-3282, Classification Well Graded Gravel or Well Graded Sand, shall be used in the construction of structural fill. No brush, rocks, logs, stumps, vegetation, spongy or frozen soils, or other unsuitable materials are to be placed in the fill.

Suitable materials not available on-site will be secured, transported, and stockpiled, if required, by the Contractor from off-site sources having approved material.

Contractor shall, prior to the start of work, submit a representative sample (50-100 lbs.) of the material proposed for the structural fill to the City for testing of density and grain size.

The moisture content of the soils is to be maintained within $\pm$ 2% of optimum. During periods of dry weather the Contractor is to water the material to provide sufficient moisture for compaction. The material containing excessive moisture is to be permitted to dry out to the proper moisture content before compaction is attempted. All areas are to be drained and otherwise properly operated to assist in achieving this objective. Soft material that cannot be compacted readily or is otherwise unsuitable is to be removed as directed and replaced with satisfactory material.

209-06 MATERIAL FOR COMPACTED EARTH FILL

Compacted earth fill shall be constructed with suitable borrow material consisting of non-organic earth, sand and gravel mixture, or sand and clay mixture. Such materials shall have compaction qualities satisfactory to the City and shall not contain rocks or stones over 3 inches in diameter. Material containing loam, silt, debris, cinders, foreign or organic matter will not be acceptable.

209-07 COMPACTION REQUIREMENTS FOR STRUCTURAL EARTH FILL

Structural backfill as herein designated shall be compacted to a minimum of 97% of the maximum dry density, except that the minimum dry density shall not be less than 110 pcf, all as determined by ASTM D1557 (Modified Proctor).

209-08 COMPACTION REQUIREMENTS FOR COMPACTED EARTH FILL

Fill will be compacted according to the following table and in accordance with ASTM Standard D1557 (Modified Proctor):

Maximum Laboratory Dry Density, Lbs./Ft.^{3} (Modified Proctor)	Minimum Field Compaction Requirement % of Laboratory Maximum Dry Density (Modified Proctor)
90.0 - 102.9	100
103.0 - 109.9	98
110.0 - 119.9	95
120.0 and Greater	90

209-09 EQUIPMENT FOR STRUCTURAL & COMPACTED EARTH FILLS

The Contractor may furnish the following equipment for the placement of structural fill.

a) A multiple-wheel pneumatic-tired roller constructed so it can be loaded to a gross weight of at least 225 lbs. per square inch of tire contact area. The internal pressure of the tires shall be not less than 45 lbs. per square inch, and the tires on the front and rear axles shall be staggered so that they will cover the entire area over which the roller travels.
b) A self-propelled 3-wheel steel roller and/or self-propelled tandem roller, each weighing not less than 10 tons.
c) Proof-roller of not less than 5 tons.
d) Tamping or sheepsfoot rollers weighing not less than 10 tons.
e) A self-propelled 3-wheel steel roller and/or self-propelled tandem roller, each weighing not less than 10 tons.
f) Vibrating steel-wheel rollers rated at 5 tons per impact.
g) Equipment for distributing water, consisting of a tank equipped with spray bars and a pump to operate under pressure. It shall be mounted on a pneumatic-tired equipment. The distributor equipment shall be constructed to permit accurate and uniform distribution of the desired quantities of water per unit of surfacing area. There shall be hose and nozzle attachments to permit hand watering in localized areas.
h) Other equipment approved by the City

209-10 DENSITY TESTING

The frequency and number of tests to determine density and moisture will depend on the area and depth of the compaction effort. For locations where the compaction area is relatively small, several tests shall be taken during the first day of work, followed by subsequent tests as the compaction progresses, as may be deemed necessary by the City Inspector or soils technician. The number of subsequent tests can generally be determined by how smooth the work is proceeding and the uniformity of the soil being compacted.

For compacting large areas such as tank foundations or manifold areas, tests shall be taken for approximately each 5 to 10,000 square feet of area for each 8 inches of lift.

When the top layer of fill material is too sandy to remain compacted during the rolling operations, a density test will be run on the next lower or preceding layer, and this procedure is to be followed for each subsequent layer of sandy material. Should the density of the preceding layer fail to meet requirements, it is to be brought to the required minimum by further rolling the overlying layer before depositing another layer. Fill sections failing to meet requirements are to be removed and replaced, or reworked until satisfactory to the City Inspector, at no additional cost to the City.

209-11 TOP SOIL STRIPPING

Contractor shall remove top soils from fill areas to a depth of 6-12 inches and shall segregate this material in a separate stockpile for use as top dressing in the final grading. Fill areas shall then be scarified by a harrow or other approved means. Just prior to placing the fill, the area shall be proof rolled with a roller weighing not less than 5 tons.

209-12 SUBGRADE PREPARATION

After stripping, the Contractor shall probe the sub-grade to a depth of 5 feet in the presence of the City. Approximately 1 probe per 500 square feet will be required or as directed by City Inspector. If the sub-grades appear unsatisfactory to City, they shall be proof-rolled with a 5-ton roller or other approved equipment. Unsuitable material that has been stripped will be replaced with approved borrow material and compacted per project specifications.

209-13 PLACEMENT OF FILL MATERIAL

Fill material is to be deposited and spread in successive, uniform, approximately horizontal layers across the full width of the required cross-section. Each layer of fill is to be rolled and compacted to the specified density.

The fill material shall be spread in layers not to exceed 8 inches depth of loose fill material and shall not to exceed 6 inches depth after compaction.

Fill shall be placed so that during construction the center of the fill area is to be kept at a slightly higher elevation than the edges to avoid pockets of open graded material surrounded by tight or more impervious material. Contractor shall use successive passes of compaction equipment progressing from the edges toward the center.

209-14 COMPACTION OF FILL

The material in each lift shall be of the proper moisture content before rolling to order to obtain the prescribed compaction. Contractor shall wet, dry and/or blend the material to obtain a uniform material. If City determines that the material is too wet for proper compaction, Contractor shall stop the construction of the fill and shall work to dry the material to the required moisture content.

Samples of the fill material for testing, both before and after placement, and compaction will be taken at frequent intervals. Control, based on these tests, in the form of corrections and modifications of methods, material, and moisture content, will be made to properly construct the fill. Rolling operations shall be continued until the fill is compacted in accordance with these Specifications. The Contractor shall be responsible for the stability of the compacted fill made under the contract and shall replace any portion that has become displaced due to carelessness or negligence on the part of the Contractor when judged so by the City. The construction of fill will be halted at any time that the required compaction results cannot be obtained on the account of rain, freezing weather, or any other unsatisfactory condition existing in the field.

209-15 COMPACTION TESTING

The frequency and number of tests to determine density and moisture will depend on the size of the area and depth of the compaction effort. For locations where the compaction area is relatively small, several tests should be taken during the first day of work followed by subsequent tests as the compaction progresses as may be deemed necessary by the City. The number of subsequent tests can generally be determined by how well the work is proceeding and the uniformity of the soil materials being compacted. For compacting large areas such as tank foundations or manifold areas, tests should be taken for approximately each 5,000 to 10,000 square feet of area and for each 6 inch lift.

Tests for moisture-density of soil in place shall be in accord with ASTM D1557.

Price for compaction of material obtained from on-site sources shall include the removal of unsuitable material, hauling, and compaction. The Contract will arrange for the services of a qualified soil engineering testing firm to perform the tests and will pay the costs of all such tests.

431-01 FIELD APPLIED COATING

Contractor shall furnish all material, labor, and equipment for cleaning, surface preparation, inspection and application of coatings on pipe and pipe materials. Contractor shall coat pipeline, fittings, weld joints, CP test leads connections, new TOR installations, and repair damaged pipe coatings in accordance with manufacturer's application guidelines.

431-02 COATING MATERIALS

City Approved Coating Systems

- 2-Part Epoxy Coatings
    - DENSO Protol 7300

Contractor shall provide coating materials. Contractor shall follow coating manufacturer's recommendations for storing, mixing, and application and shall properly store material to prevent theft, damage, and/or deterioration. In particular, the Contractor shall provide temperature control for the coating to ensure compliance. Prior to use, Contractor shall verify that all materials utilized have not exceeded their specified shelf life. For brush application, DENSO specific brushes are required.

Pipe, fittings, and parts shall be handled at all times in such a manner to prevent damage to the coating or the part. Transporting vehicles shall be free from debris, nail heads, or any other protrusions that may damage the pipe, fittings, or part. The applicator shall ensure sufficient and proper dunnage is used to protect the coated part. Fittings may arrive with a thin factory applied over-coat which must be cleaned to base metal. If fittings have a factory applied and documented FBE coating of 11 mils or more, then only prepare the ends.

All coating materials shall remain in manufacturer's containers with all manufacturer's labeling, instructions, and other data regarding material storage and use. City may prohibit use of any coating material which, in the City's opinion, shows any evidence of deterioration or damage.

The City requires all coating applicators to be trained and have proper OQ's. Documentation of certification shall be submitted to the City for review prior to application of field coatings. Training courses shall be coordinated in advance of coating activities to minimize any project delays.

All coating shall be purchased directly through the City approved manufacturer and/or distributor sources so that proper quality control of the coating material is maintained, and all requirements of the coating applicators are met. For HDD joints, a build to 40 mils is required and subsequent coats are to be applied while the base coat is still tacky.

431-05 BLASTING MEDIA & COMPRESSED AIR

Contractor is to furnish blast cleaning abrasive that shall be free from moisture, silt, and detrimental contaminants and shall contain less than 0.7% chlorides and less than 0.3% copper.

Contractor shall not use steel shot or recycled blast media for abrasive blasting. Black Beauty or Star Blast are acceptable blast media. Silica sand is strictly prohibited for use as a blast media due to potential health related concerns.

Blast cleaning materials and process shall achieve the specified surface condition prior to application of field coating.

Compressed air that is used for sand blasting shall be visibly free of oil and water. If water and oil traps are not deemed sufficient by the coating inspector, the air compressor shall be fitted with an aftercooler system appropriately sized for the application.

Compressed air that is used for sprayed coating application shall meet manufacturer recommendations. If required, Contractor shall use an aftercooler system to dry the compressed air.

431-06 SURFACE PREPARATION

Prior to the commencement of surface preparation, the surface shall receive a visual inspection to ensure it is free from grease, oil, water, arc burns, weld splatter, salt, mud, dirt, and other deleterious items. Rough welds, weld splatter and other sharp projections shall be carefully removed by mechanical means, chisel and/or power buffer. Arc burns shall be removed or repaired by grinding. Arc burns repaired by grinding shall be etched to confirm removal of all the metallurgical altered material. Suitable etchants include 10% natal or 20% ammonium persulfate. All dark-etching material shall be removed, and the remaining wall thickness shall be determined by ultrasonic measurement. In no case shall the removal of surface defects or deleterious items decrease the pipe wall thickness below API 5L requirements.

Prior to abrasive blast cleaning, the surface of the pipe shall be cleaned in accordance with SSPC-SP1 or other approved method. Solvent cleaning to be performed using an alkaline cleaner such as trisodium phosphate solution, followed by a fresh hot water or steam rinse or a volatile solvent such as xylene. MEK is an approved solvent wipe for surface preparation.

Nameplates, valve stems, rotating equipment, threads, bolts, adjacent coatings, etc. shall be protected from blasting and coating by suitable masking materials.

Open flame heat or a catalytic heater may be used to dry the pipe prior to abrasive blasting, but care should be taken to prevent any damage to the adjacent pipe coating. If the adjacent coating is burned, the damaged coating shall be removed by abrasive blasting.

The dew point and substrate (pipeline surface) temperature shall be checked during the blast cleaning operation and before coating each weld joint and area to be coated. The dew point and pipeline surface temperature values shall be documented on the pipe inspection report as well as the differential value of these temperatures to ensure that manufacturer's requirements are met. The surface temperature of the blast cleaned joint should be maintained a minimum of 5°F above the dew point until application of field coating.

The edge of the plant applied coating near the field joint shall be sweep blasted for a minimum distance of 2 inches from the edge of the field joint and shall be feathered with a power buffer or approved equivalent so as to provide a smooth transition from the bare metal area onto the plant applied coating. This process shall remove approximately 1 to 2 mils of coating.

The bare metal area to be coated shall be abrasive blast cleaned to meet the following minimum requirements:

- Two-Part Epoxy: SSPC-SP10/NACE No. 2 – Near-White Blast Cleaning requirements. The surface anchor profile shall meet coating manufacturers' requirements. Typically, the surface anchor profile shall be 2.0 to 4.5 mils. Testex Tapes Press-O-film to be used.

Surface profile measurements shall be obtained on all weld joints, measured at the 12:00, 3:00, 6:00 and 9:00 o'clock positions. The center of all fittings shall be tested at these four (4) o'clock positions. All measurements obtained, including the test method utilized, shall be recorded on a field inspection form. Note, fittings may have a thin, black factory applied covering. This is not a final coating. Fittings will be abrasive blasted and coated.

Any areas and/or joints identified by the City to have insufficient surface preparation, either before or after abrasive blast cleaning, to contain condensation, to be observed outside of the specified temperature range(s), or is observed to not meet the specified surface anchor profile will be marked with a grease-free marker such as school chalk. Locations identified shall be corrected in accordance with this specification at no additional cost to the City.

Contractor shall install coating within one hour of the completion of surface preparation and before any surface discoloration or contamination occurs to prevent flash rusting.

431-07 PRE-HEATING & POST-HEATING FIELD JOINTS

Contractor shall preheat the field applied coatings as required by the coating manufacturer. Contractor shall not coat pipe or piping materials when the surface to be coated is not clean and dry. The contractor shall not coat the pipe or piping materials if the temperature of the pipe surface falls outside of the manufacturer's temperature range requirements. During the coating process the pipeline surface temperature shall be at least 5° F above the dew point.

Contractor is allowed to preheat field weld joints for coating. The surface area to be coated shall be cleaned immediately before preheating. Electric induction with full circle heating coils, catalytic heater or open flame propane torch are acceptable methods of preheating the pipeline. Other methods must be approved by the coating manufacturer.

The substrate shall be preheated to a temperature of at least 50° F, and not exceed 200° F. Preheating shall be uniform over the entire surface area to be coated. The heating equipment will be such that the field joint will be heated to the specified temperature without blistering or bubbling the plant applied nor the adjacent existing coatings.

Contractor shall measure the temperature of the preheated area using a non-contact method such as quick response digital temperature indicator, pyrometer, or IR temperature gun with up to date calibration. Contractor shall not use heat crayons on bare metal surfaces that have been cleaned, blasted, and preheated for coating. No surface preparation or coating will be performed unless the City's Coating Inspector is on-site witnessing and documenting.

Post heating may be utilized, subject to City approval, if an accelerated cure time is required such as on mid-welds during HDD pullback operations. Post heating may be performed utilizing induction coils or catalytic infrared heaters. The maximum acceptable steel surface temperature for the application of the coating is 200°F.

431-08 MIXING 2-PART EPOXY COATING MATERIALS

Contractor shall NOT mix an individual component nor shall the Contractor mix together the components of 2-part epoxy coating materials unless a City Representative is present and able to directly observe the mixing operation to ensure that the 2-epoxy material is mixed properly according to manufacturer requirements.

Contractor shall NOT begin spray-coating operations unless a City Representative is present and able to directly observe the equipment setup to ensure that the 2-epoxy material component mix ratio is set properly according to the manufacturer requirements and that the temperature of the epoxy material components is per manufacturer requirements.

Contractor shall not divide Two-Part Epoxy kits in order to mix smaller quantities. Only full 2-Part Epoxy kits shall be mixed.

431-09 APPLICATION OF COATING

The coating shall be applied over the entire bare steel area and overlap onto the adjacent plant applied coating area that was abraded during surface preparation. Total overlap shall conform to the following dimensions for each transition type:

- FBE/ARO to FBE/ARO: Two-Part Epoxy shall be used in all situations. Total width of Two-Part Epoxy to be applied shall be a minimum of 12 inches, with approximately 6 inches of epoxy on each side of the welded connection.

- New FBE/ARO to Existing Asphalt Enamel / Coal Tar / Somastic: A gap at least 1 inch wide shall be left between the FBE and existing asphalt enamel / coal tar / somastic coating.

The coating produced shall result in a homogenous film around the full circumference of the pipe, free from holidays, voids, inclusions, surface pin holing, imperfections, brush bristles, and interface foaming. Use sufficient labor to quickly apply and smooth out.

The dry film thickness (DFT) shall be a minimum of 25 mils and shall not exceed the manufacturer's specified maximum film thickness. DENSO Protal 7300 is typically applied in the range of 25 to 45 mils. 2-part epoxy coatings are typically applied in the range of 20 to 40 mils with 40 mils being the target DFT,

If maximum DFT is exceeded check with manufacturer to verify that there is no likelihood of future coating failure or performance degradation. If DFT is less than required then check maximum recoat window to assure that recoating is allowed without roughening the surface. Apply additional topcoat to meet specification thickness. If the required thickness is significant, apply intermediate coat and then a topcoat. If maximum recoat time has been exceeded, then follow manufacturer's product literature for proper procedures. If no procedure is specified in product literature, then consult manufacturer.

Contractor shall ensure that dust, insects, brush bristles, and other detrimental contaminants do not contaminate the coated area during application and curing. Contractor to use DENSO brushes for brush application.

Application shall be performed in such a manner so as to provide adequate cover in angles and crevices, and to provide a smooth uniform coat. Coating thickness shall comply with manufacture's recommendations. Runs and sags are unacceptable.

If more than one coat of material is necessary to achieve the required thickness or a satisfactory condition, contractor shall follow the coating manufactures instructions for application of subsequent coats.

The applied coating shall cure to a Shore D hardness of 80 before lowering in or pulling in on HDD.

431-10 COATING DURING ADVERSE WEATHER

Coating of pipe shall not occur during periods of snow, sleet, rain, fog or when the City considers that excessively windy or dusty conditions will have a detrimental effect on the coating quality. During windy conditions, the Contractor shall erect windbreaks, to the approval of the City, for the protection of coating application operations.

The coating must not be allowed to freeze before an adequate cure is attained.

431-11 COATING INSPECTION - HOLIDAY DETECTION

Contractor shall coordinate with City to witness holiday detection testing. The holiday detector voltage output is to be set and verified with the appropriate voltmeter or crest meter to the satisfaction of City each day before initial use and periodically throughout the day to verify proper test voltage is being applied. Refer to coating manufacturers' recommendations published on the Product Data Sheet for the required output voltage settings of the holiday detector.

All coating repairs shall be holiday detector tested. Holiday testing shall take place after the coating has exceeded 80% of its hardness value. Holiday test the repair at the same voltage as used for the original coating.

Contractor shall ensure that 100% of pipe coating (plant applied and field applied) is holiday tested in the field, to include final tie-in welds, before backfilling, and during pullback of HDD installations.

431-12 COATING INSPECTION – THICKNESS AND ADHESION TESTING

All coated area shall be inspected for cured film thickness utilizing a magnetic pull-off gauge or other device approved by the City. Such checks shall be made at a minimum of four locations evenly spaced around the circumference of the pipe and at other locations as directed by the City. If needed, the Contractor shall modify the coating equipment and/or procedure so as to ensure that satisfactory results are achieved.

City shall determine the coating bond and condition by occasional sample removal. Contractor shall repair coating where samples are taken at no extra cost to the City.

431-13 COATING INSPECTION – VISUAL

The coating shall be visually inspected for, and be free of, the following conditions:

- Pinholes
- Missed or skipped areas
- Roughness
- Blistering, cracking, delamination

- Bristles or debris or dust in the coating

Runs, sags, and icicles are unacceptable and shall be recoated.

431-14 COATING REPAIR

The pipe coating may become damaged or scratched during hauling, unloading or stringing. Any damaged areas will be marked for repair. Small coating repairs less than 1 square foot associated with the installation of test leads or cables will be subject to a visual inspection to determine if adequate coverage has been obtained and free of holidays. A brush type holiday detector may be used to perform holiday detection on an "as needed" basis or if proper visual inspection cannot be performed.

Coating defects indicated by the visual inspection or holiday detector shall be marked and repaired by an experienced repair crew and to this specification.

Remove the defect, or defective coating, to sound coating or to bare steel by abrading the repair area with coarse sandpaper or a power sander. The removal of any loose, damaged, or disbonded coating shall be performed by abrasive blasting, wire brush, scraping or other method approved by City. Heating the coating to aid in its removal is not permitted. Abrade the surrounding coating for a distance of 1.5 inches radially to ensure proper inter-coat adhesion. Except for microscopic holidays, feather the edges of the original coating. For pinholes, repair by abrading/sanding lightly the parent coating about one inch in diameter around the pinhole before coating.

If, after defect removal, more than 25 square inches of bare steel is exposed, prepare entire exposed surface as per this Specification.

Prior to patching, remove all loose particles and dust with dry compressed air or a clean, dry cloth. Recoat the prepared surfaces to the specified dry film thickness, lapping at least 1 inch over the surrounding abraded coating.

502-02 WORKING ON OR NEAR ACTIVE PIPELINE(S)

Contractor shall exercise care when working on or near active pipelines and provide all labor, materials, and equipment to provide protection as described. Timber matting is the preferred cover for working on or crossing over the existing pipeline.

Contractor is cautioned that City's active natural gas pipeline is continuously operated at high pressure. Contractor is cautioned that the depth of cover over the active pipeline is unverified. The Contractor shall determine the actual depth of cover.

Contractor shall notify and obtain City approval prior to placing or removing any earth pad or stockpiling or removing stockpiled spoil material located on or near the active pipeline. Contractor is cautioned that padding placed over the existing pipeline or pipelines of others to provide line protection when it is necessary for his equipment to cross over or work over the existing line does not qualify for additional payment.

The City reserves the right to limit the type and size equipment that the Contractor utilizes to work on or near the City's active pipeline. The City requires the backfill material be removed from over the existing line by equipment such as an auger backfiller or padder, a motor grader or an angle dozer moving parallel to the lines rather than bladed equipment moving at right angles across the lines. City prefers rubber-tired equipment be employed rather than metal-tread equipment. If metal-tread equipment is employed, it must be equipped with street treads rather than treads with grousers. If dozers are employed, they shall not weigh more than 40,000 pounds and must produce a ground pressure of less than 8 psi.

Contractor shall use either rubber-tired equipment or a City approved lightweight dozer with street treads to spread spoil material or to install earth padding over the existing active pipeline. Grouser equipped treads will not be permitted for this operation. No large, operator-driven vibratory compactors will be used during the placement of fill on City's right-of-way in order to facilitate the proposed equipment crossings.

Colored sheets of plastic shall be placed under the temporary fill at original grade so that original grade will not be disturbed when temporary fill is removed. When using yellow plastic caution tape, the caution tape shall be placed directly above the pipeline and at a maximum interval of 2 feet spacing parallel to the pipeline centerline under the complete width of the stockpile not to exceed 10 feet from the centerline of the pipeline.

502-03 CONSTRUCTION ROAD CROSSING(S)

The Contractor shall only cross over active pipeline(s) and new pipeline segment(s) at designated construction road crossing locations as shown on the construction drawings and at an angle between 45 and 90 degrees. Only one piece of equipment shall cross the pipeline at one time. Only small, light-weight construction equipment will be used on the City's right-of-way in order to facilitate the proposed equipment crossings. During initial construction planning, the Contractor shall notify the City of the locations required to cross the active pipeline. The Contractor shall provide matting and necessary materials and equipment to safely cross the active pipeline. These costs shall be included in the bid.
The locations of proposed equipment crossings shall not be in a swamp/marsh/flood plain or any other area with highly compressible in-situ soils located beneath and/or adjacent to the pipelines. The groundwater table must be located below the top of the pipelines at the locations of the proposed equipment crossings. The Contractor shall not have recently excavated pipelines at the locations of the proposed equipment crossings.
Contractor shall obtain material for earth padding from the immediate right-of-way area or the designated offsite location. This material shall be clean and appropriate for the intended use. No more than 4-feet of additional fill will be placed on existing ground surface above the pipelines at the locations of proposed equipment crossings.

If material is not readily available from right of way, Contractor shall provide material from off-site. No "off right-of-way" material may be used unless Contractor provides to City a written agreement between the Contractor and the property owner from whom the material is to be obtained.

When Contractor requests extra construction road crossings at locations other than those shown on the construction plans, Contractor may be required to install additional depth of cover (earth padding) over pipeline(s) at those locations.

Upon completion of the work, Contractor shall remove the earth pad in 6-inch lifts down to original grade. Contractor shall dispose of any excess fill material in accordance with all regulations. After removal of padding material, Contractor shall grade crossing area to original conditions.

502-04 STOCKPILING SPOIL MATERIALS ON OR NEAR ACTIVE PIPELINE(S)

Before trenching parallel to active pipeline(s), Contractor shall ensure that City has staked the centerline of the new pipeline(s) and the existing active pipeline(s) at 50-foot intervals. The stakes for the existing active pipeline(s) will indicate the depth of cover at that location. Contractor is warned that this depth of cover is accurate only at the staked location and at the time of staking.

Trench excavation spoil material may be stockpiled in the space between the new pipeline(s) and active pipeline(s) and/or on or near the active pipeline(s).

Stockpiles shall not be placed adjacent to stream banks, within locations where it may become a source of sediment in surface runoff, or near areas subject to concentrated overland flow.

Spoil material shall be stockpiled in a manner that does not endanger personnel, stability of adjacent trench(s) or excavations, or cause settlement of the ground. Slopes of stockpiled materials shall be formed at stable angles consistent with the soil material properties.

Whenever practicable, Contractor shall not mix the topsoil with subsoil during stripping/trenching and stockpiling procedures.

502-05 REMOVAL OF EARTH PAD(S) AND STOCKPILED SPOIL MATERIALS

Contractor shall obtain City's approval of Contractor's proposed method for removing the soil materials from on or near the active pipeline(s).

Contractor shall remove soil material located on or near active pipeline(s) by equipment such as an auger back-filler or padder, a motor grader, or an angle dozer that is moving parallel to the pipeline(s) rather than bladed equipment moving across at right angles.

Contractor shall, upon completion of the work, remove the spoil material in 6-inch lifts, leaving a minimum of 48 inches depth of cover over the pipeline(s). Contractor shall dispose of excess spoil material.

After removal of spoil material located on or near active pipeline(s), Contractor shall grade and restore site to original conditions.

502-06 USE OF TIMBER MATS AND AIR BRIDGES

Timber mats can be used in addition to earth padding. Air bridges may be substituted for earth padding with a minimum air span of 20-feet. Timber mats for active pipeline equipment crossing shall be 3 layers.

505-02 PIPE TRANSITIONS

Contractor shall furnish all labor, tools, and equipment necessary to fabricate pipeline transitions.

At any location where the pipe wall thickness changes and that change in wall thickness exceeds 0.094", a transition piece, 3 feet or 3 times the nominal pipe size in length, whichever is greater, shall be installed. If pipe material is not commercially available that provides for a change in wall thickness that is less than 0.094", then pipe material that provides for a change in wall thickness up to 0.135" may be used.

Contractor shall fabricate transition pieces using pipe material. Contractor shall fabricate transition pieces and welds per construction specifications, specifically, ASME B31.4, Pipeline Transportation Systems for Liquids and Slurries, Acceptable Butt Welded Joint Design for Unequal Wall Thickness.

The pipe transition requirements noted above also apply whenever abutting wall thicknesses exceed 0.094" such as welding pipe to fittings, pipe to valves, valves to fittings, etc. The land and bevel angle is to be documented at eight locations around the fitting.

524-01 ISOLATION AND BLOWDOWN VALVES

Contractor shall furnish all equipment, labor, and materials necessary to install pipeline isolation valves and related appurtenances as shown on construction plans.

All pipeline components shall be pressure tested in accordance with City's Specifications and Standards before installation. Contractor shall notify City in writing as least 48 hours before pressure testing.

Any work performed without prescribed inspection(s), as determined by the City, may be ordered removed and replaced at Contractor's expense.

524-03 PIPELINE ISOLATION VALVES

Valve Assemblies: Pipeline isolation valves shall be installed plumb and aligned with piping. For below grade installations, valve body bleed ports shall be piped to the surface. Such piping shall be schedule 80 minimum, adequately supported, and assembled with socket weld fittings or weld end fittings. All such piping shall be coated in accordance with City's underground coatings specifications. Valves shall be assembled according to the City and Manufacturer's specifications and standards.

Pipe and Fittings**:** Contractor shall be responsible for trimming elbows to achieve plumb and proper alignment of pipe and valves. Fittings shall be free of any buckles, dents, cracks, gouges, or other defects. Stresses in pipe and fittings shall be kept within allowable limits and excessive pipe deflections shall be avoided.

Corrosion Coating: Contractor shall inspect and repair pipe coating on all exposed pipe in accordance with the Specification(s). Contractor shall coat, inspect and repair as needed valve assembly and appurtenances.

Pipe Bollard: For new valve sites, Contractor shall furnish and install 2-inch steel pipe bollards and pipe rail fence as shown on construction drawings. Bollards shall be painted white.

Valves shall be installed on cement/concrete pads or resting blocks with yellow rock shield between the bottom of the valve and cement. Stacked bags of cement placed on undisturbed soil under the valve is sufficient.

The isolation valves shall come equipped with gear reducers and grease zerts. The valves are designed with stem extensions. The Contractor shall take care not to damage the valves during installation. Valves are to be properly supported.

524-04 BLOWDOWN VALVES

Blowdown valves shall be installed per the construction drawings. A cement/concrete pad or resting block shall be installed below the pipe. Yellow rock shield shall be installed between the bottom of the pipe and the resting block.

Soil to air transition shall have RD6 wrap, or equivalent, two feet below and two feet above the finished ground level. Any pipe that is exposed to the atmosphere shall be abrasive blasted and primed and coated with a UV resistant topcoat.

525-01 HDD INSTALLATION

The Contractor shall install the welded pipe string using the Horizontal Directional Drilling (HDD) method. Contractor shall provide all necessary equipment, instrumentation and supplies to install the welded pipe string using the Horizontal Directional Drill (HDD) method of installation. Contractor will be responsible for providing and mobilizing equipment to the site.

Contractor shall provide a plan documenting the necessary procedural precautions to ensure that the basic and essential aspects of a proper directional drilling installation are controlled.

Contractor shall be responsible for obtaining additional geotechnical information that it determines may be required to successfully complete the HDD installation as per the construction drawings, specifications, construction and/or environmental permits, applicable regulations, and other specific requirements outlined in the contract documentation for the HDD project.

If conditions that differ from the geotechnical information obtained for the site are encountered during any phase of the HDD process, Contractor shall immediately notify and provide written notice to City.

Contractor shall obtain City approval of a Horizontal Directional Drilling Plan before mobilization. The plan shall include the following information, at a minimum:

- List of all personnel in supervisory positions that will be assigned to the project including their training and related HDD experience
- Procedure(s) associated with personnel safety on the job site including, but not limited to, communication protocols between personnel at the entry and exit sites when work is being performed at one site that could affect the safety of personnel at the other site
- List of all equipment that will be used during the project
- SDS sheet(s) for the drilling fluid as well as any additives that will be used
- Description of the proposed solids control equipment (if any)
- Procedure for preventing, detecting, controlling and mitigating the impacts of any inadvertent drilling fluid discharges including:
    - Identification of areas requiring protection: streams, wetlands, ponds, restricted property, etc.
    - Description of the method(s) that will be used to locate inadvertent returns when they occur
    - Description of the method(s) that will be used to contain, collect, and remove/dispose of the inadvertent returns
    - Method to restore areas onto which inadvertent returns were contained.

- Procedure for drilling the pilot hole
- Procedure and equipment used for tracking the actual location of the drill strings downhole assembly during the pilot hole drilling process to ensure profile maintains minimum bend radius.
- Procedure for the reaming and swabbing operations including a description and diameters of the proposed reaming and swabbing tools as well as the expected number of passes for each reaming tool or swab.
- Procedure for supporting the welded pipe string during the pre-installation pressure test including the type of supports that will be used
- Insertion plan for the welded pipe string including the following:
    - Description of the support equipment (rollers, side-booms, side rollers, etc.) for the welded pipe string
    - Buoyancy calculations and ballast adjustment measures, if required
    - Procedure for protecting the pipe coating, verifying its integrity and repairing any damaged coating during the insertion process
    - Procedure for the pulling the welded pipe string into the reamed hole
    - Procedure for disposing of the drilling fluid after the completion of the HDD project including the name and location of the off-site disposal facility (if one is to be used)
    - Procedure for use of pneumatic ramming tool if needed to overcome static friction during pipe pullback. Procedure for protecting pipe from over-stressing and/or repairing damage incurred during ramming assist

Contractor shall submit an as-built package including all original project records for acceptance by City. Package shall include pull strength applied, GPS routing data, ACAD profile, and final jeeping report.

525-04 CONTRACTOR PERSONNEL

Contractor shall provide the necessary personnel fully trained in their respective duties as part of the directional drilling crew and in safety (each person must have been fully trained on all facets of directional drilling). A responsible representative who is thoroughly familiar with the equipment and type of work to be performed, must be in direct charge and control of the operation at all times. In all cases the supervisor must be continually present at the job site during the actual directional drilling operation. The

Contractor personnel in supervisory positions shall have verifiable experience for each phase of the HDD process on other projects with similar subsurface conditions, pipeline diameters and pipeline lengths.

525-05 CONTRACTOR EQUIPMENT, INSTRUMENTATION, AND SUPPLIES

All equipment provided by the Contractor shall be leak-free, fully functional for its intended purpose and be maintained in good operating condition.

All instrumentation provided by the Contractor shall be calibrated/certified as per the manufacturer's recommendations, have appropriate documentation that summarizes the results of the most recent calibration/certification process, be fully functional for its intended purpose and be maintained in good operating condition.

All supplies provided by the Contractor shall be fully functional for their intended purpose and be stored as per the manufacturer's recommendations and any applicable construction and/or environmental permits/regulations.

525-06 PROTECTION OF ABOVEGROUND AND UNDERGROUND FACILITIES

Contractor shall ensure that existing underground utilities, cables and/or structures in the vicinity of the project site have been positively located and adequately marked before beginning any construction activities.

During the drilling process, the Contractor shall expose and/or protect all underground utilities, cables and/or structures for inspection.

Contractor shall be responsible for all financial losses and repairs associated with any damage to aboveground facilities as well as any damage to underground utilities, cables and/or structures resulting from all construction activities associated with the HDD project.

525-07 PERMITS

The Contractor shall be responsible for obtaining all local and state permits that are required to complete the installation of the welded pipe string other than those provided by the City. Contractor shall be responsible for obtaining all permits for the treatment, stockpiling, transporting, and offsite disposal of all waste drilling mud, fluids, cuttings and/or water from the dewatering process and/or other drilling operations.

Contractor shall adhere to all permit requirements as well as any applicable regulatory requirements associated with the HDD project including MODOT submittal.

525-08 ENVIRONMENTAL REQUIREMENTS

Contractor shall perform the HDD process in such a manner as to prevent the discharge of any drilling mud, fluids, cuttings and/or water to adjacent land areas and/or water bodies that is not in accordance with permit and/or regulatory requirements.

Contractor shall maximize recirculation of drilling fluid surface returns. Contractor shall provide solids control and fluid cleaning equipment of a configuration and capacity that can process surface returns and produce drilling fluid with appropriate properties and for removal of excess cuttings from the fluid.

Contractor shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at locations other than the entry and exit points shall be minimized. In the event that annular circulation is lost, the contractor shall take steps to restore circulation. If inadvertent surface returns of drilling fluids occur, they shall be immediately contained, collected, and removed/disposed. A hydovac machine is to be on-site and on standby as necessary with a full water tank.

Contractor shall check the Entry Site, Exit Site and the area in the vicinity of the drilled path for inadvertent discharges on a routine basis. This includes upland, wetland, and water areas. Contractor shall provide the necessary personnel/equipment and follow the Inadvertent Control Contingency Plan in order to detect, control and remediate the surrounding areas associated with any inadvertent discharges as part of the HDD project.

If the amount of inadvertent returns exceeds the capacity of the containment, drilling operations shall be suspended until the volume of inadvertent returns can be managed without exceeding the capacity of the containment.

Contractor shall prepare any excavated pits used in the drilling operation so that they will contain the drilling mud, fluids and/or cuttings in order to prevent their infiltration into the surrounding soil and to prevent the migration of ground water into the pits. Any excavated pits used in the drilling operation shall be constructed and maintained as per the applicable permit and/or regulatory requirements.

Disposal of excess drilling fluids to the designated facility is the responsibility of the contractor and shall be conducted in compliance with all City policies, city, state, and federal regulations, right-of-way and workspace agreements, and permit requirements.

Waste drilling mud, fluids, cuttings and/or water from the dewatering process and/or other drilling operations shall be treated, stockpiled, transported and disposed of at the designated facility in accordance with all applicable permit and/or regulatory requirements.

Waste drilling mud, fluids and/or cuttings that are to be disposed of in a semi-dry state shall be dewatered and dried by the Contractor by processing them through a solids control plant comprised of equipment that may include sumps, pumps, tanks, desilters/desanders, centrifuges, material handlers and/or haulers.

The water content of the dewatered and dried solids shall not exceed the applicable permit and/or regulatory limitations (if any), and the equipment used to perform the waste cleaning/separating/stockpiling/hauling operations shall not interfere with the HDD process or impede its progress.

Waste drilling mud, fluids, cuttings and/or water from the dewatering process and/or other drilling operations shall be sampled and tested in accordance with all applicable permit and/or regulatory requirements.

Contractor shall maintain a copy of all permits and test results at the project site. Contractor shall provide City with copies of all permits and test results upon request.

City retains the right to monitor and/or collect samples of the waste drilling mud, fluids, cuttings and/or water in order to independently verify that the Contractor is adhering to all permit and/or regulatory requirements.

525-09 BENTONITE AND WATER

The technical criteria for bentonite shall be as outlined in the latest edition of API Specification 13A (Specification for Drilling Fluids Materials) for fresh water drilling fluids.

Any proposed modifications to the basic drilling fluid associated with additives shall be outlined in the Contractor's Horizontal Directional Drilling Plan, and a description of the additives to be used as well as their applicable SDS sheet(s) shall be included in the plan. No fluid will be approved or utilized that does not comply with permit requirements and environmental regulations.

Contractor shall be responsible for obtaining, transporting, and storing any water required for drilling fluids. Water use for drilling fluid shall be potable and shall not contain salts or chlorides that are detrimental to drilling fluid performance.

525-10 ENTRY SITE

Contractor shall establish a temporary work area at the Entry Site within the limits indicated on the City-approved construction drawings. The temporary work area at the Entry Site shall have adequate parking facilities, contain the necessary equipment associated with the HDD activities at the site and provide any required space for office trailers and/or equipment/material storage.

Contractor shall clear and grade the Entry Site in order to contain any spills and/or discharges. Any topsoil that is removed during the grading process shall be stockpiled at the site and stabilized in order to prevent erosion.

Contractor shall provide a load bearing surface for equipment, vehicles and material in the work area.

525-11 EXIT SITE

Contractor shall establish a temporary work area at the Exit Site within the limits indicated on the City-approved construction drawings. The temporary work area at the Exit Site shall contain the necessary equipment associated with the HDD activities at the site and provide any required space for equipment/material storage.

Contractor shall clear and grade the Exit Site in order to contain any spills and/or discharges. Any topsoil that is removed during the grading process shall be stockpiled at the site and stabilized in order to prevent erosion.

Contractor shall provide a load bearing surface for equipment, vehicles and material in the work area.

525-12 PILOT HOLE

The pilot hole must have smooth vertical and horizontal alignments, match the required entry and exit angles, follow the design centerline alignment and profile within the specified horizontal and vertical tolerances and have an actual radius of curvature that is greater than the minimum allowable radius of curvature specified on the City-approved construction drawings.

Contractor shall at all times provide and maintain instrumentation which will accurately locate the drill string downhole assembly during pilot hole drilling, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure. City shall have access to instrumentation and their readings at all times. A log of all recorded readings shall be maintained and will become part of the "as-built" information developed by the Contractor and submitted to Company.

City shall have access to the Contractor's field log, the actual equipment/instrumentation used during the HDD process as well as the current and historical readings of the equipment/instrumentation.

Contractor shall monitor the position of the drill string using down-hole instrumentation during the pilot hole drilling process. When the ground surface is not impeded by a road, railway, water or other obstruction, the Contractor shall provide and utilize a separate survey grid system located on the ground surface in order to track the position of the drill string.

When a separate survey grid system on the ground surface is used, the down-hole instrumentation shall be linked to it just before the pilot hole drilling process begins. Furthermore, the down-hole instrumentation shall be linked to the separate survey grid system on the ground surface a second time just after the pilot hole drilling process is completed.

Contractor shall determine the position of the drill string in the X, Y and Z coordinate system relative to the ground surface and compare the actual position of the drill string to the planned position of the drill string as shown on the City-approved construction drawings at least twice along the length of each drill pipe at approximately equal intervals.

The pilot hole shall be drilled along the path shown on the drawings within the following tolerances:

- Horizontal: +/- 5 feet from design centerline
- Vertical: + 0 feet to -10 feet from design profile (the HDD drill path may be up to 10 feet lower than that which is depicted and up no higher than depicted)

However, in all cases, right-of-way restrictions and proximity to adjacent HDD bores shall take precedence over the listed tolerances. Regardless of tolerances achieved, no pilot hole will be accepted if it will result in any of the pipeline being installed in violation of right-of-way restrictions or cause interference to an adjacent HDD bore or existing casing. Additionally, concern for adjacent utilities, foreign utility crossings and/or structures shall take precedence over the listed tolerances. Listing of tolerances does not relieve the Contractor from responsibility for safe operations or damage to adjacent utilities and structures.

Contractor shall immediately notify City of any deviations that do not comply with the tolerances listed on the City-approved construction drawings. Furthermore, Contractor shall immediately notify City of any other situation, event and/or condition that could affect the successful installation of the welded pipe string along the drilled path.

During the drilling process, Contractor shall verify that the actual radius of curvature for each joint of drill pipe along the entire drilled path exceeds the minimum allowable radius of curvature listed on the City-approved construction drawings. The drilled radius will be calculated over any three joint segments using the following formula: $R = L / A * 57.296$

where:
R = drilled radius over length (L)
L = length drilled, no less than 75 feet and no greater than 100 feet
A = total change in angle over length (L)

If the actual radius of curvature does not exceed the minimum allowable radius of curvature, Contractor shall immediately notify City.

Contractor shall record all calculations in the field log. At the completion of the pilot hole drilling process, Contractor shall provide City with the field log along with the equipment/instrumentation readings and calculations: legible copies of the original documents are also acceptable.

Furthermore, Contractor shall provide City with organized and legible data in tabular form for all of the equipment/instrumentation readings as well as all calculations associated with the actual location of the drilled pilot hole.

At the completion of the pilot hole drilling, the Contractor shall provide a tabulation of coordinates, referenced to the drilled entry point, which accurately describes the location of the pilot hole. This tabulation shall be in addition to the log of recorded readings required elsewhere in this specification.

Before pre-reaming operations may begin, City must determine if the actual location of the entry and exit points for the pilot hole are acceptable, the actual entry and exit angles for the pilot hole are acceptable, the horizontal and vertical tolerances for the pilot hole have been met and that the actual radius of curvature of the pilot hole is acceptable.

The Contractor shall conduct pre-reaming operations to ensure that a hole sufficient to accommodate the pull section has been produced. At a minimum, the hole shall be pre-reamed to the lesser of 150% of the outside diameter of the pull section, or 12 inches greater than the outside diameter of the pull section. Any damage to the pipe resulting from inadequate pre-reaming shall be the responsibility of the Contractor.

Final acceptance of the as-drilled location, entry and exit angles as well as the radius of curvature of the pilot hole shall be made by City's Project Engineer.

525-13 WELDED PIPE STRING ASSEMBLY AND SUPPORT

Contractor shall assemble the welded pipe string near the Exit Site as per the applicable section(s) of the project construction specifications. The welded pipe string shall be of the required length for the crossing, and it should be fabricated in one continuous section if practical.

The pull section shall be supported as it proceeds during pullback so that it moves freely and the pipe and coating are not damaged.

As part of the assembly process, Contractor shall provide adequate vertical and horizontal support for the welded pipe string along its entire length by the use of support equipment, rollers and/or cradles.

The supports shall be made of suitable non-abrasive material and shall not cause any damage and/or deformation to the welded pipe string. The supports shall be arranged in such a manner as to provide lateral stability and vertical support for the entire welded pipe string during both the pre-installation hydrostatic test and the welded pipe string installation process.

Although City prefers the use of pneumatic tire supports, the proposed use of other types of supports will be reviewed on a case-by-case basis. Other than pneumatic tire supports, all proposed supports for the welded pipe string must be approved in advance by City.

The supports shall be placed in such a manner as to fully support the welded pipe string during the pre- installation pressure test, and they should also allow the welded pipe string to move freely during the installation process. The Contractor shall provide a list of the number and type of equipment and booms that will be used for pipe support for City approval.

The supports shall be aligned properly and adequately secured and braced so as to prevent them from tipping over, moving or otherwise failing to support the pipe during the pre-installation pressure test and the installation of the welded pipe string in the reamed hole. Rollers shall be maintained and freely spin.

525-14 PIPELINE COATING

Contractor shall monitor the welded pipe string(s) and the pipe support equipment in order to insure that the pipeline coating is not damaged during the installation process. If any pipeline coating damage is discovered, the installation process shall cease immediately, the pipeline coating shall be repaired as per the applicable section(s) of the pipeline construction specifications and the situation that caused the pipeline coating damage shall be corrected.

Contractor shall inspect the welded pipe string for any pipeline coating damage on the leading edge of the welded pipe string after the installation process has been completed. Contractor shall immediately notify City of any indications of pipeline coating damage on the leading edge of the welded pipe string, and the pipeline coating damage shall be repaired as per the applicable section(s) of the pipeline construction specifications.

Any pipeline coating damage before, during and/or after the completion of the installation process shall be the responsibility of the Contractor.

Final acceptance of the post-installation pipeline coating integrity inspection shall be made by City.

525-15 PRE-INSTALLATION PIPELINE INSPECTION

Contractor shall inspect the welded pipe string(s) for any deformation (i.e. dents, buckles, wrinkles, etc.) and/or damage (i.e. scratches, gouges, etc.) before the installation process. An internal inspection using a caliper tool will be performed on the pipe string(s) before the pre-installation pressure test is conducted. If any type of deformation and/or damage is discovered, the welded pipe string(s) shall be repaired as per the applicable section(s) of the pipeline construction specifications.

Any deformation and/or damage to the welded pipe string shall be the responsibility of the Contractor.

525-16 PRE-INSTALLATION PRESSURE TEST

After a successful pre-installation inspection has been completed and before the welded pipe string is pulled into the reamed hole, a pre-installation pressure test must be successfully performed on the welded pipe string. Air or inert gas to 90 psig for two hours.

525-17 WELDED PIPE STRING INSTALLATION PROCESS (PULLBACK)

After the pilot hole has been pre-reamed to the appropriate size, Contractor shall install the welded pipe string(s) as per the applicable section(s) of the City-accepted Horizontal Directional Drilling Plan.

The pull section shall be installed in the reamed hole in such a manner that external pressures are minimized and an appropriate counter-balancing internal pressure is maintained. Any damage to the pipe resulting from external pressure during installation shall be the responsibility of the Contractor.

Unless City provides written instructions that ballast is not required, welded pipe strings with outside diameters larger than 16 inches must be ballasted in order to facilitate the installation process. No procedure shall be used that has not been approved by City. The Contractor shall be responsible for any damage to the pull section resulting from buoyancy modification.

Contractor shall furnish the necessary pull-head(s) in order to facilitate the installation process. The pull-head(s) shall have a fully-functional swivel connection in order to minimize the torsional stress on the welded pipe string during the installation process. The pull head shall be coated to assess coating quality.

The maximum allowable tensile load imposed on the pull section shall be equal to 80% of the product of the specified minimum yield strength of the pipe and the area of the pipe section. If more than one value is involved for a given pull section, the lesser shall govern.

The actual tensile stress imposed on the welded pipe string shall not exceed the allowable limit specified in the City-approved engineering calculations.

Any deformation and/or damage to the welded pipe string resulting from inadequate pre-reaming shall be the responsibility of the Contractor.

On projects with multiple pullback pipe strings where the pullback process is interrupted to weld on an additional pipe string and coat the joint, and the downhole pipe string section becomes stuck due to static friction, the use of a pneumatic ramming assist tool is allowed in order to overcome the static friction. Continuous use of pneumatic ramming assist tools is not allowed. Contractor shall notify City before using pneumatic ramming assist tools. Contractor is responsible for ensuring that the pipe string is not overstressed during the use of the pneumatic ramming assist tool.

If ramming assist tools are used field logs shall record the following:

- The date, starting time, and finish time of the pipe ramming assist
- Advance rates during rammer assist
- Linear distance the rammer assist was required during pullback
- Model and size of the rammer tool
- Compressor pressure and output
- Drill rig pulling pressure and forces prior to assist, during the assist, and upon completion of the assist with the rammer

525-18 POST-INSTALLATION PIPELINE INSPECTION

An internal inspection will be performed on the installed pipe string immediately after installation and before the post-installation pressure test is conducted. After the completion of the post-installation pipeline internal inspection process, any indication that does not meet City's acceptance criteria that cannot be cut-out and replaced, will require that the Contractor replace the installed pipe string at no additional cost to City.

Final acceptance of the post-installation pipeline internal inspection shall be made by City.

525-19 POST-INSTALLATION PRESSURE TEST

After a successful post-installation internal inspection has been completed, a post-installation pressure test must be successfully performed, see Pressure Testing.

Final acceptance of the post-installation pressure test shall be made by City.

526-01 WELDING

Contractor shall furnish all labor, tools, and equipment necessary to perform spread or facility welding in accordance with this Specification and Part 192 of Title 49 of the Code of Federal Regulations – "Transportation of Natural Gas by Pipeline" and the latest amendments thereto, issued by the Department of Transportation, Office of Pipeline Safety; the requirements of ASME B31.8, "Gas Transmission and Distribution Piping Systems;" and API 1104, "Welding Pipe Lines and Related Facilities."

Contractor shall perform all welding in accordance with qualified welding procedures using welders which have been qualified in those procedures. Procedure qualification and welder qualification shall be done in accordance with City Specification for Qualifying Procedures and Testing Welders. All production welding shall be in accordance with this Specification. Welding to be performed to MANGO standards. The MANGO-1 and MANGO-2 procedures shall be used.

MANGO-2 specification for Shielded Metal Arc Welding with low hydrogen (Class 7018) electrodes is used for hot taps, stopple fittings, welded split sleeves, patches and any other welding on lines pressurized to 100 psig or more, on lines with a high flow rate that will quench the weld and cause "sweating" or on lines that contain liquid. Low hydrogen welding methods may also need to be used on lines pressurized at less than 100 psig.

Contractor shall follow the welding procedures.
Procedure MANGO-1 for Butt Welds
Procedure MANGO-1 for Fillet Welds
Procedure MANGO-1 for TOR and O-let Fillet Welds
Procedure MANGO-2 for In Service Fillet Welds, In Service for TOR and O-let Fillet Welds

The MANGO procedure gives weld rod dimensions in fractional inches, the corresponding metric equivalents may be used as long as they are within +/- 10 percent.

526-02 WELDING EQUIPMENT AND MATERIAL

Contractor shall furnish all welding equipment, tools, and labor. Welding equipment shall be subject to the approval of the City and be of a size and type suitable for the work. All equipment shall be maintained in such condition as to ensure acceptable welds, continuity of operation, and safety of personnel. The equipment shall be operated within the voltage and amperage ranges used during the welding procedure qualification tests. Voltage and amperage gauges on welding rigs shall be accurate and may be tested.

Filler metals and fluxes must be as specified by the MANGO welding procedure. Filler metals and fluxes shall be stored in unopened, original containers to avoid damage or deterioration due to moisture. Filler metals, fluxes, and unopened containers which show signs of deterioration or damage shall not be used.

Low hydrogen electrodes which have been removed from their containers shall be kept in holding ovens at temperatures recommended by the electrode manufacturer. An electrode which has been outside the holding oven for a period of two hours shall be re-dried as recommended by the electrode manufacturer or properly disposed. The installation of the spherical tee on the in-service pipeline, shall be accomplished using the MANGO-2 low hydrogen procedure. Appropriate filler metals may be used in spherical tee and weld-o-let installation as specified in MANGO-2.

526-03 WELDING PROCESSES AND APPLICATIONS

Oxyacetylene welding may be used with City approval but will be restricted to pipe and fittings 2-inch diameter or smaller and to certain fabrications which cannot be feasibly accomplished utilizing the other welding processes.

Shielded Metal-Arc Welding may be used for all shop and field fabrication of pipe, fittings, valves, and structures. The current used shall be reverse (electrode positive) polarity. The base material shall be the negative side of the line.

Automatic Submerged Arc Welding shall, in general, be restricted to shop fabrication and multiple jointing of pipe. Semi-Automatic Gas Metal-Arc (Micro-wire) and Automatic Gas Metal-Arc Welding may be used with City approval.
The Contractor shall have the option of employing position or roll welding if tested by MANGO procedure.

526-04 PREPARATION FOR WELDING

The bevel shall be as specified in the procedure being followed. Pipe ends not mill beveled or requiring beveling shall be beveled by machine tool or machine oxygen cutting.

For pipe of the same nominal wall thickness, the maximum abutting offset shall be 25 percent of the nominal wall thickness but not more than 1/8". For welding pipe and fitting ends of unequal wall thickness, consult City for application of ASME B31.8, "Acceptable Butt Welded Joint Design for Unequal Thicknesses". Pipe having longitudinal seams shall be offset within 30° of the top.

All pipe and fittings are to be installed plumb, square, true, and level without strain or distortion, both horizontally and vertically. Flanges are to be welded with the top holes astraddle the vertical centerline. Using back hoes or other pulleys or pry bars for alignment is not allowed. Segmentable ells are provided. The Contractor's welders shall fit pipe as necessary.

Surfaces for welding shall be clean and free of paint, oil, rust, scale, coating, or other material detrimental to welding for a distance of at least 1.5 inch back from the welding edge inside and outsied. If water or moisture is present on the pipe, it shall be removed by preheating.

The root spacing of the joint shall be the same as the procedure being followed.
An internal line-up clamp shall be employed whenever practical for all sizes of pipe 10-3/4" OD or larger. The root bead shall be completed prior to removal of this clamp.

An external line-up clamp shall be used where it is impractical or impossible to use an internal line-up clamp. Root bead segments used in connection with external clamps shall be uniformly spaced around the circumference of the pipe and shall have an accumulative length of not less than 50% of the pipe circumference before the clamp is removed.

When the pipe has a fusion bonded epoxy coating, the Contractor shall provide fireproof blankets which will protect at least two (2) feet of coating on each side of the weld. FBE and ARO coated pipe shall be cut back 2.0 inches minimum.

526-05 BACK-UP WELDS

Back-up welds shall be used where there is safe access to the inside of the pipe when:

1. The nominal wall thickness of adjoining pipe ends is internally offset more than 3/32" but less than one-half the wall thickness of the thinner pipe;

2. In the opinion of the City, the root bead shows signs of internal undercut or lack of penetration;

3. A fitting is being welded to a pipe.

When back-up welding is required due to varying inside diameters, it shall be made any time after the second OD pass. Before back-up welding is used, the root bead shall be background to clean metal with a power grinder. All back-up welding shall be done with the same electrode during the separate welding procedure for back-up welding.

526-06 PREHEATING

A preheat of 250°F shall be applied prior to welding, and this temperature shall be maintained prior to each subsequent pass.

The preheat area shall include the entire circumference of the joint for a minimum distance of three (3) inches back from each end. Preheat temperature shall be checked with temperature indicating crayons.

526-07 PROTECTION FROM WEATHER

All joints being preheated, welded, or stress relieved shall be protected from moisture and severe weather conditions until the joints have cooled to 100°F.

Welding shall not be permitted unless adequately protected when the wind velocity is over 10 MPH for gas-metal welding and 15 MPH for shielded metal-arc welding or when the ambient temperature is lower than 20°F.

526-08 WELDING TECHNIQUES - GENERAL

Interpass temperatures shall be a minimum of 260 °F. A maximum interpass time of five (5) minutes for shielded metal-arc welding shall be allowed between the completion of the stringer bead and the start of the second pass.

The number of welders used on the root (stringer) and hot bead pass shall be the same number as used in making the procedure qualification weld.

When welding joints in which one or both members are 0.750" W.T. or greater within three (3) inches of the center line of the weld, one of the following precautions shall be taken:

1. Low hydrogen electrodes (EXX18) shall be used; or

2. The base metal within three (3) inches of the weld centerline shall be preheated to a minimum of 150 °F. prior to welding with conventional electrodes (EXX10).

During production welding, the motion, direction, and length of the circumferential welding of each welder on each pass shall duplicate as closely as possible the motion, direction, and length of circumferential welding used on the procedure weld.

Once welding has begun on fittings, valves, and .500" W.T. pipe, the City may require the entire weld to be completed without stopping. If welding is suspended during production welding, the base metal within three (3) inches of the weld centerline shall be preheated to a minimum of 150 °F. prior to the restart of the welding process.

Once welding has begun on pipe, the second pass shall be completed prior to shut down. A preheat of 150°F shall be used when welding begins again.

The maximum distance along the right of way between the second pass crew and the filler crews shall be 2,500 feet.

No ground clamps, supports, braces, or access wells shall be welded to the pipe, or fittings.

Weld-O-Lets, studding outlets, Thread-O-Lets, Thread-O-Ring nipples, spherical tees, and Lock-O-Ring flange nipples shall be installed with low hydrogen electrodes.

526-09 SHIELD METAL-ARC WELDING – VERTICAL DOWN

The bevel ends shall have an angle of 30° (+5, -0) with a 1/16"+ 1/32" root face.

The root bead shall be made with the number of welders in the procedure qualification weld, working simultaneously in such a way as to equalize stresses. Tack welds not removed shall be made with the same class electrode used for the root bead. The root bead shall be completed without interruption and without removal of the internal line-up clamp. Contractor is cautioned that rough handling of the pipe at this point will induce cracks in the stringer bead. To minimize this possibility, the pipe shall be gently lowered onto skids. The pipe shall not be moved again until at least the hot pass and one or more filler passes have been completed.

Before applying a second bead or hot pass, the root bead shall be thoroughly cleaned using a power wire brush. The crown of the root bead shall then be ground with a disc buffer to a depth that will expose "wagon tracks." After buffing, the stringer shall be cleaned a second time with a power wire brush. The finished bead shall present a good concave surface as a foundation for the remaining beads as well as allowing the City welding inspector an opportunity to review.

Remaining beads shall consist of the required number of beads as given in the procedure included in this Specification. Each bead shall receive a power wire brushing as necessary to remove slag and scale. Before applying the final bead, it may be necessary to flush up concave portions of the weld with short welds called stripper passes. Adjacent beads in the same layer of the weld shall be started in staggered position with respect to each other.

The contour of the finished weld shall be such that the crown shall not be below the pipe surface nor be higher than 1/16 inch above the parent metal and shall overlap the original groove by 1/16 inch on each side. The completed weld shall be thoroughly brushed and cleaned.

If welding is stopped for any reason, special care shall be taken in restarting in order to obtain full

penetration to the bottom of the joint and thorough fusion between the deposited metal, the parts being joined, and the previously deposited weld metal.

526-10 SHIELD METAL-ARC WELDING – VERTICAL UP

The bevel ends shall have an angle of 30° (+5, -0), with a 1/16" ± 1/32" root face.

To ensure complete fusion between weld and base metal and to minimize the possibility of underbead cracking when welding low-alloy, high-strength materials, the vertical up method of welding, using low-hydrogen type electrodes, may be employed with City approval.

Further, when frequent, unaccountable cracks or incomplete fusion are found to be occurring in the welds made by the vertical down method, the City reserves the right of requiring the Contractor to remove the defective welds and re-weld using the vertical up method.

The use of backup rings for vertical up welding will be at the approval of the City.

Filler metals shall be handled as described in the section titled "Welding Equipment and Material" of this Specification.

526-11 IDENTIFICATION OF WELDS

Each welder shall identify his weld or portion thereof with a non-indenting weather resistant surface mark. Contractor shall be responsible for keeping a record of each welder's work until the pipeline has been coated.

526-12 WELDING DEFECTS

Defects located by nondestructive methods or visual inspection shall be accepted or rejected by the City in accordance with ASME B31.8, API Standard 1104, and Part 192 of Title 49 of the Code of Federal Regulations and the latest amendments thereto, issued by the Department of Transportation, Office of Pipeline Safety. In the event these documents conflict, 49 CFR Part 192 shall take precedence, followed by API 1104.

Frequent defects of a similar nature involving either inadequate penetration, incomplete fusion between the weld and base metal, or cracks, which occur despite good welder technique, shall be sufficient cause of the Contractor and City to review the welding and preheat procedure, perform a complete check of the welding equipment and the type and condition of electrodes, and, if necessary, request a chemical analysis of the base metals being welded from the City's Engineer in order to determine the proper remedial steps to be taken.

526-13 REPAIR OR REMOVAL OF DEFECTS

All repairs shall meet the standards of acceptability set forth in Part 192 of Title 49 of The Code of Federal Regulations, ASME B31.8, and API 1104. No repairs to weld defects shall be made without the knowledge and authorization of the City.

Except for shallow crater cracks or star cracks as described in API Standard 1104, Paragraph 9.3.10, welds containing cracks shall be removed. Under certain circumstances, repair of certain types of cracks, less than 8 percent of the weld length, may be permitted. Any portion of the pipe containing an arc burn shall be repaired or cut out as a cylinder.

A repair of a repair shall not be permitted.

All Contractor labor, material, and travel costs associated with welder qualification and testing should be included in the base bid and are the responsibility of the Contractor.

541-01 TIE INS

Contractor shall provide all necessary equipment, labor and supplies to conduct the tie-ins. The Contractor shall execute work simultaneously at all tie-in locations in order to complete the work within the allowable time for the tie-in schedule. The tie-in involves hot-tapping the active pipeline on both sides and may involve a sub-contractor.

Depending on final tie-in equipment, it may be possible to tap the new HDD piping and purge it. Both the new HDD piping and the cased carrier pipe may be able to flow in parallel. Then, stopping and making a positive seal on both sides can occur.

Contractor should be aware that the exterior coating on some pipelines may have asbestos-containing material (ACM) which shall be properly abated at the tie-in locations prior to the day of tie-in.

The Contractor shall not begin any hot work on the existing line until the City has declared that it is safe to do so.

The Contractor shall submit a detailed tie-in plan at least four weeks prior to the Contractor's target tie-in date. The tie-in plan, at a minimum shall include:

- Staffing plan to include maintaining safe working hours for any crew members not to exceed 14 hours in a single working day.
- Required equipment (air moving equipment, cold cut saws and blades, fire extinguishers, air monitors)
- Additional equipment
- Tie-in pipe configuration with taps for purging and isolating and equalizing
- Pipeline strip back length (length of pipe exposed, but not undermined, to facilitate tie-in)
- Workspace layout
- Contingency plan for residual gas in line
- Evacuation routes
- Traffic Control Plan
- Lifting points, cut locations, weld locations, etc.
- Day-of work checklist for materials and equipment

As field data becomes available, the Contractor shall update the tie-in plan to address changes from the initial plan and to include a detailed drawing of the tie-in piping. Contractor shall not proceed with the tie-in until the final plan is approved.

The Contractor shall provide weekly schedules that reflect the target tie-in date as a milestone.

541-04 TIE-IN, GENERAL

The maximum allowable time for the Tie-In Work Event is 14 hours which begins at the time the lock box is handed over to the Contractor and ends with final NDE weld acceptance. This time period shall include all construction tasks required to put the line back into operational service, if a bypass arrangement can not be maintained.

Contractor shall stake-out the tie-in configuration and establish the cut locations on the existing pipeline such that each tie-in location is completed with the minimum amount of closure welds. The Contractor will be limited to two closure welds at the tie-in location.

541-05 TIE-IN SCHEDULING

The Contractor shall establish a target tie-in date at the preconstruction planning meeting or 10 days before the target tie-in date, whichever is more. The City will establish the expected line shutdown date within +/- 10 calendar days of the target tie-in date.

The Contractor shall confirm the target tie-in date 10 days before the expected line shutdown date. The City will re-establish the expected line shutdown date within +/- 5 calendar days of the expected line shutdown date. Contractor is responsible for scheduling sub-contractors and 3rd parties like TDW.

The City will notify the Contractor approximately two days in advance of the expected line shutdown date with an Actual Line Shutdown date when the line will be turned over to the Contractor for the fixed-bid portion of the Tie-In Work event.

This planning and notification is required to coordinate work with any sub-contractors, so the Contractor can accurately plan the work and bid accordingly.

541-06 PRE-WORK FOR TIE-IN WORK EVENT

Prior to establishing the final cut location for the tie-point on the existing pipeline, the Contractor shall expose the pipe and confirm that the City has examined the piping, at least 10 calendar days prior to tie-in, at that location to ensure that the pipe is free from anomalies and laminations and has adequate wall thickness for the tie-in welding operation.

Contractor shall confirm the TORs or Save-a-Valve for visual inspection has been installed at the tie point location. The Contractor shall mark the intended cut location on the pipeline.

Prior to the planned shutdown date, the Contractor shall complete all required excavation work including the minimum open trench length on the side of the existing pipeline to remain in service according to the table below. At no point shall the contractor be allowed to excavate under the existing pipeline that will remain part of the completed system, except at the weld points and lifting points. The minimum open trench length may be shortened if the Contractor and plan and show the work space is sufficient.

Pipe Size (inches)	Minimum Open Trench Length (feet)
6	25
8	30
10	40
12	45

One cold cutting machine shall be installed and set-up on each cut location at least one day before the tie-in event.

Prior to the Tie-in Work, the Contractor shall have all labor, materials, and equipment properly staged and prepared. The Contractor shall have contingency resources (equipment and crews) to complete the Work in a non-stop manner to completion. These resources shall be on or near the jobsite and readily available to include full complements of relief crews, critical equipment spares for light plants and cold cutting equipment, hot cutting and welding rigs, side-booms, air movers, air horns and other critical equipment. Contractor shall confirm that all the equipment is in working condition prior to the planned line shutdown date and time.

Fire extinguishers and spill kits shall be located at each tie-in location. Drip pans, absorbent pads, and other equipment and materials shall be readily available and used as needed to prevent the release of gas.

541-07 EXECUTION OF TIE-IN WORK

The Contractor shall initiate work immediately when the pipeline is turned over from City to the Contractor on all tie-in locations to minimize the required duration of the line shut down. Work on all cut points shall be executed simultaneously by multiple crews.

Contractor and City shall provide continuous LEL readings at the tie-point locations. The LEL shall be within OSHA permissible levels before personnel enter the work area. City and Contractor shall take LEL readings and CGI readings to confirm that the pipeline is free of gas.

Initial cuts of pipeline sections to be removed shall be made using “cold” methods. Hot cutting can only be performed once both ends of the line segment have been cold cut, a segment removed, and it has been determined by monitoring that a non-hazardous atmosphere exists within the pipe segment.

Contractor shall ensure that the City has visually inspected the interior of the pipeline immediately after the line is separated and noted its condition as this is a regulatory requirement.

All pipeline welds shall be made in compliance with the most stringent requirements of the inspection criteria of API-1104 or the City’s welding criteria and are subject to inspection by the City.

The Contractor shall retain all labor, materials, and equipment on site until all of the tie-in welds have passed examination, the Contractor has removed all locks and LOTO, and released by the City.

At any time, if the Contractor states or if in the opinion of the City, the Contractor will not be ready to conduct the tie-in event, the Expected Line Shutdown Date will be postponed. The Contractor shall not be eligible for standby time, additional contract days, or any other compensation if the Expected Line Shutdown Date is postponed for these reasons.

If the City creates a schedule slippage to the established Actual Line Shutdown Date, the Contractor will be compensated per the established unit rate for Standby Time for Tie-in Crew as per submitted Exhibit.

561-01 PRESSURE TESTING

Contractor, shall provide all labor, equipment, and material required to pressure test new and/or modified pressure piping, valves, fittings, manifolds, pipeline segments, to include piping that may be required for cut-out repairs of tie-in welds and/or other pipeline repairs.

The Contractor may perform a hydrostatic pressure test or an inert gas, nitrogen, pressure test. The test chart shall start at zero and return to zero. The test will hold +/- 10% 100 psig and 400 psig for ten (10) minutes during initial pressurization.

When testing new pipeline segments, pressure testing shall only be performed after City has accepted the final caliper tool run.

Pressure testing of pipeline segment(s) shall be performed on Horizontal Directional Drill (HDD) projects both before and after the pipe string is pulled back through the pilot hole. A pretest of 90 psig air test for two hours is sufficient.

The mill test reports with corresponding heat information shall be available and confirmed by the City for all pressure containing piping, fittings, etc. before the pressure test is started. The exact footage and number of fittings under the test is to be recorded.

561-02 QUALITY ASSURANCE

Hydrostatic pressure testing shall comply with this specification and Code of Federal Regulations, Title 49, Part 192, Sub-part J: “Test Requirements”.

The City shall approve the Contractor or Contractor’s vendor that specializes in pressure testing. The Contractor or vendor shall provide all test equipment required to pressure test the pipeline segment(s) or pipeline components(s). All equipment shall be in good working condition, with certification traceable to the National Institute of Standards Technology that is dated within the 12-month period preceding the pressure test date.

All new and/or modified facility pressure piping, including the valves, fittings, manifolds, etc., attached thereto shall be pressure tested which includes piping that may be required for cut-out repairs of the tie-in welds and repairs required. Additional pipe shall be tested to be used as future pre-tested emergency pipe.

When the welds for piping that is installed for cut-out repairs and for final tie-in weld(s) between new (or modified) and existing facilities cannot be pressure tested, these welds must be 100% radiographically inspected in accordance with API 1104.

All equipment shall be in good working condition, with certification traceable to the National Institute of Standards Technology that is dated within the 12-month period preceding the hydrostatic pressure test date. Primary Temperature Recorder, Secondary Temperature Recorder and Pressure Chart Recorder shall have calibration certification within 12-month period preceding the hydrostatic pressure test date.

Analysis and certification stating that the pressure test was performed without evidence of leakage and executed in accordance to Federal, State, and City standards and regulations. Before all pressure tests are accepted, a qualified engineer (Professional Engineer) shall review the test data and certify that the hydrostatic test was performed without any evidence of leakage. The results of the engineering analysis shall be included with the pressure test documentation as proof that the test was acceptable.

Copies of test certifications for all equipment requiring certification must be included with the pressure test records.

Contractor shall provide equipment certification documents to City before hydrostatic pressure testing and shall confirm that City concurs that the equipment certifications are valid before authorizing the hydrostatic pressure testing to begin.

Contractor shall supply to City in writing the source supply data of all water used for the hydrostatic tests. Contractor shall provide and obtain approval of the procedures for filling the welded pipe string with water, performing the hydrostatic test and de-watering the welded pipe string after the completion of the test. For Horizontal Directional Drill installations, Contractor shall provide the separate procedures for the pre- and post-installation hydrostatic tests.

Contractor shall confirm with City Engineer before writing on the paper chart.

Original hydrostatic test(s) records shall be provided to City immediately upon completion of the hydrostatic pressure test. All documents shall be assembled in a neat, orderly manner and presented to City. Hydrostatic test records shall include, but not limited to, the following data and documents:

a. Name of operator, name of company and person responsible for the test
b. Date and time (start and completion) of the test
c. Test pressure achieved
d. Pressure and temperature recording charts with appropriate information listed
e. Description of the pipeline segments tested, including pipe diameter, heat numbers, wall thicknesses, grades, and lengths
f. A graphical description of the pipeline segments as tested including elevation differences
g. Explanation of pressure discontinuities
h. As-built Test Procedure Diagram

561-04 HYDROSTATIC PRESSURE TESTING, GENERAL

General Contractors may perform hydrostatic pressure testing up to ANSI Class 300 (maximum test pressure of 1,080 psig). Hydrostatic pressure test plans exceeding 1,080 psig must be performed by an entity specializing in the hydrostatic pressure testing of high pressure vessels and piping systems.

Contractor shall obtain City's approval before filling and releasing water from the pipeline segment(s) or pipeline component(s). Due to various system complexities, City reserves the option to subdivide the facility into sub-systems for test purposes.

Unless permits are provided for by City, the Contractor shall obtain the required permits or permissions from a local water supplier, distribution authority, company or regulatory body for obtaining water for the hydrostatic test of the pipeline segment. Water shall be obtained from a treated potable water source if practical. Water shall NOT be drawn from a river or lake.

Contractor shall provide all labor, equipment, and materials for the installation and removal of the temporary launching and receiving traps used for the caliper tool run and the hydrostatic testing of the pipeline segment(s). Adequate vent capacity shall be installed in the traps to purge trapped air during line filling and de-airing. The launching and receiving traps shall be long enough to contain 2 pigs and shall be configured to launch the pipeline filling pig independently of the pipeline dewatering pig. Contractor shall ensure that the traps are designed for the maximum test pressure. Facilities for launching/receiving foam pigs do not need to be fully welded or high pressure test capable.

City shall provide radiographic inspection to examine the welds of pipe and fittings associated with the hydrostatic pressure testing.

Valves within the test section shall be placed in the mid-open position to insure the body cavity is included in the hydrotest and completely void of air during the test. Following the start of the hydrostatic test, valves so positioned shall not be operated or repositioned until the test has been successfully completed. Note: valves have ANSI pressure ratings and need not be in the pressure test.

The Contractor shall run two new pigs per pipeline segment. If required, the first pig will be used during the filling of the pipeline segment with test water. The second pig will be used to de-water the pipeline segment.

Contractor shall provide all labor, equipment, and materials required for using compressed gas to drive the dewatering pig.

Contractor shall comply with all City and all local, state, federal government requirements while disposing of the hydrostatic pressure test water. Contractor shall not discharge to grade any hydrotest water, including water from the depressuring of the line after hydrotesting, unless approved by permit to do so.

No pressure testing shall be made against a spherical tee, stopple, Meuller fitting, or bag. Spherical tees shall be tested to 100 psig.

561-05 STANDARD HYDROSTATIC TEST PRESSURE EQUIPMENT AND MATERIALS FURNISHED BY CONTRACTOR

Contractor shall supply, at a minimum, the following equipment to perform hydrostatic pressure testing:

1. High volume pump(s) capable of filling the pipeline segment at an average fill rate velocity of 1 foot per second (fps) and no time shall the maximum fill rate exceed 2 feet per second (fps).
2. Filters to provide clean water. Filters shall be arranged in parallel to facilitate filter cleaning and/or replacement.
3. A meter to measure the line fill volume.
4. A variable speed, positive displacement pump equipped with a stroke counter to pressurize the pipeline segments with a known volume per stroke and capable of exceeding the maximum test pressure by at least 100 psig.
5. Portable tank of sufficient volume to provide a continuous supply of water to the pump during the complete pressurized phase of the pipeline segment(s) or pipeline component(s) under test.
6. A four (4) inch or greater diameter Bourdon type pressure gauge of suitable pressure range and increment division such that the hydrostatic test pressures fall within the middle third of the capacity of the pressure gage.
7. Dead weight tester with adequate range, capable of measuring in one psig increments or less. Weights cannot show any evidence of damage.
8. A 24-hour recording pressure gauge with charts and ink. This gauge shall be dead weight tested in the presence of City prior to its use. This documentation shall be included with the hydrostatic test records.
9. Laboratory grade digital thermometers (3 minimum) with a temperature measuring range between 30°F and 120°F and three-inch immersion. Except for the temperature chart, all temperature measuring devices must have a digital readout and a precision of 0.1 degree Fahrenheit or less. Separate thermometers will be used for above ground pipe, below ground pipe and ambient temperature. Temperature measuring devices may be installed in a thermal well that is inserted into the pipe (thermal well should preferably be filled with water rather than oil) or securely fastened to the side of the pipe preferably at the 3 o'clock or 9 o'clock positions (pipe coating must be removed so that the probe is installed against the bare steel pipe). The backfill for the below-ground thermometer bulb shall be tamped. Calibration data for the thermometers must be provided and included with the hydrostatic test records.
10. Caps shall not be permitted to have any fittings.
11. Piping as required from water sources to pipeline segment under test and from pipeline segment under test to points of discharge.
12. If required, tank trucks with enough capacity and necessary hoses and fittings to handle water when filling, cleaning and dewatering.
13. Material to adequately secure the pipeline segment(s) and/or pipeline component(s) to avoid movement during transient events, filling, and de-watering operations.
14. Material and equipment to mitigate the effects of sunlight on the temperature of the water in the test section.
15. Graduated measuring containers with a precision of 1 milliliter to measure water released during hydrostatic pressure testing to maintain test pressure.

561-06 HYDROSTATIC TESTS PRESSURE LIMITS

Pipeline segment(s) and pipeline component(s) shall be hydrostatically pressure tested as follows:

1. The hydrostatic test pressure for piping is typically at least 90 percent of the minimum yield strength (SMYS) at the highest elevation point of the line, and shall not exceed 95 percent of the minimum yield strength (SMYS) at the lowest elevation point of the line and help for a 15 minute spike test.

2. City shall provide the target hydrostatic test pressure, as well as the minimum and maximum hydrostatic test pressures before testing is performed.

3. If the test pressure exceeds the maximum test pressure at any point, Contractor shall notify the City immediately.

561-07 HYDROSTATIC TESTS HOLDING TIME

The test pressure shall be maintained for a minimum of 1 hour prior to beginning hydrotest to ensure that temperature and pressure have stabilized. The minimum hold time for hydrostatic pressure testing is eight (8) hours for pipeline segment(s) and pipeline components that cannot be fully visually inspected such as buried pipe or concrete coated pipe joints. The spike test is performed in the first 30 minutes.

The test may take longer than the minimum hold times noted above depending on weather conditions. The test will continue until City has collected adequate data that indicates that there is no evidence of leakage.

A test is not successfully completed unless the specified hold time is achieved in one continuous test. At no time during the test may the pressure at any point within the test segment be allowed to fall below the minimum test pressure or above the maximum pressure. If the test pressure at any point falls below the minimum test pressure the test must be restarted with no time allowance for prior testing.

The hydrostatic pressure test shall not be initiated if severe weather is anticipated. The hydrostatic pressure test shall be discontinued if unanticipated severe weather conditions develop during the test. A hydrostatic pressure test that is in progress may continue if an unexpected weather event develops that according to the criteria of the City does not affect the integrity of the test. If the hydrostatic pressure test is canceled or discontinued due to weather conditions, the test shall be re-scheduled at no additional cost to City. Sunlight and the possibility of clouds play an important role in successfully completing the hydrostatic test. An early start may be scheduled.

561-08 HANDLING RUPTURES THAT OCCUR DURING HYDROSTATIC TEST

The pipe joint and/or fitting where the rupture or leak developed shall be carefully removed from the pipeline to preserve the failed areas as soon as it is found and transported to a location directed by City for further examination.

In case of weld associated fractures, the entire girth weld and/or the entire longitudinal weld shall be removed. A nondestructive examination of the remaining portion of the weld will not be accepted as means to demonstrate that the weld defect has been fully removed.

The fracture, coating, and all evidence at the location of the failure are important to subsequent investigations. Personnel shall make every effort to prevent anything from making contact with the area where the fracture occurred. Every effort shall be made to prevent anything from making contact with the fracture surface to avoid destroying the characteristics of the fractured surface and reducing the chances of finding the failure mechanism. A light coating of oil applied from a spray-can should be applied to avoid oxidation.

561-09 DEWATERING AND LINE CLEANING

After the hydrostatic tests are completed, the pipeline pressure shall be lowered in a controlled manner from test pressure to zero (0) psig. The pipeline segments shall be dewatered by launching a pig with compressed gas (air or nitrogen). Nitrogen only shall be used in pipeline segments that have previously contained hydrocarbon materials. Final disposition of the test water shall be the Contractor's responsibility.

Dewatering hoses, fittings and connections shall be selected and installed to accommodate the maximum expected pressure. Dewatering equipment, piping, and hose systems must be adequately secured to prevent injuries to personnel and damage to pipeline segment(s).

For new piping, new water is to be sampled and tested to determine no oil sheen or other contaminants are in the water. For clean, tested water and with appropriate permits, the Contractor may discharge water through filter socks and hay bales.

561-09 SAFETY DURING PRESSURE TESTING

The following safety precautions shall be considered during the testing procedure. The Contractor is responsible for safety during the pressure test.

All practical steps shall be taken to keep the public outside the testing area until the test is completed. In addition, when a pipeline of 720 PSIG design or higher is being tested, these precautions include monitoring road crossings and the pipeline right-of-way for pedestrian congregation or activity.

During the test, all personnel shall be kept clear of the piping under pressure. Those performing the test shall be near the piping only when necessary and there shall be no work on or around the piping system during the test. All personnel shall keep clear of the blow off area. Barricade the area as necessary.

Testing against a temporary stopping device, such as a "Mueller" plug, “TDWilliamson” stopple, or bag, is prohibited. Testing against a main line valve that is not blind plated is also prohibited.

It is recommended to backfill as much as practical before testing. The hazards of testing exposed piping should be considered, regardless of the test medium. The hazards associated with testing unburied pipe are greatly diminished when using water as a medium.

All test connections must be exposed and of adequate rating for the test pressure. Contractor shall document all fittings have the appropriate pressure rating and are in a satisfactory condition.

The tested system shall be depressurized through a valve before any fittings are loosened or removed. Caution shall be taken to prevent damage to the surrounding area as the pressure is being relieved.

When an inert gas is used as any part of the test medium, it shall be vented to the atmosphere through a pipe extension at least 7 feet above the ground. Personnel operating the valve that controls the relief of the test pressure shall wear approved ear protection. All other personnel shall be at a distance where the noise is not at a harmful level. A muffling device should be used to reduce noise in urban areas as the pressure
is relieved. The use of a muffling device should be determined based on the test pressure and velocity of air or inert gas to be released.

Non-restraint mechanical compression caps and couplings, if used, shall be strapped and/or blocked regardless of the test pressure. All fittings used shall be rated for the test pressure.

561-09 PRESSURE TESTING WITH INERT GAS

The Contractor may perform a pressure test with an inert gas, nitrogen, instead of a hydrostatic test. Contractor is responsible for arranging the volume and amount of nitrogen necessary to conduct the test. Contractor is responsible for preparing a pneumatic pressure test plan and identifying safety components, failure response to relive stored energy, and a hose/piping tie downs.

Refer to aspects of hydrostatic testing above. Inert gas/nitrogen is an option due to the short length, and no water would be introduced.

563-01 X-RAY AND NON-DESTRUCTIVE TESTING

All radiographic inspection will be done by a third party City hired contractor. This document is provided for reference only.

Each weld will first be visually inspected before receiving nondestructive testing. 100% of butt welds will be inspected by radiograph testing, and 100% of the fillet welds shall be inspected by magnetic particle testing.

Contractor is cautioned the radiographic and magnetic particle inspection specifications contained herein are for his information and are representative only. Final radiographic construction specifications may vary somewhat from those shown in this Specification.

Note to City Inspector: These nondestructive inspection specifications are representative only and must not be used for construction. Refer to separate radiographic inspection contract for final construction radiographic specifications.

563-03 RADIOGRAPHIC INSPECTION CODES AND STANDARDS

All radiographic or other nondestructive testing shall meet the criteria per the codes and standards noted below. This Specification supplements these codes and standards by providing additional detail intended to clarify the requirements of the construction contractor.

- Part 192 of Title 49 of the Code of Federal Regulations, " Transportation of Natural Gas by Pipeline" and the latest amendments thereto, issued by the Department of Transportation Office of Pipeline Safety

- ASME B31.8, "Gas Transmission and Distribution Piping" latest edition

- API Standard 1104, "Welding Pipelines and Related Facilities," latest edition, including 2001 errata of which radiographers shall be thoroughly familiar with the contents of same pertaining to weld inspection and testing.

Contractor shall correct all welds not in compliance with the codes and standards listed above and this Specification at no additional cost to the City.

563-04 PERSONNEL QUALIFICATIONS

At least one certified Level II or Level III radiographer as per applicable API Standard, and SNTTC1A shall be assigned to each radiographic unit. The records of such certification shall be furnished to City for each Level II and Level III radiographer that reports to the job site. The records shall include the level of qualification, the entity granting the qualification, results of qualification tests, date of qualification, and Jaeger vision test results. A radiographer may be required to requalify if there is any question as to his ability or at the option of the City at the beginning of this project. In any event, radiographers shall be requalified each three years from their qualification date by reexamination in accordance with SNTTC1A, latest edition.

Level II radiographers shall be responsible for the quality of all radiographs, shall make the official interpretations of all radiographs, and shall be responsible for determining whether the weld meets the requirements of Section 6.0, "Acceptance Standards for Nondestructive Testing," of API Standard 1104, Welding Pipelines and Related Facilities.

Level II radiographers shall be responsible for the protection of all personnel against radiation exposure and shall provide monitoring at or near radiation areas. This protection and monitoring shall comply with applicable federal, state, and local regulations.

City shall have the right to require the removal of any employee of Contractor who, in the opinion of the City, is incompetent, negligent, careless, or otherwise unqualified to perform the work assigned to him, or who may be insubordinate or guilty of improper conduct.

563-05 IMAGING MEDIA

Film
Class I and II film: Approved
Class III and IV (high speed) film: Shall not be used.

All film shall be within the manufacturer's expiration date, and all exposed film shall become the property of the Radiographic Inspection Contractor after it has been approved by the City Welding Inspector.

All films shall be clearly identified using lead numbers and/or letters. City shall supply Contractor with a written numbering procedure prior to beginning work. Identification markers shall appear on each film, and each weld section number or marker shall be common to two successive films so as to assure inspection over the entire circumference of the weld. In addition,

films of repaired weld areas shall be identified with the original identification plus R1, R2, etc., to indicate the weld repair. The proposed identification numbering system is shown at the end of this document.

Other Imaging Media

Imaging media other than film may be utilized to conduct radiographic inspection. The Radiographic Inspection Contractor shall, as a minimum, provide a procedure for radiography using imaging media other than film which include the following details:

- Radiation source – the type of radiation source, the size of the effective source or focal spot, and the voltage rating of x-ray equipment.
- The image collection system used.
- The image processing system used.
- The image viewing system used.
- The image storage system used.
- Exposure geometry – Whether SWE/SWV, DWE/SWV, or DWE/DWV; whether in motion or still imaging; the scanning speed for in motion imaging; the distance from the source or focal spot to the imager surface; the relative positions of the imager surface, weld source, IQIs, and the intervals or reference markers; the amount of geometric magnification; the total magnification used for viewing; and the number of images required for radiography of a complete weld.
- Exposure conditions – Whether milliampere or curie minutes, the X-ray voltage or the input voltage and amperage, and when applicable, the exposure time.
- Materials – The type and thickness range of material for which the procedure is suitable.
- IQIs – The type of material, identifying ASTM or ISO set, and essential wire diameter.
- Heat shields – Material, thickness, and the distance from the imaging side of the heat shield to the pipe surface.

All other applicable sections of API 1104 shall apply to the use of imaging media other than film.

In addition, the City's third party radiographic inspection company shall keep track of all welds and uniquely number the x-ray; this data will be used as a weld map.

563-06 PENETROMETERS

Penetrometers shall be used in accordance with Subsection 8.1.4 and 8.1.5 of API 1104. Shims of the same metal type as the pipe and equivalent in thickness to the average thickness of the weld buildup shall be placed under the penetrometers should the weld buildup be utilized to determine penetrometer thickness. The shim dimensions shall be larger than the penetrometer dimensions on at least three sides if utilized.

563-07 PROCEDURE QUALIFICATION

City's third party radiographic inspection company shall supply his proposed radiographic procedures along with his quotation. Each procedure shall include all details outlined in Paragraph 8.1.2.2 of API Standard 1104. Qualification of each procedure shall be documented in the document attached for reference during construction. Prior to the start of production radiography, Contractor shall qualify his proposed radiographic procedures by demonstrating that they will produce radiographs which meet or exceed the requirements of API 1104. The qualification radiographs shall be labeled and shall be made on welds of the same materials and sizes of pipe and welded by the same procedure as will be inspected on construction. The image of both the source side and the film side of penetrometers must show the required sensitivity, i.e., the images of the penetrometer outline and the essential hole shall be clearly discernible. If the proposed procedure will not produce acceptable radiographs, it shall be modified until satisfactory to City. The written procedure supplied by the Contractor shall contain all items required under Paragraph 8.1.2.2 of API Standard 1104.

The following points shall be used to evaluate radiographs:

1. An acceptable film quality that is free of fog and processing irregularities that could mask the image of actual defects, and of approved density and contrast.
2. Contractual sensitivity level.

3. Satisfactory identification system.
4. Acceptable technique and setup.
5. Compatibility with acceptance standards.

Three qualification radiographs and three copies of each acceptable procedure shall be given to City Representative. At least one of each of the qualifying radiographs will be kept on the job by the welding inspector to be used as a standard against which he can check the quality of production radiographs during the job.

All requirements referring to the quality of the resulting radiographs shall apply equally to X-rays and gamma rays.

563-08 PRODUCTION RADIOGRAPHY

Procedures – Only procedures which have been qualified and recorded shall be used.

Quality – The quality of production radiographs shall be substantially the same as the quality of the qualification radiographs.

Minimum Coverage – During construction, 100% of the girth welds made by each welder during each welding shift shall be radiographed over the entire circumference of the weld.

Film Interpretation – Only certified radiographers shall interpret radiographs to determine weld acceptability. All defects outside the limits of API Standard 1104 shall be immediately reported to City welding inspector, and the report shall indicate whether or not the weld meets the specified acceptance standards. The final disposition of the weld shall be determined by City Representative.

A written record of welds inspected and the radiographs shall be furnished to the City daily. The format for the daily reports shall be approved by the City and shall include the following:

1. Number of welds inspected.

2. Weld size and identification number.

3. Weld acceptance (within or beyond code). The Level II or III radiographer shall indicate whether the weld meets the requirements of Section 6.0 of API Standard 1104.

4. Type of unacceptable defects observed.

5. Signature of radiographer.

6. Signature of City's Representative.

As a clarification, the items above are the basic items. The list may be expanded as required by City.

Retakes – The City’s third party radiographic inspection company shall submit only radiographs which meet all requirements of the API 1104 code and this Specification. If retakes are necessary to obtain such quality, they shall be completed at no cost to City.

563-09 MAGNETIC PARTICLE TESTING

Only Level II or Level III Magnetic Particle Inspectors who have been qualified according to the latest edition of ASNT's SNT-TC-1A shall be allowed to interpret the Magnetic Particle Tests. Records of their certification shall be provided to the City.

All Procedures shall be written, qualified and documented prior to being used on the Production Fillet Welds. The nondestructive inspection contractor’s form shall be used for documentation in/of this procedure.

563-10 RADIOGRAPHIC EQUIPMENT AND PERSONNEL

The City's third party radiographic inspection company shall furnish all supervision, qualified technicians, Magnetic Particle and radiographic equipment, radiation source, radiation safety equipment, and any additional personnel and equipment and supplies to perform radiographic inspection of field welding including film developer, dark room, fourwheel drive trucks, clips, tanks, fuel, oil, maintenance, penetrometers, film viewing illuminators, and all other items of equipment and materials required for the performance of the work.

City's third party radiographic inspection company's materials and equipment, including vehicle(s), must meet City's approval. All unexposed film shall be stored in a clean, cool, dry place. Sufficient chemicals and water shall be available to permit frequent changing of processing chemicals and water necessary for high quality radiographs.

Viewing illuminators shall be used which produce sufficient light intensity so that all portions of the radiograph of the weld and base metal will transmit sufficient light to reveal pertinent details. A viewing illuminator shall be provided in the dark room for the City's Inspector's use.

City's third party radiographic inspection company shall maintain near the work site and at no cost to the City that equipment and material necessary to insure that pipeline or station construction will not be halted or delayed by failure of the equipment. At least one member of the radiographic crew shall be capable of making field repairs to all radiographic equipment. Delays to the main line Contractor caused by repeated breakdown of radiographic equipment or inability to maintain pace shall be grounds for termination of contract.

563-11 RADIOGRAPHIC INSPECTION RECORDS

At the end of the construction project, the Radiographic Inspection Company will complete the attached form and return it to the City.

563-12 WELD IDENTIFICATION NUMBERING

Weld identification numbering format shall be as follows:

Identification Format:	(x) – (x) – (xxx) – (x) – (x)
Example (with no repair):	2 – D – 027
Example (with repair):	2 – D – 027 – R – 5
Identifying Data**:**	(Radiographic Crew Number) - (Type of Weld Inspected) – (Sequential Weld Number) - (R-Repair) - (Sequential Repair Number)

Identifying Data Definitions:

(X-Ray Crew Number) A single (1) digit number assigned by project to radiographic crew.

(Type of Weld Inspected) A one (1) letter designation used to identify the weld type inspected:

- **F** Fabrication Shop Weld
- **M** Main Line Weld (normal lay pipe construction)
- **X** Road Crossing Weld
- **D** HDD Weld (including Jack and Bore)
- **T** Tie-In Weld (closure weld)
- **H** "Hot-tap" Weld (weld to an active pipeline)

Number of Weld Number assigned to weld inspected. Weld numbers shall be in consecutive order and begin with first weld as number one (1)

R-Repair Letter use to identify repaired weld

Number of Repair Radiograph Number assigned to weld repair
Repair numbers shall be in consecutive order and begin with the first repaired weld as number one (1)

563-13 NON-DESTRUCTIVE EXAMINATION (NDE) REPORT

Date _____ AFE #_____ Project Name _____

1. Name of NDE Inspection Contractor _____

2. Type of Non-Destructive Inspection

   _____ Radiographic _____ Magnetic-Particle _____ Ultra-Sonic

3. General Location of Welds Tested

   A. Line Construction

      Location _____

      From Station # _____To Station # _____

      Comments _____

4. Number of Welds Made (All Visually Inspected) _____

5. Number of Welds Tested _____

6. Number of Tested Welds That Were Rejected _____

7. Disposition of Rejected Welds _____

Chief Welding Inspector _____

City Representative _____

563-14 RADIOGRAPHIC PROCEDURE QUALIFICATION REPORT

Location _____ Date _____

Contractor _____ State _____

Radiographer _____ Social Security No. _____

Qualification Level (as specified in API 1104, Section 8.7) _

Radiographic Inspection Company _____

Pipe Diameter _____ Wall Thickness _____ API 5L Grade _____

Type of Equipment _____

_____

Intensifying Screens and Material _____

_____

Filter Type and Placement _____

_____

Geometric Relationship _____

_____

Limit of Film Coverage _____

_____

Type of Film _____ Film Density _____

Penetrometers _____ Location _____

Exposure Time _____

Processing Times
1. _____
2. _____
3. _____
4. _____

Procedure Qualified _____ Procedure Disqualified _____

Tested By _____ Date _____

564-01 PIPELINE SUPPORT

Contractor shall provide all materials, equipment, and labor to support the pipeline during construction and monitor the elevation of exposed pipeline. This specification outlines the minimum standards that the Contractor shall implement to adequately support in-service pipelines during excavation to prevent movement which may cause overstressing of the pipeline. Contractor shall take all reasonable precautions to eliminate pipeline movement during construction. The Work shall include monitoring for movement of the pipeline by use of surveying at specific construction milestones during excavation, work on the pipeline, and backfilling.

564-02 IN-SERVICE PIPELINE SUPPORT AND MONITORING, GENERAL

These standards apply to all trench excavations where the length of the exposed pipeline, measured along the 6:00 o'clock position between the unsupported points at the farthest extreme ends of the trench excavation, exceeds the maximum allowable unsupported length of pipeline noted below:

- 20 linear feet for nominal pipe diameters 12 inches and larger
- 15 linear feet for nominal pipe diameters 10 inches and smaller

Pipeline supports are disregarded for this measurement.

Contractor shall immediately notify City if movement of the pipeline is suspected. Contractor is strictly prohibited from adjusting the elevation of the pipeline without written authorization from City.
Elevation location points shall be established during the first elevation survey along the top centerline of the pipeline and these same points shall be used for the duration of the construction for each subsequent elevation survey such that direct comparisons between elevation surveys can be made. The benchmark used for this purpose shall be tied to the project benchmark and accessible for the project duration.

Contractor shall coordinate with City for witness of data collection.

564-03 TEMPORARY PIPELINE SUPPORT AND CRIBBING

All pipeline supports such as cribbing shall be sized and installed to prevent pipeline movement based on the soil bearing capacity and the fully loaded condition of the pipeline. See tables below which are based a normally fully loaded condition of the pipeline. The actual fully loaded weight of the pipeline shall include the pipe material, concrete jacketing, casing pipe, hydrotest water, and any other dead or live loads applied to the pipeline.

All pipeline supports shall meet the minimum surface bearing area for the soil bearing capacity. The soil bearing capacity shall be based on the site geotechnical soils data if available. In no case shall the soil bearing capacity used exceed 2,000 psf. If site specific geotechnical information is not available, the soil bearing capacity used shall be 500 psf unless further reduction in soil bearing capacity is required by on-site soil conditions or the field observations of the OSHA Excavation Competent Person.

Minimum Timber Support Bearing Area

		Soil Bearing Capacity (psf)			
		500	1,000	1,500	2,000
Nominal Pipe Diameter	6 in	3 sf	1.5 sf	1 sf	1 sf
	8 in	4.5 sf	2.5 sf	1.5 sf	1.5 sf
	10 in	6 sf	3 sf	2 sf	1.5 sf
	12 in	7.5 sf	4 sf	2.5 sf	2 sf
	16 in	10 sf	5 sf	3.5 sf	2.5 sf
	18 in	12 sf	6 sf	4 sf	3 sf
	20 in	14 sf	7 sf	5 sf	3.5 sf

	24 in	18.5 sf	9.5 sf	6.5 sf	5 sf
	30 in	28 sf	14 sf	9.5 sf	7 sf
	32 in	31 sf	15.5 sf	10.5 sf	8 sf
	36 in	37 sf	18.5 sf	12.5 sf	9.5 sf
	42 in	47.5 sf	24 sf	16 sf	12 sf

Approximate Bearing Area of Single Wood Timber (sf)

		Length of Timber (ft)				
		2	3	4	5	6
Width of Timber (in)	4	0.6	0.9	1.2	1.5	1.8
	6	0.9	1.4	1.8	2.3	2.8
	8	1.3	1.9	2.5	3.1	3.8

Any pipe diameter not noted in these tables, the Contractor shall use the next largest nominal pipe diameter cribbing size calculations.

Example use of these tables:

> Example No. 1: Geotechnical data indicates a bearing capacity of a 16-inch pipe subgrade equal to 1,300 psf. The minimum timber support bearing area indicated above for this situation is 5 square feet.
>
> Example No. 2: No geotechnical data is available. Support is required for a 40-inch pipeline. The minimum timber support bearing area indicated above for this situation is 47.5 square feet.

Organic and/or other unsuitable materials shall be removed from the pipeline support subgrade areas prior to installation of supports. If this is not possible due to poor soil conditions located below the bottom of the trench, the Contractor shall notify City who will consult with engineering regarding the use plates of adequate thickness, bearing area, and spacing to support the pipeline cribbing.

Pipe supports shall not be placed on subgrades containing standing water, snow, frost, or ice. The Contractor shall provide all necessary measures to prevent accumulation of water, snow, frost, or ice on subgrades where pipeline supports will be installed.

Temporary cribbing shall consist of material which is normally used for pipeline support and is suitable for the site conditions and is capable of adequately supporting the pipeline without causing damage to the pipeline (dents, gouges, degradation of coating, etc.).

Sand bags are not considered to be an acceptable form of permanent pipe support and therefore, all sandbags used during construction shall be removed during backfilling operations. No sandbags shall remain under the pipeline during backfilling or post construction due to historical evidence and the high likelihood that backfilling operations will cause bottom-side dents at the sandbag locations.

Hydraulic jacks may be used for short-term support purposes and must be replaced with cribbing within 24 hours. Hydraulic jacks shall not impose a point load on the pipeline. Hydraulic jacks shall not be used for welding line up.

Intermediate cribbing supports shall be installed BEFORE moving or removing any support cribbing such that the maximum allowable length of unsupported pipeline is not exceeded at any point in time.

Cribbing shall be installed during pipeline excavation to support the pipeline before the adjacent load bearing soils are excavated from below the pipeline.

When assembling stacked cribbing, the ends of timbers shall extend a minimum of 4 inches beyond the supporting timbers below them to prevent failure of the timber and to ensure stability of the stacked cribbing. The height to width ratio of stacked cribbing shall not exceed 3 to 1.

564-06 MONITORING AND RECORD KEEPING REQUIREMENTS

The elevation location points shall be established at intervals no greater than 25 feet along the top centerline of the pipeline and shall be documented by measuring from the girth weld at one end of the excavation area where the pipeline is least likely to be disturbed, covered by concrete jacketing, or covered by casing pipe. All subsequent data for the duration of the project shall use these same elevation location points that have been established & documented.
The first elevation survey shall be taken when the top of the pipeline is first exposed, and before the installation of pipeline supports, and before the removal of supporting sub-grade materials.
The second elevation survey shall be taken immediately after the pipeline is supported with cribbing and the supporting soil from under the pipeline has been removed.
Additional elevation surveys shall be taken as required by work activities that affect the support of the pipeline such as moving or modifying the cribbing, installation of concrete jacketing and casing, etc., and when directed by the City due to suspected pipeline movement.
The final elevation survey shall be taken when the existing pipeline trench has been backfilled to an elevation at or above its centerline and before the backfill reaches top of pipe.

581-01 DEMO

The City shall work with the Contractor to plan and schedule the safe removal of the designated pipe segments. Pipeline removal work may not begin until approved by City.

City shall select the approved disposal site for the residual product removed from pipe segments.

Any designated pipe segments with ACM shall conform to those specified requirements prior to removal.

Contractor shall submit intended equipment to be used, expected duration of activities, and planned procedures prior to beginning Work.

Contractor shall complete the Waste Handling and Disposal plan prior to removal work commencing.

581-04 INTERNAL CLEANING THE DEMO PIPE SEGMENTS

Contractor shall be responsible for supplying all labor, and equipment necessary to accommodate the pipe cleaning process, to include running cleaning pigs through the demo pipe segments to remove any residual product that was not removed during the drain-up or nitrogen push process.

Contractor shall supply the cleaning pigs. The cleaning pigs shall be pushed through the demo line segments using nitrogen. Contractor shall supply the nitrogen, connection materials, and install the nitrogen connections needed to complete the cleaning operation. The pipe weld caps may be reused from the hydrotesting of the relocated pipe segments.

The Contractor shall also provide suitable containment (i.e. vacuum trucks, frac tanks or other means approved by City) at vent and drain vent locations to capture any residual product removed from the demo pipe segments.

Contractor shall transport any residual product removed from the demo pipe segments to disposal site chosen by City.

581-05 ENVIRONMENTAL SOIL SAMPLING

There are no special environmental requirements that require soil sampling, unless evidence of contamination is detected when the pipe is excavated (e.g. odors or stained soil).

If the presence of odors or stained soils is observed then soil samples will be collected. City will hire the environmental consultant, and the Contractor shall be responsible for coordinating with the environmental consulting company for the collection of the soil samples. Soil samples may be collected after the demo pipe segment removal and before trench backfilling. The environmental consulting company may need to direct the Contractor's backhoe operator to facilitate the proper collection of soil samples.

581-06 DISPOSITION OF SALVAGE PIPE MATERIALS

Contractor shall be responsible for the loading of the demo pipe removed from service and hauling it off site. Contractor shall manage the final disposition of salvage pipe materials. Ownership of the salvage pipe material is transferred to the Contractor when it leaves the jobsite. City may elect to keep portions of removed pipe.

582-01 ABANDONED PIPE – GROUTING - **IF REQUIRED BY MODOT**

The City shall work with the Contractor to plan and schedule the safe abandonment of the designated pipe segments by plugging the ends and filling with grout.

Contractor shall submit intended equipment to be used, expected duration of activities, and planned procedures prior to beginning Work.

Contractor shall submit for approval of the grout to be used with calculations indicating the volume anticipated to be required for the Work.

The City may request information to help support the final report on the abandonment of the pipeline as required by the Codes of Federal Regulations, Title 49, Part 192, Section 402(c) (10)

Any designated and exposed pipe segments with ACM shall conform to the specified handling and disposal requirements.

Contractor shall provide volumes of grout supplied, installed, and disposed. Contractor shall coordinate the witnessing of grouting activities by City.

The following activities shall be completed before commencing abandonment procedures for the existing pipeline segment:

- Contractor shall verify that the existing pipeline has been cleaned
- Contractor shall verify that the Cathodic Protection System has been completely disconnected from the existing pipeline.

582-04 CAPPING OF PIPELINE SEGMENTS TO BE ABANDONED-IN-PLACE

The pipe segment(s) to be abandoned shall be sealed or capped using steel plates welded at each end of the segments. Vents will be temporarily installed on top of the pipeline to facilitate the filling with grout and venting of the air in the pipe.
Materials to be provided by contractor:

1. 2 plates required (a thickness and a size sufficient to adequately seal the pipe segment)
2. All required fittings for grout injection, venting, and plugging.

582-05 GROUTING PIPE SEGMENTS

Grout Requirements:

- Unconfined compressive strength: minimum 75 psi at 56 days as determined in accordance with ASTM D495 or ASTM D4832 as applicable. Present at least three sets of acceptable test results for the proposed mix design in the mix design report.
- Placement characteristics: pumpable.
- Shrinkage characteristics: non-shrink.

Waste Disposal:

- Contractor shall contain all surplus and waste grouting material so that no spillage of grout material occurs in areas surrounding the placement location(s).
- Contractor shall dispose of all surplus and waste grout materials in accordance with all applicable federal, state, and local regulations and requirements. Under no circumstance shall grout materials be released to the wetlands or any other areas at the project site.
- Uncontrolled washing out of concrete mixers, delivery equipment (including but not limited to concrete truck mixers), conveying equipment (including but not limited to concrete pumps and conveyors), and placement equipment is not permitted at the project site. Contractor shall collect and retain all concrete washout water. Refer to

EPA Stormwater Best Management Practice (BMP): Concrete Washout, EPA 833-F-11-006, or other locally mandated BMP, for collection and retention of concrete washout water.

- Contractor shall dispose of all collected concrete washout water in accordance with all applicable federal, state, and local regulations and requirements. Under no circumstance shall concrete washout water be discharged to the wetlands or any other areas at the project site.

The segments must be slowly, continuously and completely filled with grout, assuring all air is purged out of the pipe segments. Venting will be accomplished using the temporary vents to be installed along the pipeline route. Contractor shall determine the best flow rate to be used during the filling process.

Contractor shall disconnect the temporary vents and dispose of them as needed once the pipeline is filled with grout.

601-01 FENCE

Contractor shall furnish all labor, materials, and equipment necessary to fabricate and erect fencing and to make permanent repairs to all fences cut for construction access by using new and like-kind fencing materials.

Before proceeding with construction operations, Contractor shall furnish and install a suitable, substantial gate or gap in every fence at intersection with right-of-way for access to land crossed by pipeline and for passage of construction equipment.

601-02 FENCES AND GATES, GENERAL

Contractor shall notify City if it is discovered that landowner(s) has installed fencing that prevent access to constructing site location(s). City shall contact landowner(s) to obtain consent to modify said fence(s).

Barbed wire used for temporary gaps shall be 2 or 4 points, heavy duty type wire, approved by City. Fences shall be reinforced as necessary to prevent damage. If woven wire fences are encountered, consent of landowner and tenant shall be obtained before the Contractor cuts the fence(s) and adequate arrangement have been made for bracing and restoring the fence(s).

Contractor shall be responsible for keeping construction gates and gaps closed before, during, and after the performance of work.

Contractor shall furnish watchmen, if necessary, to prevent livestock from entering or leaving properties through construction gates.

601-03 CHAIN LINK FENCE MATERIALS

Fencing material shall be stored or racked so as to prevent it from coming in direct contact with the ground. Care shall be taken not to abuse, stretch, or otherwise damage the fence material before installation.

All posts, rails, fittings, fabrics, and appurtenances shall be hot-dipped zinc coated steel. The weight of zinc coating shall be not less than 2.0 ounces per square foot of surface area per ASTM A-123.

Line posts shall be l.875" x l.625" roll formed C-sections from steel conforming to ASTM A-570, Grade 45, or 2-3/8" OD, Schedule 40 galvanized pipe with 2.0 ounces of hot-dipped zinc in accordance with ASTM F-1083.

Top rail shall be l-5/8" x l-l/4" roll formed sections or 1.66" OD, Schedule 40, galvanized pipe with 2.0 ounces of hot-dipped zinc in accordance with ASTM F-1083. Top rail shall pass through intermediate post tops and form a continuous brace within each stretch of fence and be securely fastened to terminal posts.

End, corner, and pull posts shall be 3-l/2" x 3-l/2" roll formed sections with integral fabric loops, 5.14 pounds per foot, or 2-7/8" OD, Schedule 40, galvanized pipe with 2.0 ounces of hot-dipped zinc in accordance with ASTM F-1083.

Posts for swing gates shall be as follows:		
Gate Width	Section	Wt. Lbs. Per Linear Foot
Up to 6'	3-1/2" x 3-1/2" Rolled Form or 2-7/8" OD Pipe	4.85 5.79
Over 6' to 13'	4" OD, Sch. 40 Pipe	9.11
Over 13' to 18'	6.625" OD, Sch. 40 Pipe	18.97
Over 18'	8.625" OD, Sch. 40 Pipe	28.55

Extension arm shall be designed to extend at a 45° angle with the top strand of barbed wire located 12 inches above the fabric and 12 inches out from the fence line.

Braces shall be the same as top rail. Braces to be securely fastened to posts by heavy pressed steel connections, then trussed from line post back to terminal post with 3/8" diameter rod.

Tension wire shall be 7-gauge coiled spring tension wire, coated with 2.0 ounces per square foot of hot-dipped zinc.

Gate Frames shall be l.90" O.D. pipe connected with fittings and riveted at each corner. Each frame shall have 3/8" diameter adjustable truss rods. Gates shall have positive type latching devices with provisions for padlocking; and drive gates shall have a center plunger rod, catch, and semi-automatic outer catches. Gates to be hung so as to open through a 180° angle, to lie along and parallel to the line of fence. Three strands of barbed wire shall be fastened to the extended end bars of the gate frame.

Barbed Wire shall be aluminum-coated, 12-1/2 gauge, twisted wire with 14- gauge, 4-point barbs, spaced approximately 5" centers, conforming to ASTM A-585.

601-04 CHAIN LINK FENCE, INSTALLATION

Contractor shall furnish and set all line and gate stakes necessary for the fence installation. Fence line posts shall be spaced as shown on the construction plans and not farther apart than 10-foot centers and be set 36 inches in concrete footing. Post footings shall be set in concrete and with a 2-inch crown sloping from post to grade to insure proper drainage. C-section line posts may be mechanically driven 36 inches into the ground in lieu of concrete.

The vertical profile of fence generally follows the contour of the ground, but Contractor shall perform erection so as to avoid sharp breaks in the top line of the fence caused by abrupt contour changes of the ground. This shall be accomplished by raising or lowering posts to produce a smooth top rail line appearance throughout the installation.

Contractor shall obtain a plumb alignment of all posts and a tight fabric installation without distorting the fabric pattern. The bottom of the fence fabric shall be held as uniformly as is practical to 2 inches above the finished grade.

601-05 REPAIRS TO FENCES

Fence posts shall be new pressure treated, creosote, or cedar posts with a minimum top diameter of 3 inches unless the original fence post are made of another materials such as steel, concrete, or specially constructed posts in which case Contractor shall furnish and install such posts.

701-01 CITY SUPPILED MATERIAL

The City is not supplying any material. The City may furnish material storage space as available. Contractor shall furnish all labor, other materials, tools, and equipment necessary to complete the Work.

Contractor is responsible for loading, unloading, and hauling of all pipe, casings, fittings, valves, and other project materials. Upon delivery to project site or pick-up from the staging yard, responsibility against material and pipe damage is transferred to the Contractor.

All pipe and components shall be visually inspected by Contractor and City to ensure all materials delivered are not damaged in a manner that could impair its strength or reduce its serviceability at the site of installation prior to material consignment to Contractor and before being installed in a pipeline system.

Contractor shall maintain onsite only those supplies and in quantities necessary to complete the project and ensure that materials provided by City are adequate to complete the Work. Any discrepancies shall be communicated immediately to City.

Mill Test Reports (MTR), Bills of Laden, and other delivered material paper work shall be saved and copied. Any material arriving without a valid MTR or with no MTR shall be quarantined. The City shall be notified as soon as possible.

701-03 MATERIAL CONSIGNMENT

City will work with the Contractor to schedule material to be delivered to the site or designated staging area if available.

Contractor shall provide qualified representative(s) at designated receiving locations to check quantity and condition of materials. Upon mutual agreement between Contractor and City, Contractor shall sign the written record of such check(s) to document the transfer of ownership of the materials from City to Contractor, who shall then be responsible to protect them from loss, theft, and damage.

The Contractor shall properly store all materials to prevent theft, damages, or deterioration including materials unloaded by Contractor and stored either onsite or at Contractor's storage facilities. Contractor is responsible for transportation of any surplus materials including pipe ordered for delivery that is not used during the project at their own expense to a facility designated by the City. Contractor shall be responsible for loading, hauling, unloading, storing, and/or racking these materials at the designated location.

All non-useable material as designated by City, including new line pipe less than 10 feet in length, will become the property of Contractor and shall be removed from the jobsite with transfer of ownership occurring when the material leaves the jobsite.

701-04 COATING MATERIALS

The City has selected the coating materials for this project.

The Contractor shall provide the City's selected option of the following City Approved Coating System(s) assuming the temperatures at time of construction allow:

- 2-Part Epoxy Coating
    - DENSO Protal 7300
- PolyGuard RD6 or equivalent with UV top coat.

For cold weather, DENSO 7125 may be considered.

701-05 CITY FURNISHED MATERIAL

None

702-01 PIPE LOADING

The loading, hauling, and stringing of pipe and other materials shall be performed to prevent damage to material.

Contractor shall be responsible for the repair and/or replacement costs for damages to pipe, coating, and pipe ends caused by Contractor.

Contractor is required to submit a complete procedure and obtain City approval of the planned manner and arrangement for loading, unloading, and stacking pipe prior to commencing stacking operations.

Contractor is required to submit written pipe stringing procedures for City approval.

702-04 LOADING, UNLOADING, AND HANDLING PIPE

Contractor shall load, unload, and handle coated pipe using approved suitable means and to avoid damage to the pipe, coating, and pipe ends. Pipe shall be handled at all times with care and with equipment designed to prevent damage. Contractor shall confirm personnel safety while unloading and stacking pipe to assure

No employee walks or is under suspended pipe
Only one pipe joint at a tie is unloaded
Pinch points (hands, arms, feet) are protected during stacking

Contractor shall use wide non-abrasive canvas or leather belts, cradles with rubber tired wheels, or other equipment designed to prevent injury to the coating. Hook line equipment shall be properly sized for the outside diameter and weight of the pipe. Hooks shall be broad billed with curvature to match the inside diameter of the pipe and shall be made of aluminum or other soft material. Whenever hooks are used, wide spreader bars shall also be used on fall lines. Contractor shall repair and maintain in good condition all such handling equipment to prevent injury to the pipe, coating, and pipe ends.

Contractor shall not use bare pinch bars, tongs, chain slings, unpadded rope slings, unpadded pipe hooks, canvas or composition slings with protruding rivets, improperly sized hooks, or any other handling equipment found to be injurious to the pipe coating.

Pipe shall be unloaded from the stringing trucks/trailers and lowered to the ground by means of boom tractor, swinging crane, or other suitable equipment using lifting devices. Contractor shall ensure that pipe is not dropped, set down hard on skids, or bumped against hard objects.

During initial pipe unloading, City Inspectors shall be given time to mark and label each joint on both ends at 3:00 and 9:00, approximately

702-05 HAULING PIPE

Contractor shall take extra precaution to adequately pad all bolsters and load binders to prevent damage to the pipe coating when transporting pipe and piping materials.

Concrete jacketed pipe shall be adequately supported and protected to prevent the concrete jacketing from cracking.

All permits necessary for the transportation of materials shall be secured by Contractor.

702-06 STORING PIPE

The ends of pipe during handling and stacking shall be protected with bevel protectors. Contractor shall avoid unnecessary contact between pipe and other equipment and/or materials. Pipe stacks shall be sloped to drain such that water does not collect inside the pipe. All material used for temporary storage of the pipe, including burlap sandbags, wood cradle skids, and earth berms shall be supplied by the Contractor at no additional cost to City. Plastic sandbags shall not be used. Wood cradle skids used for stacking shall be free of burrs and sharp edges and a minimum of 8-inches wide. Earth berms shall be rock free.

All pipe joints, including concrete coated joints, shall have at least two supports. The spacing between any two supports shall not exceed 20 feet. The total width of pipe supports shall exceed 10% of the length of the pipe joint. Pipe stacks shall consist of a maximum of three layers.

Pipe of different diameters and/or wall thickness shall be stacked separately. Damaged and/or rejected pipe shall be stacked separately. All stacked pipe shall be properly identified and labeled.

702-07 STRINGING PIPE

Contractor shall take special precautions during stringing of pipe to avoid damage. Contractor shall never drag or slide pipe that is to be put into service. Contractor shall prevent entrance of dirt, water, and debris into pipe during stringing.

Contractor shall minimize the interference of the land owner's normal use of the land by providing gaps at adequate intervals to permit use of land and passage of farm stock and equipment crossing the right-of-way.

Contractor shall string pipe only:

- during daylight hours
- after all clearing and grading is complete
- after all blasting is complete and rock and/or debris cleared

702-08 SHORT PIECES

Contractor shall utilize all cut sections of pipe that are greater than 10 feet in length in the construction of the pipeline. These cut sections shall be welded into the pipeline line intermittently with pipe of the same wall thickness and grade. With City approval, pipe sections less than 10 feet in length may be employed when necessary to facilitate tie-ins, bends, heavy wall pipe and/or concrete jacketed pipe for crossing roads and wetlands, etc., but in no case shall pipe sections less than one-half of the pipe diameter in length be incorporated anywhere within the pipeline.

703-01 EXISTING COATINGS

Contractor shall ensure the abatement of ACM pipe coating on all piping surfaces requiring mechanical disturbance such as grinding, cutting, welding, etc. Contractor shall properly dispose of all ACM at the designated facility.

All ACM abatement shall be conducted by a qualified ACM abatement company which shall be hired by the Contractor (or self-performed by the Contractor, if qualified).

Regional EPA notification is generally not required when pipeline coating and gaskets are removed intact as non-friable Category II materials. Additional state and/or location notification requirements may apply. Contractor is responsible for verification of and complying with the applicable notification and permit requirements.

Contractor shall provide procedures for ACM removal. The procedures shall indicate how to remove ACM as non-friable Category II materials and shall comply with all applicable federal, state, and local regulations and requirements. All procedures used for ACM abatement shall be the sole responsibility of the Contractor for compliance with all applicable federal, state, and local regulations and requirements.

The Contractor will complete a project-specific waste handling and disposal plan. The plan will include profiling procedures, manifesting requirements and logistics, disposal methods, documentation requirements, facilities and transportation. Those expected waste materials shall be reported on the Waste Handling and Disposal Plan.

703-02 ASBESTOS CONTAINING MATERIALS (ACM), GENERAL

On projects where pipe segments are removed, approximately two (2) linear feet of coating shall be abated at each location to be cut. Abatement may also be required at other locations such as where TORs are to be welded to the pipeline for nitrogen displacement of the pipeline.

703-03 DISPOSAL OF ASBESTOS CONTAINING MATERIAL (ACM)

For this project, the City may be considered the Waste Generator. The Contractor shall properly dispose of ACM waste materials that are generated during the ACM mitigation process.

Contractor shall transport all ACM waste materials generated during abatement to City selected waste recycling/disposal site.

If the ACM abatement company shall transport ACM materials across state lines, the ACM abatement company must be licensed with the state(s) prior to the movement of any ACM materials.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

FOR

City of Fulton, MO.
I-70 HDD Replacement Project
Callaway County, Missouri

October 2024

PREPARED BY:

Platte Landing Utility Services, LLC

TABLE OF CONTENTS

I. INTRODUCTION

The purpose of the Storm Water Pollution Prevention Plan (SWPPP) is to provide a site-specific description of the best management practices to prevent contamination of the site by storm water flows from potential pollutants associated with construction activities. The SWPPP has been prepared for the City of Fulton, Missouri (City), as required by the Missouri Department of Natural Resources (MODNR) in compliance with the applicable regulations for coverage under applicable Missouri statutes. Platte Landing Utility Services, LLC (PLUS) has developed this SWPPP to be incorporated into the routine construction activities associated with the proposed project development plans. This SWPPP also outlines implementation, inspection, and maintenance requirements. The erosion and sediment control practices should be monitored, and the plan should be revised if storm water compliance is not achieved.

II. SITE ASSESSMENT

A. **Location**: The site is a proposed gas distribution line to provide natural gas to the City of Fulton, Callaway County, Missouri. More particularly, the proposed replacement pipeline will begin just north of Interstate 70 and be bored underneath I-70 to the south side at Jade Road and CR215. The project area is two miles west of the Kingdom City exit on I-70.

B. **Description of Work**: The project will involve the construction of approximately 500 feet of new underground gas distribution 8-inch pipeline. Some areas are installed in road right-of-way (ROW), and there is a permanent 25' easement on the north of I-70. Additionally, temporary construction space will be utilized along both ends of the project. Construction activities will include the above ground clearing of vegetation and the construction of the pipeline utilizing open trenching and directional boring methods. The total disturbance of the pipeline area is approximately 0.918 acres. This area is under the permit requirements of: Form E - Application for Land Disturbance Stormwater General Permit (MO-R100). However, this plan incorporates the best management practices (BMP) to mitigate storm water pollution.

C. **Potential Pollution Sources**: The most significant potential pollutants are soil particles subject to removal by storm water. Other potential pollutants subject to removal by storm water are spilled fuel and lubricants. Material may also be inadvertently tracked off-site or blown off-site when distributed by hauling equipment. The storm water, which leaves the site, shall meet the non-numeric limitations of being free from oil, scum, debris, other floating materials, and eroded soils.

D. **Non-Storm Water Solid Materials**: The on-site generation of solid materials will be minimal, and its proper disposal will be closely monitored. All solid waste will be taken off-site for proper disposal.

E. **Drainage Patterns**: Most of the rainwater that falls on areas disturbed by construction activities will sheet flow off the ROW.

F. **Receiving Waters**: Richland Creek is the primary drainage feature in the project area. No stream crossings are encountered on this project. Using the selected BMP's and the HDD installation, the project will not cause or contribute to exceedances of the water quality standards to any receiving streams in accordance with a typical Large Construction General Permit.

G. **Wetlands:** The entire property has been delineated and is upland (non-wetland) in nature. There are two (2) ephemeral channels (road drainage ditches) near the project. The pipeline is bored under these features. Any streams/drainage ditches with flowing water at the time of construction will be avoided by HDD methods. Additionally, it is anticipated that dry streambeds (i.e., ditches, erosional features, and ephemeral features) will be crossed via trench excavation. There are zero (0) emergent wetlands, zero (0) scrub shrub wetlands and zero (0) forested wetlands present within the project ROW. This project is not subject to a Section 404 Nationwide permit.

III. BEST MANAGEMENT PRACTICES (BMPs)

A. Erosion and Sediment Control: Construction activities shall not cause more than minimal and temporal water quality degradation of any adjacent wetlands, stream or water body. Appropriately chosen and installed erosion and sediment control BMPs will be used to prevent sediment from leaving the site or entering adjacent wetlands or other waters. All BMPs implemented for the site will be in accordance with the standards set forth in the most current edition of the MODNR and the EPA "Developing Your Stormwater Pollution Prevention Plan, a Guide for Industrial Operators" published by the U.S. Environmental Protection Agency, June 2015. The contractor will be responsible for installing, inspecting, and maintaining the erosion and sediment controls for the duration of the project until final stabilization of the site is achieved, and a Notice of Termination has been issued by the City. The site plan found in Appendix II will detail where each BMP will be used. Additional control measures could include but are not limited to the use of secured hay bales, sediment/silt fencing, wooden or vinyl barriers and/or seeding or sodding of exposed or disturbed areas.

1. Structural Practices

- Construction Entrance/Exit (Rock) (Temporary Practice) – Temporary construction entrances may be utilized as deemed necessary during construction. Aggregate should be at least six (6) inches thick and 50 feet long using DOT#1 coarse aggregate. The entrances will be inspected weekly and periodic top dressing with new gravel may be necessary when it becomes clogged with dirt and/or debris to prevent the tracking of mud and dirt onto the roadway. In addition, dirt and debris that accumulates on the roadway should be removed **immediately**. The City interprets **immediately to mean no later than the next workday unless a traffic issue needs remediation.**

- Hay Wattles (Temporary Practice) – Wattles will be installed as shown on the site plan. They will be placed between the area to be disturbed, the wetland areas and stream crossings as needed and at any other locations deemed necessary once construction begins. Sediment will be removed when it reaches one third to one half the height of the barrier. **All removed sediment deposits shall be properly disposed within the project site and in accordance with this plan.**

- Silt Fence (Temporary Practice) – Silt fence will be installed as shown on the site plan. It will be placed between the area to be disturbed and stream channels as needed and at any other locations deemed necessary once construction begins. Sediment will be removed when it reaches one third to one half the height of the barrier. **All removed sediment deposits shall be properly disposed within the project site and in accordance with this plan.**

- Matting - In areas of the ROW where standard BMP's are not sufficient, (along slopes, banks and crossing water) the installation of matting should be considered or may be required in order to prevent runoff. Once matting is installed contractors must use the mats to traverse the ROW.

- Fueling and Vehicle Maintenance Locations – Fueling and vehicle maintenance areas shall use BMPs for industrial activities to ensure that pollutants do not impact the storm water runoff. Impervious dikes and berms shall be used to contain potential spills. Drums and containers for holding and transporting contaminated materials should be on site.

2. Vegetative Practices

- Vegetated Buffers – A fifty (50) feet wide vegetative buffer must remain in place along each top bank of any stream. In areas where tree clearing is required adjacent to the top bank of a stream, stumps must remain in place and grading must be avoided to maintain a fifty (50) feet wide vegetative buffer. Stream buffers are required to avoid potential damage to stream bank slopes causing excessive sediment discharge throughout the life of the project. Construction traffic must avoid traversing across any vegetative buffers along streams and along the right of way edges. Immediately following clearing practices, the

vegetated buffers must be seeded with a mixture of Bermuda, Bahia, and Rye Grass. No stockpiling of soil within the vegetative buffer areas or anywhere near a water body is permitted.

- Temporary Seeding (Temporary Practice) – Soil stabilization-vegetative stabilization measures must be initiated whenever any clearing, grading, grubbing, excavation, or other land disturbing activities have temporarily or permanently ceased on any portion of the site and will not resume for a period of fourteen (14) calendar days or more. The appropriate temporary or permanent vegetative practices shall be initiated **immediately**. **MODNR defines immediately to mean no later than the next workday.**

- Mulching (Temporary) – Mulch will be used whenever possible, excluding wetland areas, to aid in slope stabilization to hold moisture, dampen temperature extremes and retard erosion on steep slopes until temporary or permanent seeding can be implemented. Mulching in wetland areas is prohibited.

- Permanent Seeding - Permanent stabilization measures shall be initiated in a project area as soon as construction activities have permanently ceased. When weather and/or logistical factors prevent immediate stabilization, measures should be initiated no later than 14 days after the construction activity in that portion of the site has permanently ceased. **In accordance with the City, in areas where heavy equipment is utilized, the top 4 inches of the soil bed should be tilled before re-vegetation. Topsoil will be stockpiled and used in areas that will be re-vegetated.**

B. **Spill Prevention and Response Procedures:** If single wall tanks are used, then secondary containment measures shall be implemented. Double-wall tanks do not require secondary containment measures. If on-site above ground oil storage (gasoline, diesel, hydraulic, transformer, etc.) exceeds either 660 gallons in a single container or exceeds 1,320 gallons in aggregate storage, a SPCC plan would be required.

C. **Operation and Maintenance**: **The best management practices and outfalls/discharge points must be properly installed and maintained as designed and inspected after rain events that produce a discharge and at least weekly for a minimum of four (4) inspections per month.** Any poorly functioning erosion or sediment controls, non-compliant discharges, or any other deficiencies observed during the inspections shall be corrected as soon as possible, but not to exceed 24 hours of the inspection unless prevented by unsafe weather conditions as documented on the inspection form.

D. **Record Keeping:** Records shall be retained for three years of all maintenance activities, spills, and inspections, including a description of the quality and quantity of storm water.

E. **Employee Training: The Contractor understands the requirements of the City as it pertains to installation, routine maintenance, corrective action, and weekly inspections and will make sure that their contractors understand the need for any Permit**. Pre-construction training with all on-site workers is required to discuss the requirements and responsibilities of all environmental permitting required by the project. A training roster must be signed and maintained on site. All employees joining the project after the initial meeting must receive the environmental training and sign the roster.

F. **Housekeeping Practices:** Pollutants that may enter storm water from construction sites because of poor housekeeping include oils, grease, paints, gasoline, solvents, litter, debris, and sanitary waste. During construction activities, the contractor is required to:

1. designate areas for equipment maintenance and repair
2. provide waste receptacles at convenient locations and provide regular collection of waste
3. provide protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials
4. provide adequately maintained sanitary facilities on both sides of the project
5. designate an area for concrete truck wash off
6. streets will be swept as needed to remove sediment or other debris that has been tracked from construction site. **No later than the next workday or sooner if a traffic safety condition exists.**
7. sediment or other pollutants will be periodically removed from control measures, **when deposits reach one-third to one-half the height of the control, conveyance channels, or storm drain inlets.**
8. **All removed sediment deposits shall be properly disposed of in accordance with this plan. Nonfunctioning controls shall be repaired, replaced or supplemented with functioning controls within twenty – four (24) hrs of discovery or as soon as field conditions allow.**

IV. CONSTRUCTION SEQUENCE

Below is the construction sequence for this project. This sequence could change depending on the sequence of letting bids, contracting, etc. An updated construction sequence will be submitted to the City if changes occur.

1. Obtain plan approval and all other permits as needed.

2. Have a pre-construction conference to review all needed BMPs.

3. Install the construction entrances as shown on the plans.

4. Begin site vegetation clearing and removal (if required).

5. Install all erosion and sediment controls as indicated on the site plan prior to site construction. Silt fence the perimeter on both sides.

6. Begin site construction.

7. Perform weekly reviews of site conditions along with erosion and sediment practices to ensure compliance with the SWPPP. Inspection reports will be kept on site with an updated SWPPP.

8. As site is cleared, maintain BMPs as needed to ensure minimal erosion and sedimentation problems.

9. Perform any temporary seeding as needed and instructed throughout the construction process.

10. Final grading, seeding, sodding, mulching, fertilizing, and coordinating with the City and the landowners.

11. Ensure final stabilization is achieved within the project site.

12. Removal of any temporary measures.

V. IMPLEMENTATION SCHEDULE

A. **Structural Measures**: The non-existing structural measures shall be installed as the weather permits, and the existing measures shall be reconditioned as well. General implementation principles are:

1. install down-slope and perimeter controls before other site work
2. divert upslope water around area before major site grading
3. do not disturb an area until it is necessary
4. time construction activities to limit impact from seasonal weather
5. cover or stabilize disturbed area as soon as possible
6. do not remove temporary controls until after site stabilization
7. The permittee shall limit clearing, excavation, and the placement of fill materials to areas essential to the project. The remainder of the property shall be left in its natural state.

B. **Proof of Coverage**: Not applicable.

VI. INSPECTIONS AND REPORTING

A. **Inspections**: Inspections of the best management practices and other storm water pollution prevention plan requirements shall be performed as follows:

1. At least weekly for a minimum of four inspections per month.

2. After a rainfall event that produces a discharge and as often as necessary to ensure that appropriate erosion and sediment controls have been properly implemented and maintained.

The minimum inspection requirement in no way relieves the permittee of performing whatever inspections are needed to ensure safe and pollution free facility operation.

B. Reporting: The owner and/or contractor must inspect, as described in the section above, and maintain controls and prepare weekly reports noting damages or deficiencies and corrective measures. These inspection reports are kept on-site until the Request for Termination (RFT) form is submitted.

As previously stated, all records, reports, and information resulting from activities required by this plan and any issued permit shall be provided to the City for the City to retain for at least three years from the date of the inspection or report.

A rain gauge shall be placed in a central location on the site and used to obtain rainfall amounts. This information will be needed for proper completion of the inspection report.

VII. REVISIONS

The storm water pollution prevention plan will be kept current by the company representative and will be revised as changes in site conditions warrant. The company representative may notify the SWPPP developer for assistance when necessary. Factors that would compel the SWPPP to be modified include:

- Inadequacies revealed by routine inspections.
- Changes in identified sources, non-storm water discharges, or non-storm water solid wastes.
- MODNR Office of Pollution Control notification that the plan does not meet one or more of the minimum requirements.
- Changes in design, construction, operation, or maintenance, which has affected the discharge of pollutants to waters of the State and which were not otherwise addressed in the SWPPP.
- Identification of any new contractor and/or subcontractor that will implement a measure of the SWPPP.

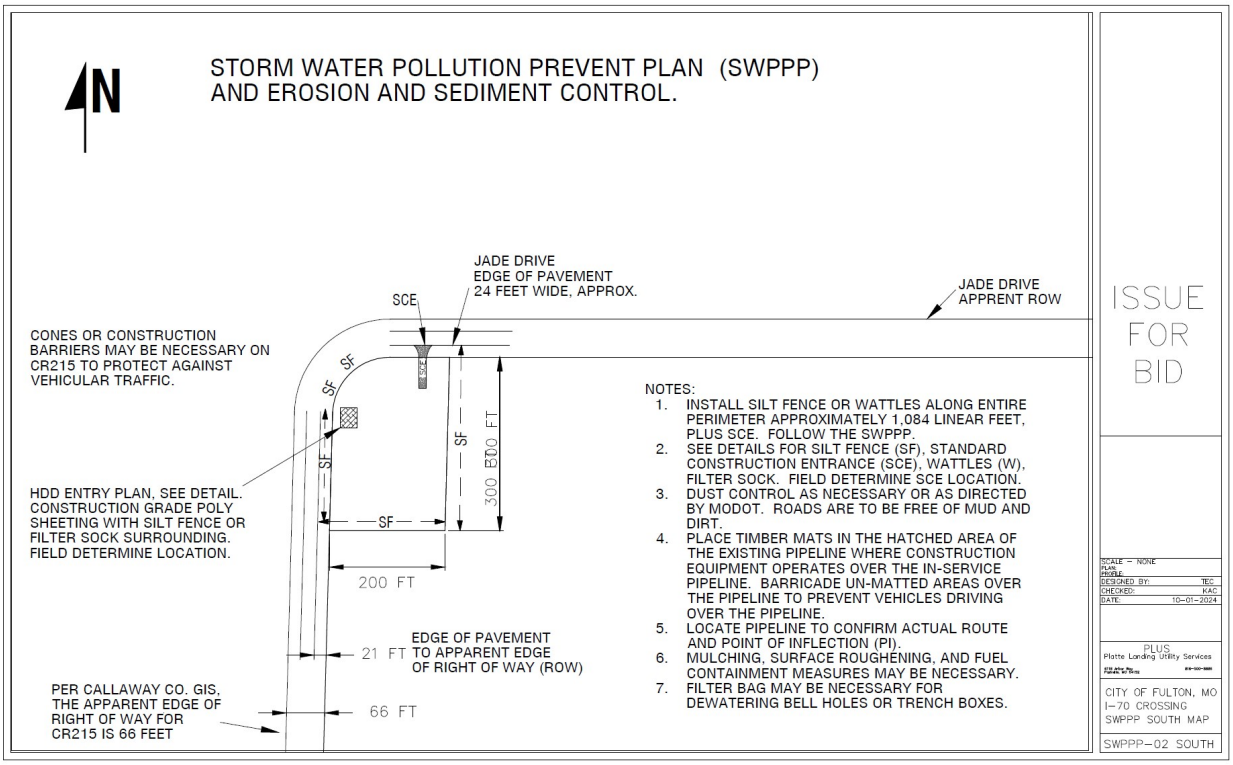
- Install additional erosion and sediment controls when existing controls prove to be ineffective.
- Any additions, removals, or modifications to construction entrances as shown on the site plans.
- All revisions to the SWPPP must be approved by the company representative.

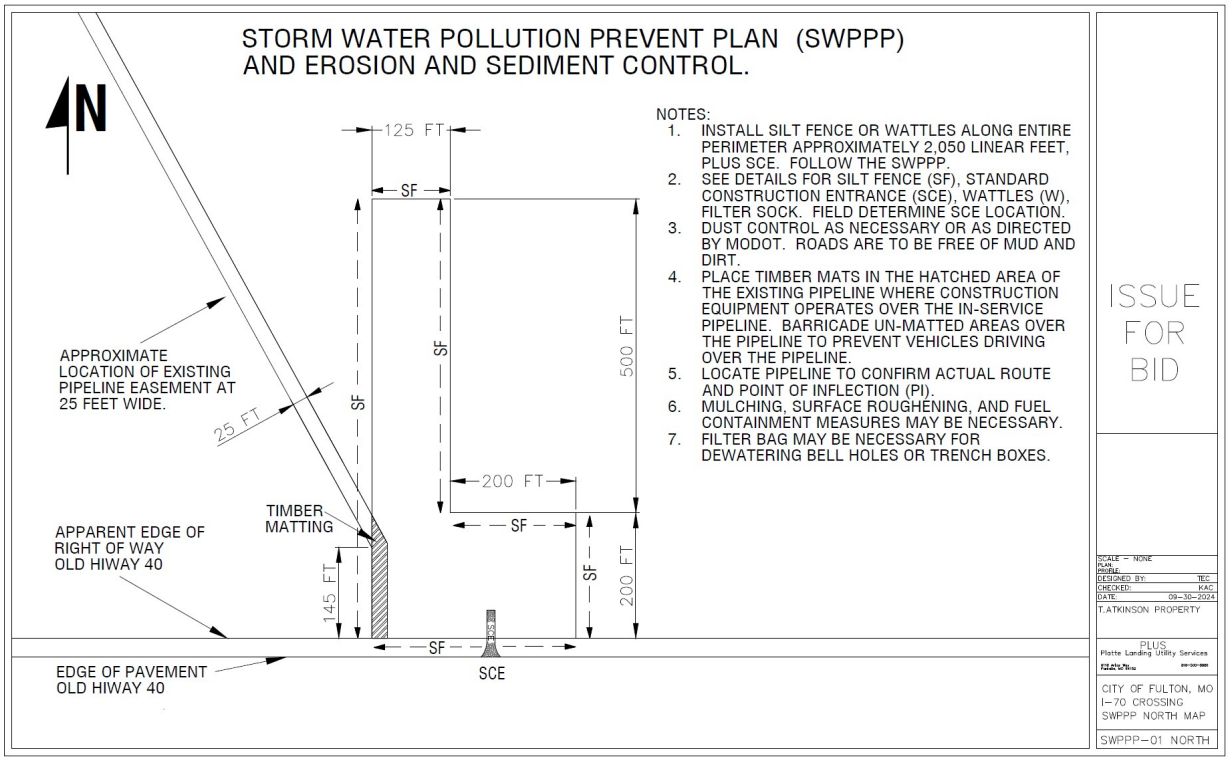
A plan revision will be completed within 30 days of the date if determined that a revision is warranted. If the modification is in response to a request by governing bodies, the City must submit that the requested changes have been made.

VIII. TERMINATION OF COVERAGE FOR A STATE ISSUED PERMIT

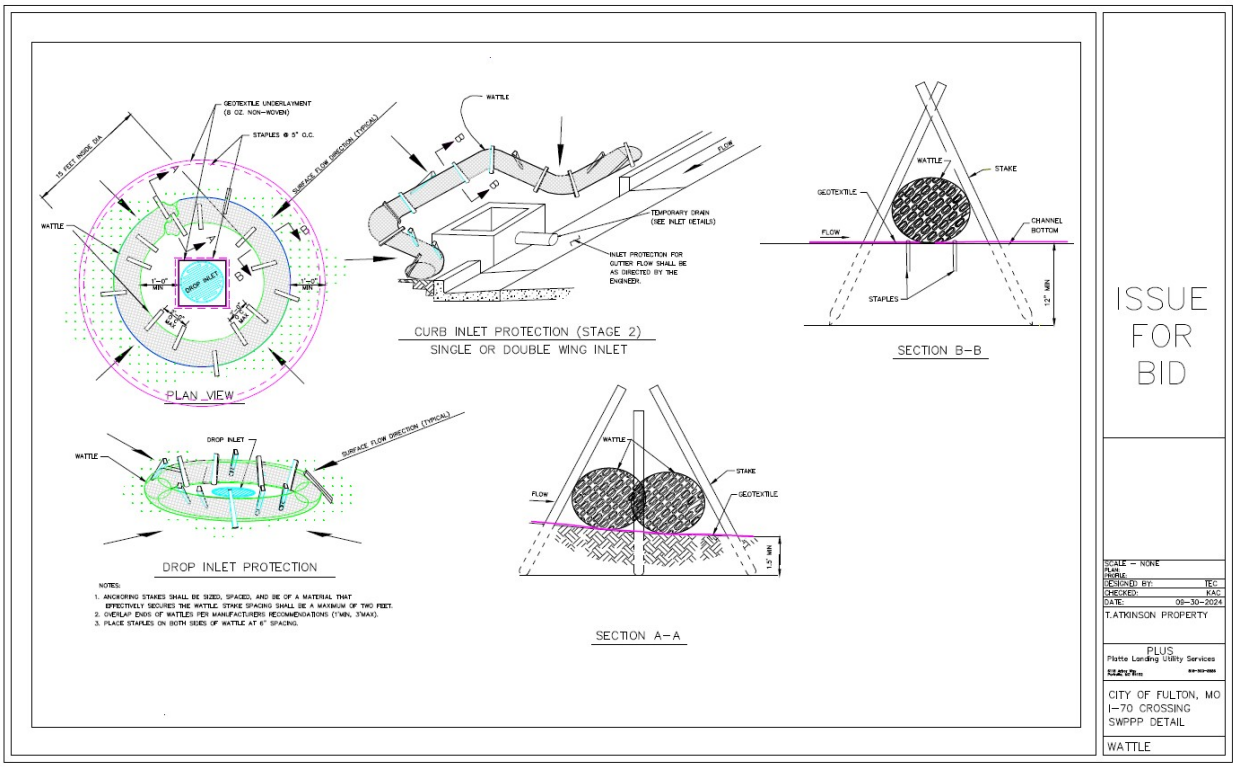
Not applicable.

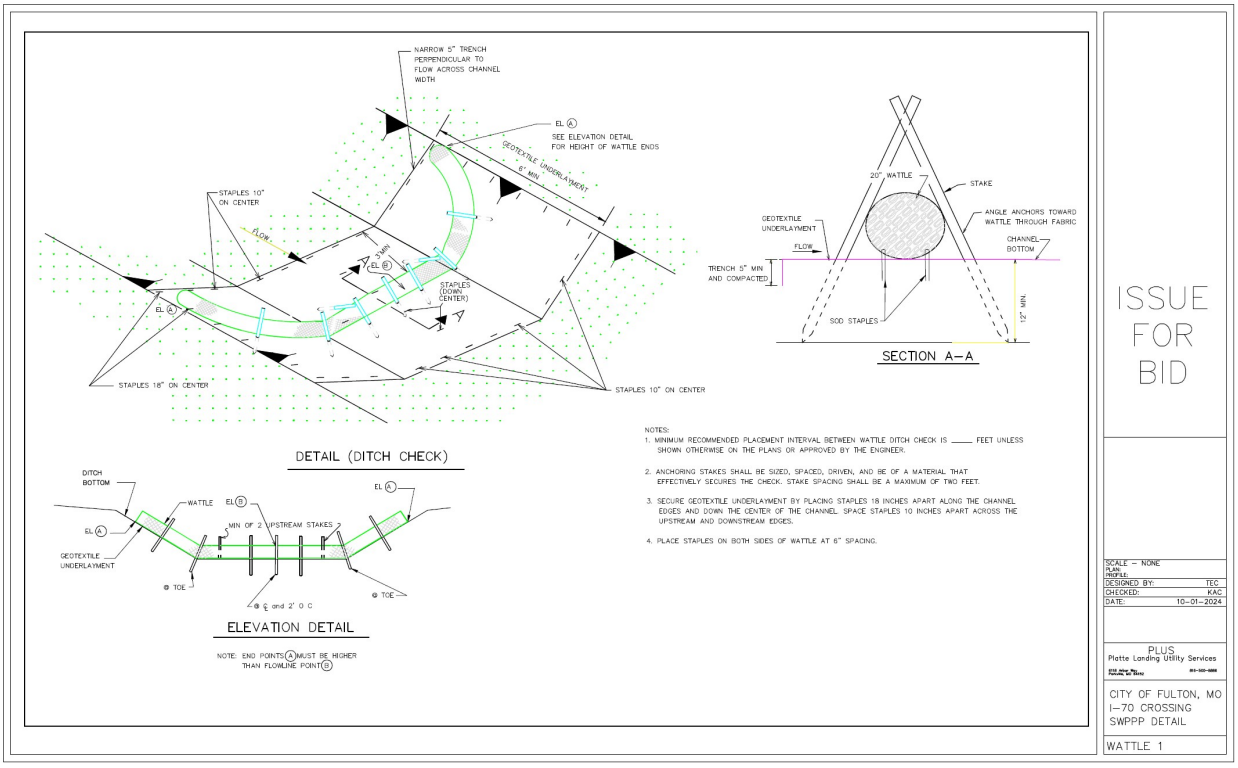
IX. APPENDIX I – LOCATION MAPS



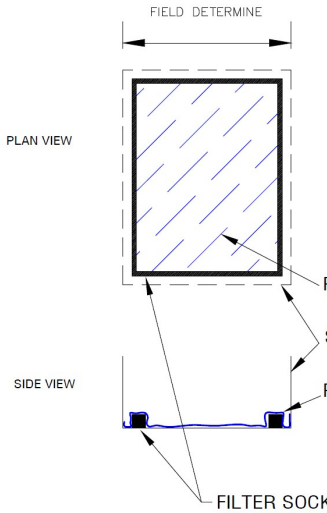


Appendix II – Details





HDD ENTRY



INSTALLATION

1. HDD EQUIPMENT (RECLAIMER, HOLDING TANK, ETC.) TO HAVE AN OUTER RING OF SILT FENCE. AN INNER RING OF FILTER SOCK/WATTLES/HAY BALES, SIX INCHES HIGH (MINIMUM). THE INNER RING IS TO BE SET 1 OR 2 FEET INSIDE SILT FENCE.
2. A HEAVY DUTY POLY BARRIER IS INSTALLED ON THE GROUND AND LAPPED OVER THE FILTER SOCK. THE POLY BARRIER SHEETING IS TO EXTEND FOUR INCHES OVER THE ADJACENT SHEET AND STAKED DOWN IF NEEDED.
3. INSPECT THE POLY LINER FOR RIPS AND TEARS, REPAIR AND REPLACE AS NECESSARY.
4. DISTANCES FOR LENGTH AND WIDTH TO BE FIELD DETERMINED.
5. A VAC TRUCK MAY BE NECESSARY TO REMOVE DRILLING FLUIDS.

ISSUE FOR BID

SCALE – NONE
PLAN:
PROFILE:
DESIGNED BY: TEC
CHECKED: KAC
DATE: 10-01-2024

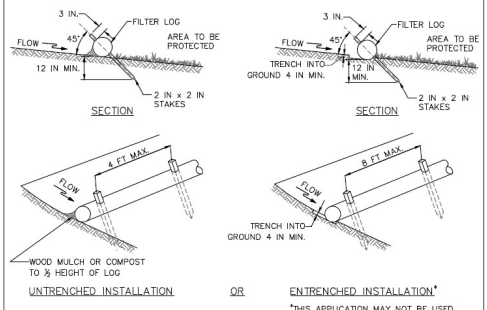
PLUS
Platte Landing Utility Services

CITY OF FULTON, MO
I–70 CROSSING
SWPPP DETAIL

HDD ENV. CONTROL

FILTER LOG (FL)

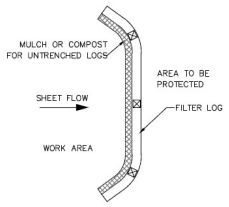
STANDARD SYMBOL
FL–18
DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG



UNTRENCHED INSTALLATION OR ENTRENCHED INSTALLATION*

*THIS APPLICATION MAY NOT BE USED WITH LOGS SMALLER THAN 12 IN.

ISOMETRIC VIEW



PLAN

1 OF 2

FILTER LOG (FL) DETAILS/NOTES

STANDARD SYMBOL
FL–18
DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H–1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS.

2 OF 2

ISSUE FOR BID

SCALE – NONE
PLAN:
PROFILE:
DESIGNED BY: TEC
CHECKED: KAC
DATE: 10-01-2024

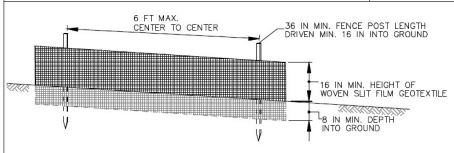
PLUS
Platte Landing Utility Services

CITY OF FULTON, MO
I–70 CROSSING
SWPPP DETAIL

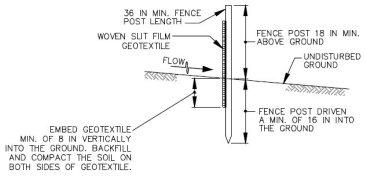
FL – FILTER LOG

SILT FENCE (SF)

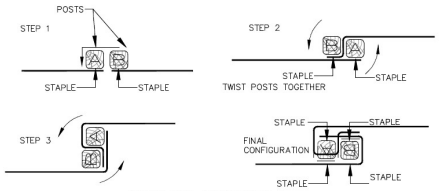
STANDARD SYMBOL: SF



ELEVATION



CROSS SECTION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

1 OF 2

SILT FENCE (SF) DETAILS/NOTES

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS FOR MODNR.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

ISSUE FOR BID

SCALE – NONE
PLAN:
PROFILE:
DESIGNED BY: TEC
CHECKED: KAC
DATE: 10-01-2024

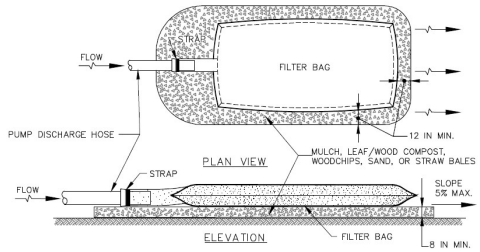
PLUS
Platte Landing Utility Services

CITY OF FULTON, MO
I-70 CROSSING
SWPPP DETAIL

SF – SILT FENCE

FILTER BAG (FB)

STANDARD SYMBOL: FB



CONSTRUCTION SPECIFICATIONS

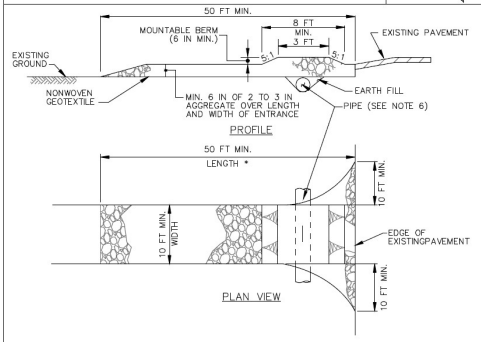
1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

STABILIZED CONSTRUCTION ENTRANCE (SCE)

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*)30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE)) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

ISSUE FOR BID

SCALE – NONE
PLAN:
PROFILE:
DESIGNED BY: TEC
CHECKED: KAC
DATE: 08-31-2024

PLUS
Platte Landing Utility Services

CITY OF FULTON, MO
I-70 CROSSING
SWPPP DETAIL

SCE AND FB

PLANS

CONSTRUCTION NOTES:

1. CONTRACTOR TO USE THE CURRENT MODOT APPROVED STANDARD SPECIFICATIONS, CONSTRUCTION OF TRANSPORTATION SYSTEM DOCUMENT FOR THIS PROJECT.
2. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES WITHIN PROJECT AREA. UTILITY DATA PROVIDED INCLUDES A COMBINATION OF SITE SURVEY AND GROUND OBSERVATIONS, AND SHOULD NOT BE ASSUMED TO BE ALL INCLUSIVE OF UTILITIES WITHIN PROJECT AREA.
3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ON-SITE WITH DESIGNER / ENGINEER FOR DIRECTION DURING INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES PER THE SWPPP WHILE COMPLETING THE HORIZONTAL DIRECTIONAL DRILLS.
4. TREE CLEARING WITHIN ALL WORKSPACE SHALL BE MINIMIZED TO THE GREATEST EXTENT PRACTICAL AND SHALL BE APPROVED BY THE OWNER, DESIGNER, OR ENGINEER.
5. TOPOGRAPHIC AND LAND SURVEY INFORMATION IS A COMBINATION OF OWNER SUPPLIED SURVEY DATA AND USGS DIGITAL ELEVATION MODEL (DEM) ELEVATION DATA.
6. THE CONTRACT CONSTRUCTION SPECIFICATIONS SHALL BE ADHERED TO. IN THE EVENT OF CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND DRAWINGS, THE DRAWINGS TAKE PRECEDENT.
7. CONTRACTOR TO FIELD VERIFY ALL PROPOSED DIMENSIONS PRIOR TO INSTALLATION.
8. CONTRACTOR SHALL CONTACT THE MISSOURI 811 (“ONE CALL BEFORE YOU DIG") IN ORDER TO LOCATE UTILITIES PRIOR TO STARTING ANY CONSTRUCTION. THE UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND SHALL BE VERIFIED BEFORE COMMENCEMENT OF ANY WORK.
9. NO BURNING IS ALLOWED ON THE SITE.
10. ON-SITE BURIAL IS NOT ALLOWED.
11. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, COORDINATES, AND DIMENSIONAL INFORMATION PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BRING ALL DISCREPANCIES TO THE ATTENTION OF THE ENGINEER PRIOR TO STARTING CONSTRUCTION.
12. EXCESS OR UNUSABLE TOPSOIL SHALL BE DISPOSED OF OFF-SITE IN A MANNER THAT IS LEGAL AND CONSISTENT WITH ALL CITY, LOCAL, STATE, AND FEDERAL REQUIREMENTS.
13. THE CONTRACTOR SHALL COMPLY WITH ALL CITY, COUNTY, STATE, AND FEDERAL REGULATIONS APPLICABLE TO CONSTRUCTION OF THIS SITE.
14. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL REQUIRED PERMITS ARE OBTAINED PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. NO CONSTRUCTION OR FABRICATION OF ANY ITEM SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED ALL PLANS AND ANY OTHER DOCUMENTATION FROM ALL OF THE PERMITTING AND ANY OTHER REGULATORY AUTHORITIES. ANY PENALTIES, STOP WORK ORDERS OR ADDITIONAL WORK RESULTING FROM THE CONTRACTOR BEING IN VIOLATION OF THE REQUIREMENTS ABOVE, SHALL BE FULLY BORNE BY THE CONTRACTOR.
15. THE CONTRACTOR'S MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES IN PERFORMING THE WORK IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR, WHO IS ALSO RESPONSIBLE FOR COMPLYING WITH ALL HEALTH AND SAFETY PRECAUTIONS AS REQUIRED BY THE APPLICABLE REGULATORY AGENCY.
16. THE DESIGN ADEQUACY AND SAFETY OF ALL BRACING, SHORING AND TEMPORARY SUPPORTS, ETC. ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ASSUME ALL SOIL TO BE CLASSIFIED AS CLASS C UNLESS GEOTECHNICAL DATA CONFIRMS OTHERWISE. SLOPING AND EXCAVATIONS TO BE AT 34 DEGREES. SHORING TO BE USED FOR ENTRANCE TO ANY EXCAVATIONS 6 FEET OR DEEPER. TIE IN LOCATION MAY REQUIRE TRENCH BOX, SHORING, AND SHEET PILE INSTALLATION DUE TO DEPTH AND LOCATION TO ROADS.
18. CONTRACTOR TO COORDINATE AND SCHEDULE WITH TDW FOR HOT TAP INSTALLATION OF SPHERICAL TEES. CONTRACTOR TO WELD SPHERICAL TEES USING LOW HYDROGEN RODS. CONTRACTOR TO PROVIDE NECESSARY BACKHOES AND EQUIPMENT TO FACILITATE THE TDW TAPPING EQUIPMENT.

PRESSURE TESTING

19. PRIOR TO TESTING, CLEAN THE PIPELINE BY BLOWING FOAM, WIRE, AND GAUGING PIGS WITH COMPRESSED AIR A SUFFICIENT NUMBER OF TIMES TO ENSURE THE REMOVAL OF ALL CONSTRUCTION DIRT, RUST, SCALE, AND ALL FOREIGN MATTER IN THE PIPELINE UNTIL APPROVED BY INSPECTOR OR ENGINEER.
20. CONTRACTOR TO SUBMIT A PRESSURE TESTING PLAN FOR APPROVAL BY CITY AND ENGINEER. THE RECORDING CHART SHALL REFLECT THE PRESSURE INCREASE AS THE LINE IS BEING PRESSURIZED AND PRESSURE DECREASE AFTER THE TEST IS DEEMED SUCCESSFUL BY CITY.
21. THE TEST PRESSURE FOR STEEL PIPE SHALL BE 1150 PSIG FOR 8 HOURS AND INCLUDE A RECORDING CHART INCLUDING PRESSURE AND TEMPERATURE. THE RECORDING CHART SHALL SHOW THE PRESSURE INCREASE FROM ZERO TO THE TEST PRESSURE AND THE DECREASE BACK TO ZERO AFTER THE TEST IS DEEMED SUCCESSFUL BY CITY. TESTING SHALL BE IN ACCORDANCE WITH TITLE 49.C.F.R.192.513 AND 192.121. A TEST WITH NITROGEN WILL BE ALLOWED AS AN ALTERNATIVE. IF WATER IS USED, THE WATER SHALL HAVE AN 8 HOUR DWELL TIME PRIOR TO TESTING.
22. IF WATER IS USED, THE HYDROSTATIC TEST WATER SHALL BE TESTED BEFORE BEING DISCHARGED. AN APPROVED PLAN SHALL BE PROVIDED.
23. PIPELINE TO BE DEWATERED AND DRIED TO -40°F DEWPOINT.
24. WIRE PIGS AND FOAM PIGS RUN UNTIL 0.25 INCH PENETRATION FOR WATER TEST AND NITROGEN.

JOINT COATING

25. AFTER PASSING X-RAY, PIPE MAY BE HEATED. JOINTS TO BE ABRASIVE BLASTED TO NEAR WHITE METAL FINISH WITH ANCHOR PROFILE WITHIN COATING MANUFACTURER'S SPECIFICATIONS AND DOCUMENTED WITH TESTIX TAPE AT 4 POSTIONS. PARENT ARO COATING TO BE ABRADED AND FEATHERED, 1 INCH MIMINUM.
26. TWO PART COATING TO BE MIXED AND APPLIED BY BRUSH OR MANNER APPROVED BY MANUFACTURER. THE SECOND COATING LAYER TO BE APPLIED WHILE THE FIRST LAYER IS STILL TACKY.
27. FOUR DRY FILM THICKNESS MEASUREMENTS TO BE TAKEN AT 3, 6, 9, 12 'O-CLOCK POSITIONS.
28. STREAKS, RUNS, DRIPS, ICICLES, BRISTLES IN COATING ARE UNACCEPTABLE.
29. ABRASIVE BLASTING EQUIPMENT TO BE CHECKED FOR DEADMAN SWITCH, SUPPLIED AIR, AND HAVE A DEDICATED SPOTTER.
30. SHORE D HARDNESS OF 80 REQUIRED BEFORE BACKFILL.
31. AMBIENT TEMPERATURE REQUIREMENTS SHALL BE FOLLOWED. CURRENT DESIGN IS FOR COATING AT 45 DEGREE F. OR ABOVE WITH PROPER APPLICATION TEMPERATURE DOCUMENTATION. IF COLDER WEATHER APPLICATION IS APPROVED, A DIFFERENT COATING WITH A "SCAR GUARD" TYPE OUTER WRAP MAY BE REQUIRED.

PIPE UNLOADING

32. CONTRACTOR MAY BE REQUIRED TO MOBILIZE TO UNLOAD AND STACK PIPE AT CITY YARD IN ADVANCE OF PIPELINE CONSTRUCTION.
33. ALL PIPE IS TO BE UNLOADED ONE JOINT AT A TIME.

WELDING

34. MANGO WELDING PROCEDURES TO BE FOLLOWED AS WELL AS PROVISIONS OF ASME, SEE CONSTRUCTION SPECIFICATIONS.
35. ANY FITTINGS OR PIPE FIELD MILLED TO 0.090 INCH TOLERANCE SHALL BE MEASURED AND DOCUMENTED AT EIGHT LOCATIONS AROUND THE PIPE.
36. THE TDW FITTING IS TO BE WELDED ONTO AN IN-SERVICE, FLOWING FLOWING PIPELINE. APPROPRIATE LOW HYDROGEN WELDING RODS AND PROCEDURES ARE TO BE FOLLOWED INCLUDING WELDING ROD STORAGE, PIPE WALL THICKNESS MEASUREMENTS, A-SCAN FOR DELAMINATION VERIFICATION.

PIPE SPECIFICATIONS

PIPE	CARBON STEEL (CS) PIPE
DIAMETER	8.625" (8" NOMINAL)
MATERIAL:	CARBON STEEL, X42000 GRADE, ASTM A106
W.T.:	0.375"
SEAM	ERW OR SEAMLESS
MAOP	740 PSIG, CLASS 3, UNDER 20% SMYS
COATING	14MIL FBE/40MIL ARO
JOINTS	DENSO 7300 AT 40MIL AT TWO LAYER BUILD UP
RADIUS	MINIMUM BEND RADIUS IS 800 FEET

ISSUE FOR BID

SCALE – N/A
PLAN:
PROFILE:

DESIGNED BY: TEC
CHECKED: KAC
DATE: 10-01-2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816-500-8886

CITY OF FULTON, MO
I-70 CROSSING
CONSTRUCT. NOTE 1

NOTE-001

CONSTRUCTION NOTES - HDD:

1. CONTROL POINT ELEVATIONS SHOWN INDICATE THE MINIMUM COVER AND MUST NOT BE REDUCED. THE CONTRACTOR MAY DRILL DEEPER WITH THE APPROVAL OF THE OWNER. NOMINAL 5 FEET OF COVER UNLESS OTHERWISE SHOWN ON PLANS.
2. THE CONTRACTOR MAY REQUEST CHANGES TO THE PROPOSED VERTICAL AND HORIZONTAL ALIGNMENT OF THE INSTALLATION AND THE LOCATION OF THE ENTRY AND EXIT POINTS FOR HDD BORES. PROPOSED CHANGES MUST BE SUBMITTED TO THE OWNER AND RECEIVE APPROVAL OF THE OWNER PRIOR TO STARTING THE EFFECTED ACTIVITY. MODOT PERMIT APPROVAL IS BASED ON 23 FEET DEPTH, MINIMUM.

BORE PILOT HOLE REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE A WRITTEN BORE PLAN PRIOR TO WORK AND BE APPROVED BY CITY AND ENGINEER.
2. THE CONTRACTOR SHALL PROVIDE CALIBRATION RECORDS PRIOR TO BORING AND INSPECTION RECORDS FOR DRILL RODS.
3. THE CONTRACTOR MUST AT ALL TIMES PROVIDE AND MAINTAIN INSTRUMENTATION WHICH WILL ACCURATELY LOCATE THE DRILL HEAD DURING DRILLING OF THE PILOT HOLE, MEASURE DRILL STRING AXIAL AND TORSION LOADS, AND MEASURE DRILLING FLUID DISCHARGE RATE AND PRESSURE.
4. THE CITY WILL HAVE ACCESS TO THESE INSTRUMENTS AND THEIR READINGS AT ALL TIMES.
5. THE CONTRACTOR, WHEN REQUESTED BY THE OWNER, SHALL PROVIDE INSPECTION HOLES AT NO ADDITIONAL COST TO VISUALLY VERIFY THE LOCATION AND CONDITION OF THE DRILLED PIPELINE.
6. THE CONTRACTOR MUST DOCUMENT AND PLOT THE ACTUAL HORIZONTAL AND VERTICAL ALIGNMENT OF THE PILOT HOLES FOR EACH DRILLING ROD, AND CORRESPONDING WITH THE PROJECT STATIONING AND DATUM.
7. THE CONTRACTOR MUST MAINTAIN AND UPDATE AN "AS-BUILT" PLAN AND PROFILE AS THE PILOT BORE IS ADVANCED AT DRILL ROD CHANGE OUT. AT A MINIMUM, DOCUMENT THE DEPTH, ANGLE, HORIZONTAL DISTANCE, AND ROD COUNT.
8. THE CONTRACTOR MUST GRANT THE OWNER ACCESS TO ALL DATA READOUT PERTAINING TO THE POSITION AND INCLINATION OF THE BORE HEAD WHEN REQUESTED. THE CONTRACTOR MUST PROVIDE EXPLANATIONS OF HIS POSITION MONITORING AND STEERING EQUIPMENT.
9. THE PILOT HOLE MUST BE DRILLED ALONG THE PATH SHOWN ON THE PLAN AND PROFILE DRAWING MAINTAINING THE SPECIFIED TOLERANCES.
10. IF THE PILOT BORE FAILS TO CONFORM TO THE ABOVE TOLERANCES, OWNER MAY, AT HIS OPTION, REQUIRE A NEW PILOT BORE TO BE MADE.
11. IN ALL CASES, RIGHT OF WAY RESTRICTIONS MUST TAKE PRECEDENCE OVER THE LISTED TOLERANCES.
12. NO PILOT HOLE WILL BE ACCEPTED IF IT WILL RESULT IN ANY OF THE PIPELINE BEING INSTALLED IN VIOLATION OF RIGHT OF WAY RESTRICTIONS.
13. CONCERN FOR ADJACENT UTILITIES AND/OR STRUCTURES MUST TAKE PRECEDENCE OVER THE LISTED TOLERANCES. LISTING OF TOLERANCES DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR SAFE OPERATION OR DAMAGE TO ADJACENT UTILITIES AND STRUCTURES.
14. ALL BEND RADII MUST BE EQUAL TO OR GREATER THAN THOSE LISTED IN THE PROJECT PLANS. FOR THIS PROJECT 800 FEET IS THE MINIMUM.
15. CONTRACTOR MUST ADHERE TO FRAC-OUT (SPILL CONTAINMENT) PLAN FOR DIRECTIONAL DRILLING PROCESS.

BORE PRE-REAMING REQUIREMENTS

16. AFTER THE PILOT HOLE IS ACCEPTED, THE CONTRACTOR MUST REAM THE BOREHOLE TO A DIAMETER THAT IS ALLOWED BY THE APPLICABLE PERMITTING AGENCIES. FINISHED BORE HOLE MUST BE SWABBED SUFFICIENTLY TO REMOVE ALL DEBRIS IN THE BORE HOLE PRIOR TO PULL BACK. CONTRACTOR MUST BE RESPONSIBLE FOR FAMILIARITY AND ADHERENCE TO ALL PERMIT RESTRICTIONS ON BORE HOLE/ REAMING DIAMETER.
17. THE PILOT HOLE DIAMETER MUST BE DETERMINED BY THE CONTRACTOR. THE REAMED HOLE SHALL BE 1.5 TO 2.0 TIMES THE SIZE OF THE CARRIER PIPE.
18. BUOYANCY MODIFICATIONS MUST BE USED AT THE DISCRETION THE CONTRACTOR. ANY BUOYANCY MODIFICATION PROCEDURE PROPOSED FOR USE MUST BE SUBMITTED TO THE OWNER FOR APPROVAL.
19. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE PULL SECTION RESULTING FROM BUOYANCY MODIFICATIONS.
20. ALL BUOYANCY MODIFICATIONS MUST BE IN ACCORDANCE WITH ACCEPTED INDUSTRY PRACTICES AND APPLICABLE PERMITTING REGULATIONS.

BORE PULLBACK REQUIREMENTS

21. CONTRACTOR MUST PULL EXTRA LENGTH OF PRODUCT PIPE SO ONE JOINT AND THE COATING CAN BE EXAMINED. THE PULL HEAD SHALL BE COATED.
22. CONTRACTOR MUST SUPPORT THE PRODUCT PIPE PULL SECTION AS IT PROCEEDS DURING PULLBACK SO THAT IT MOVES FREELY AND IS NOT OVER STRESSED.
23. THE PIPE SHALL BE PLACED ON ROLLERS SUPPORTED EVERY 30 FEET, MAXIMUM SPACING. NECESSARY SIDEBOOMS WITH CRADDLE ROLLERS SHALL BE USED.

BORE INSTALLATION

24. THE CONTRACTOR, SUBJECT TO THE REQUIREMENTS OF THESE PLANS, WILL DETERMINE THE EXACT METHOD AND TECHNIQUES FOR COMPLETING THE HDD CROSSINGS. EXCAVATED MUD PITS CONSTRUCTED IN THE ENTRY AND EXIT AREAS WILL BE LIMITED TO THE PIPE BORE HOLE AREA ONLY.
25. PULL HEAD TO BE INSPECTED FOR PROPER MECHANICAL INSTALLATION, SHACKLE, COTTER PINS, DOUBLE NUTTING, ETC.
26. AFTER COMPLETION OF THE DIRECTIONAL DRILLING WORK, THE ENTRY AND EXIT PIT LOCATIONS MUST BE RESTORED TO THEIR ORIGINAL CONDITIONS.
27. AFTER THE PILOT HOLE IS ACCEPTED, THE CONTRACTOR MUST REAM THE BOREHOLE TO A DIAMETER THAT IS ALLOWED BY THE APPLICABLE PERMITTING AGENCIES. FINISHED BORE HOLE MUST BE SWABBED SUFFICIENTLY TO REMOVE ALL DEBRIS IN THE BORE HOLE PRIOR TO PULL BACK. CONTRACTOR MUST BE RESPONSIBLE FOR FAMILIARITY AND ADHERENCE TO ALL PERMIT RESTRICTIONS ON BORE HOLE/ REAMING DIAMETER.
28. THE PILOT HOLE DIAMETER MUST BE DETERMINED BY THE CONTRACTOR.
29. CONTRACTOR MUST PULL EXTRA LENGTH OF PRODUCT PIPE SO ONE JOINT AND COATING CAN BE EXAMINED.
30. CONTRACTOR MUST SUPPORT THE PRODUCT PIPE PULL SECTION AS IT PROCEEDS DURING PULLBACK SO THAT IT MOVES FREELY AND IS NOT OVER STRESSED.

BORE DRILLING FLUIDS

1. CONTRACTOR MUST NOT USE ANY DRILLING FLUID THAT DOES NOT COMPLY WITH PERMIT REQUIREMENTS AND ENVIRONMENTAL REGULATIONS; POTABLE WATER STANDARDS.
2. CONTRACTOR MUST BE RESPONSIBLE FOR OBTAINING, TRANSPORTING, AND STORING ANY WATER REQUIRED FOR DRILLING FLUIDS.
3. CONTRACTOR MUST MAXIMIZE RECIRCULATION OF DRILLING FLUID SURFACE RETURNS.
4. CONTRACTOR MUST PROVIDE SOLIDS CONTROL AND FLUID CLEANING EQUIPMENT OF A CONFIGURATION AND CAPACITY THAT CAN PROCESS SURFACE RETURNS AND PRODUCE DRILLING FLUID SUITABLE FOR REUSE.
5. DISPOSAL OF EXCESS DRILLING FLUID IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE CONDUCTED IN COMPLIANCE WITH ALL ENVIRONMENTAL REGULATIONS, RIGHT-OF-WAY AND WORKSPACE AGREEMENTS, AND PERMIT REQUIREMENTS.
6. DRILLING FLUID AREA TO HAVE APPROPRIATE SILT FENCING AND ENVIRONMENTAL CONTAINMENT.
7. CONTRACTOR MUST EMPLOY BEST EFFORTS TO MAINTAIN FULL ANNULAR CIRCULATION OF DRILLING FLUID.
8. DRILLING FLUID RETURNS AT LOCATIONS OTHER THAN THE ENTRY AND EXIT PITS MUST BE MINIMIZED.
9. IN THE EVENT THAT ANNULAR CIRCULATION IS LOST, CONTRACTOR MUST TAKE ACTION TO RESTORE CIRCULATION.
10. IF INADVERTENT SURFACE RETURNS OF DRILLING FLUIDS OCCUR, CONTRACTOR MUST IMMEDIATELY CLEAN AND COLLECT.

ISSUE
FOR
BID

SCALE – N/A
PLAN:
PROFILE:

DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	10–01–2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
CONSTRUCT. NOTE 2

NOTE–002

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

THE SWPPP IS MADE PART OF THE PLAN SET AND THE CONTRACT. MISSOURI DEPARTMENT OF NATURARL RESOUSCES SHALL BE FOLLOWED. IN ADDITION, THE STATE OF MISSISSIPPI STORM WATER BEST MANAGEMENT PRACTICES SHALL ALSO APPLY.

STRUCTURAL PRACTICES FOR EROSION AND POLLUTION CONTROL:

THE STRUCTURAL PRACTICES SHOWN ON THIS PLAN HAVE BEEN DESIGNED TO REDUCE EROSION & SEDIMENTATION OF DISTURBED AREAS.

NONSENSITIVE SILT FENCE (SF1), SENSITIVE SILT FENCE (SF2), STRAW WATTLE / FILTER SOCK (W), TEMPORARY STREAM CROSSING (TSC), TIMBER MAT CROSSING (TMC), AND CONSTRUCTION EXIT SHALL BE INSTALLED PRIOR TO CLEARING, DEMOLITION, AND GRADING OPERATIONS TO KEEP SEDIMENT CONTAINED WITHIN THE SITE AS NECESSARY AT THE EDGE OF ROW AND/OR TEMPORARY CONSTRUCTION EASEMENT.

CRITICAL WORK ZONE:

ALL DISTURBED SLOPES 3:1 OR STEEPER AND HIGHER THAN 5 FEET SHALL RECEIVE SURFACE ROUGHENING, AND SLOPE STABILIZATION. SILT FENCING AND THE CONSTRUCTION EXIT SHALL BE USED TO PREVENT SEDIMENT FROM LEAVING THE DISTURBED AREA.

CONSTRUCTION PERIOD STORM WATER POLLUTANT CONTROL: SEDIMENTATION AND FUEL SPILLS ARE POTENTIAL SOURCES OF STORM WATER POLLUTION DURING THE CONSTRUCTION PROCESS. THESE POLLUTANTS SHALL BE REMOVED AND/OR REDUCED VIA THE BEST MANAGEMENT PRACTICES CONTAINED WITHIN THE SWPPP.

POST-CONSTRUCTION STORM WATER POLLUTANT CONTROL:

EXISTING UNDISTURBED AREAS ARE PRIMARILY COVERED IN VEGETATION. MEASURES WILL BE TAKEN TO ENSURE ALL PERVIOUSLY DISTURBED AREAS ARE VEGETATED OR STABILIZED POST-CONSTRUCTION TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES.

STABILIZATION MEASURES:

THE STABILIZATION MEASURES SHOWN ON THESE PLANS HAVE BEEN DESIGNED TO STABILIZE THE DISTURBED AREAS FOLLOWING THE TEMPORARY OR PERMANENT COMPLETION OF CONSTRUCTION. ALL EXPOSED AREAS SHALL BE STABILIZED WITH TEMPORARY MULCHING (M) IF THEY ARE TO REMAIN INACTIVE FOR 14 DAYS OR MORE. ALL DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY SEEDING (TS) OR PERMANENT SEEDING (PS) VEGETATION AS INDICATED ON THE PLAN. SLOPES STEEPER THAN 3H:1V SHALL BE STABILIZED WITH SLOPE STABILIZATION (SS) / ROLLED EROSION CONTROL PRODUCT (RECP). DUST CONTROL (DU) SHALL ALSO BE PROVIDED AS NEEDED DURING GRADING ACTIVITIES.

STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, EXCEPT:

WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER OR OTHER ADVERSE WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL.

WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED (E.G. THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY CEASED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE 14TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED.

KEEPING PLANS CURRENT:

THE PRIMARY PERMITTEE(S), SHALL AMEND THEIR PLAN WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION , OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON BMP's WITH A HYDRAULIC COMPONENT (I.E., THOSE BMPs WHERE THE DESIGN IS BASED UPON RAINFALL INTENSITY, DURATION AND RETURN FREQUENCY STORMS) OR IF THE PLAN PROVES TO BE INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS INCLUDING BUT NOT LIMITED TO VARIOUS SOURCES IDENTIFIED. AMENDMENTS TO THE PLAN MUST BE CERTIFIED BY A DESIGN PROFESSIONAL AS PROVIDED IN THIS PERMIT.

PROPER OPERATION AND MAINTENANCE:

THE PERMITTEE/CONTRACTOR SHALL AT ALL TIMES PROPERLY OPERATE AND MAINTAIN ALL FACILITIES AND SYSTEMS OF TREATMENT AND CONTROL (AND RELATED APPURTENANCES) WHICH ARE INSTALLED OR USED BY THE PERMITTEE/CONTRACTOR TO ACHIEVE COMPLIANCE WITH THE CONDITIONS OF THIS PERMIT AND WITH THE REQUIRED PLANS. PROPER OPERATION AND MAINTENANCE ALSO INCLUDES ADEQUATE LABORATORY CONTROLS AND APPROPRIATE QUALITY ASSURANCE PROCEDURES. PROPER OPERATION AND MAINTENANCE REQUIRES THE OPERATION OF BACKUP OR AUXILIARY FACILITIES OR SIMILAR SYSTEMS, INSTALLED BY PERMITTEE/CONTRACTOR ONLY WHEN NECESSARY TO ACHIEVE COMPLIANCE WITH THE CONDITIONS OF THE PERMIT.

EROSION AND SEDIMENT CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION AND SEDIMENT CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

REFER TO THE DETAILS CONTAINED WITHIN THIS PLAN SET FOR ADDITIONAL MAINTENANCE INSTRUCTION.

WASTE MATERIALS AND DISPOSAL:

NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED INTO STORM WATER INLETS OR WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER OR OTHER APPROPRIATE WASTE MANAGEMENT FACILITY.

MANAGEMENT FACILITIES SHALL MEET ALL SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE WASTE MANAGEMENT FACILITIES. WASTE MANAGEMENT FACILITIES SHALL BE EMPTIED A MINIMUM OF ONCE PER WEEK OR MORE OFTEN IF NECESSARY, AND TRASH SHALL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO CONSTRUCTION WASTE SHALL BE BURIED ON-SITE.

ALL PERSONNEL SHALL BE INSTRUCTED ON PROPER PROCEDURES FOR WASTE DISPOSAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

LOCATE WASTE COLLECTION AREAS AWAY FROM STREETS, GUTTERS, WATERCOURSES AND STORM DRAINS. WASTE COLLECTION AREAS, SUCH AS DUMPSTERS, ARE OFTEN BEST LOCATED NEAR CONSTRUCTION SITE ENTRANCES TO MINIMIZE TRAFFIC ON DISTURBED SOILS.

HAZARDOUS WASTES:

ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER AS REQUIRED BY LOCAL, STATE, AND/OR FEDERAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. THE JOB SITE SUPERINTENDENT, WHO WILL ALSO BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED, SHALL INSTRUCT SITE PERSONNEL IN THESE PRACTICES. MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR EACH SUBSTANCE WITH HAZARDOUS PROPERTIES THAT ARE USED ON THE JOB SITE SHALL BE OBTAINED AND USED FOR THE PROPER MANAGEMENT OF POTENTIAL WASTES THAT MAY RESULT FROM THESE PRODUCTS. AN MSDS SHALL BE POSTED IN THE IMMEDIATE AREA WHERE SUCH PRODUCT IS STORED AND/OR USED AND ANOTHER COPY OF EACH MSDS SHALL BE MAINTAINED IN THE STORM WATER POLLUTION PROTECTION PLAN (SWPPP) FILE AT THE JOB SITE CONSTRUCTION TRAILER OFFICE. EACH EMPLOYEE WHO HANDLES A SUBSTANCE WITH HAZARDOUS PROPERTIES WILL BE INSTRUCTED ON THE USE OF MSDS SHEETS AND THE SPECIFIC INFORMATION IN THE APPLICABLE MSDS FOR THE PRODUCT HE/SHE IS USING, PARTICULARLY REGARDING SPILL CONTROL TECHNIQUES.

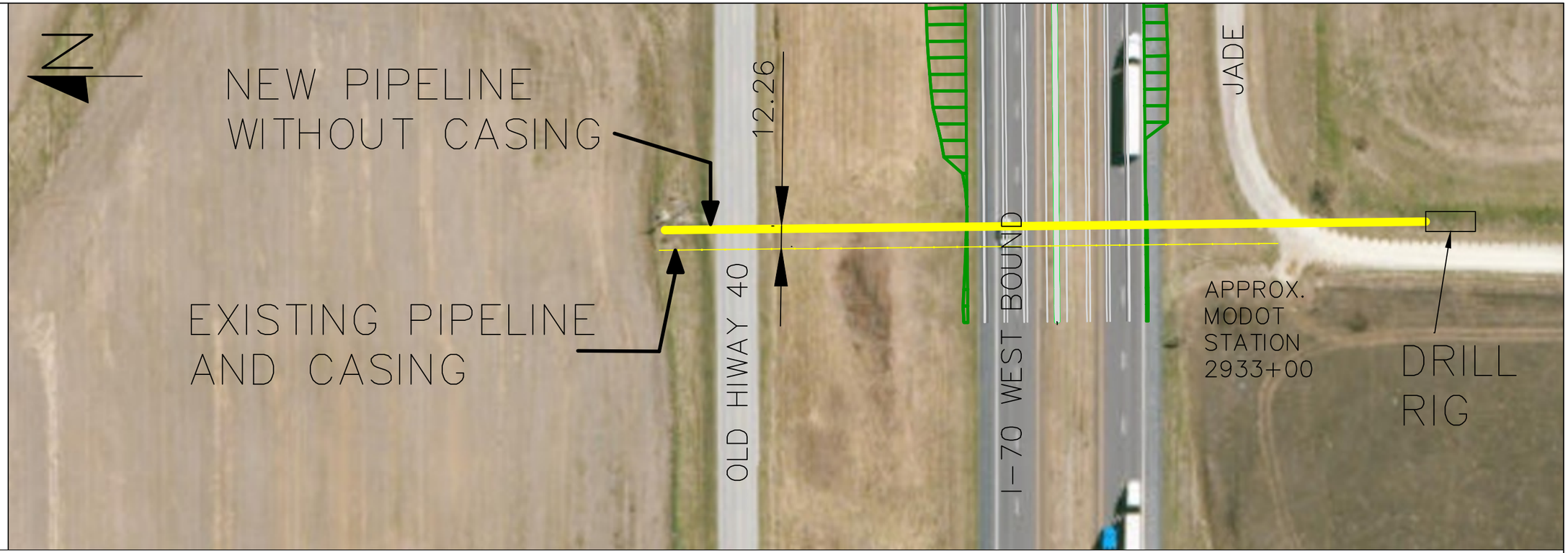
ISSUE FOR BID

SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	10–01–2024

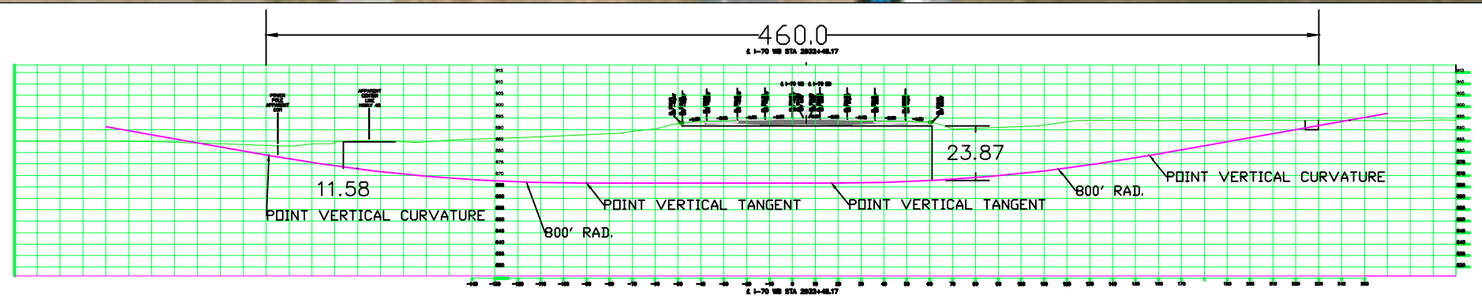
PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
SWPPP & EROSION

NOTE–003



PIPELINE, CARBON STEEL,
8.625" OD, API-5L, ERW
0.250" WT, X52000
COATED, FBE/ARO 14/40



66.25 SCALE
1.0 INCH
IS 66.25 FT

NO WORK PERFORMED IN I-70 ROW.
APPROX. MODOT STATION 2933+00.

ISSUE
FOR
BID

SCALE	
PLAN:	1"=66.25'
PROFILE: 1"=66.25' Horiz.	1"=66.25' Vert.
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	09-27-2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816-500-8886

CITY OF FULTON, MO
I-70 CROSSING
PLAN & PROFILE

CIV-001

N

NO CONSTRUCTION WORK TO BE PERFORMED IN THE I-70 ROW.

NO TRAFFIC CONTROL PLANS ARE PREPARED FOR I-70.

THESE PLANS ARE PREPARED FOR MODOT PERMIT APPROVAL.

FLAGGERS ARE ONLY USED WHEN LARGE CONSTRUCTION VEHICLES AND TRUCKS ARE ENTERING OLD HIGHWAY 40.

ISSUE FOR BID

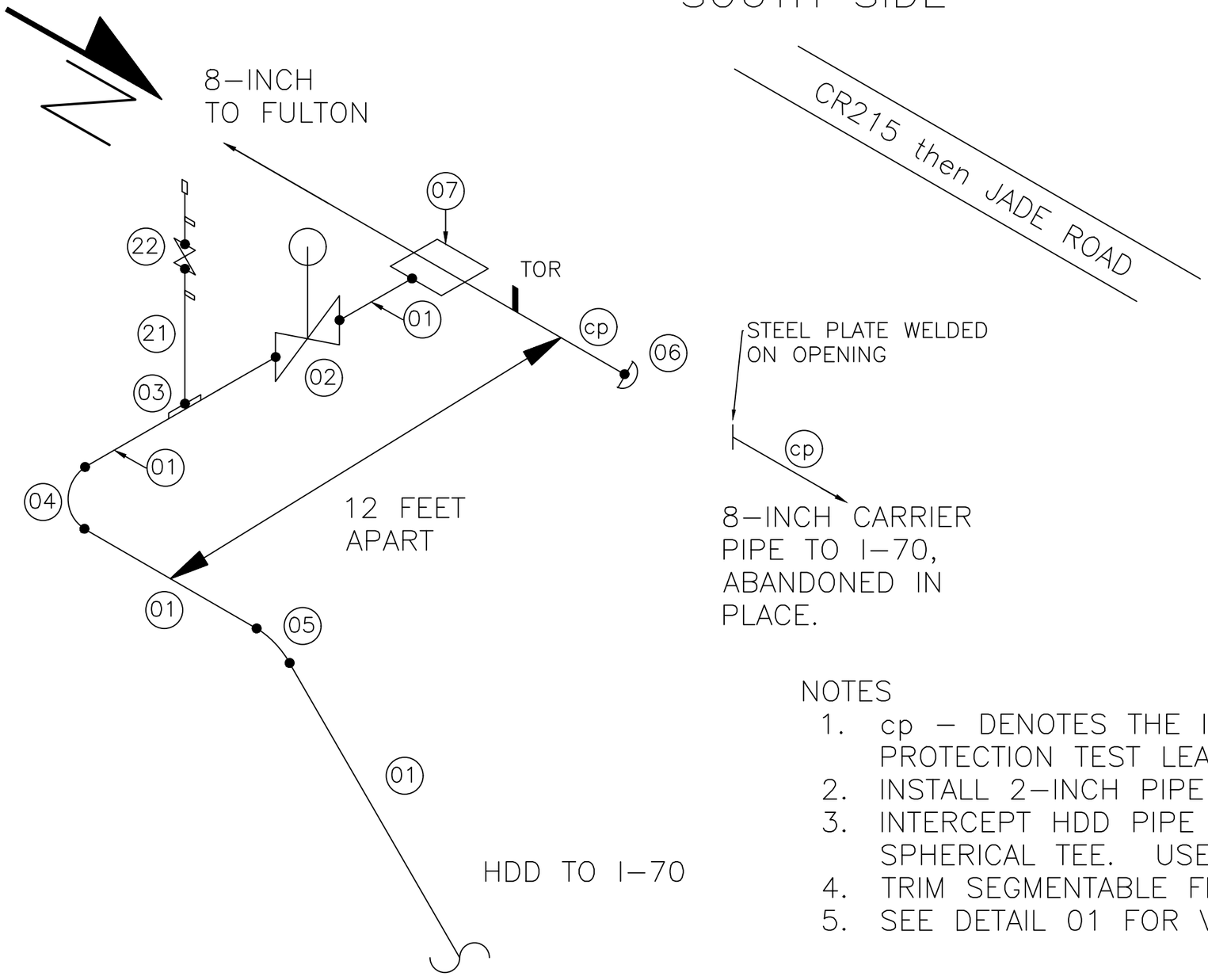
SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	10–01–2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
TRAFFIC CONTROL

TCP–001

SOUTH SIDE



STEEL PLATE WELDED ON OPENING

cp

8–INCH CARRIER PIPE TO I–70, ABANDONED IN PLACE.

NOTES

1. cp – DENOTES THE INSTALLATION OF THREE CATHODIC PROTECTION TEST LEAD CABLES PER DRAWING CP–01.
2. INSTALL 2–INCH PIPE BOLLARD FENCE ON THREE SIDES.
3. INTERCEPT HDD PIPE AT DEPTH TO 90 INTO THE SPHERICAL TEE. USE ADDITIONAL FITTINGS IF NEEDED.
4. TRIM SEGMENTABLE FITTING (05) AS NECESSARY.
5. SEE DETAIL 01 FOR VENT AND TUBING VALVES.

I–70 EB

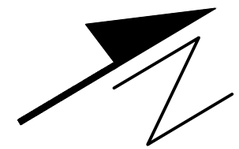
ISSUE FOR BID

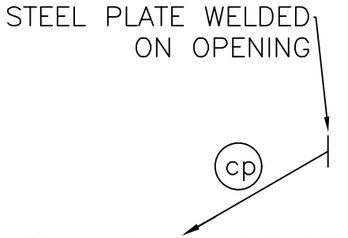
SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	10–01–2024

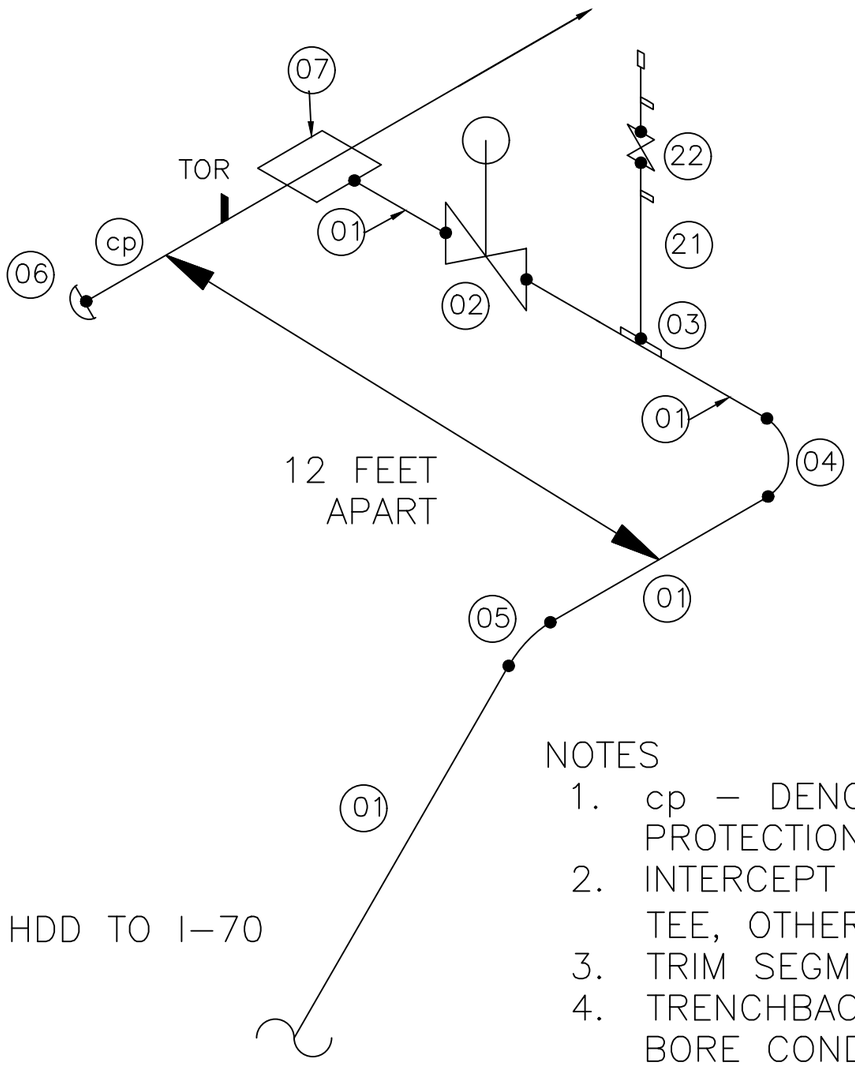
PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
SOUTH PIPING ISO

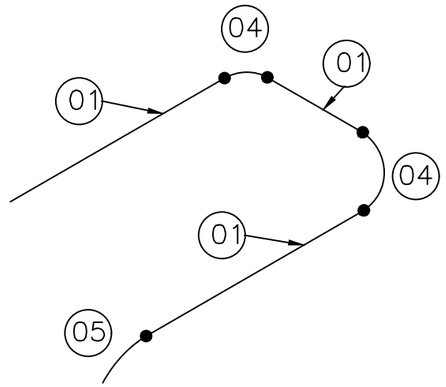
PIP–001







TRENCHBACK



NOTES

1. cp – DENOTES THE INSTALLATION OF THREE CATHODIC PROTECTION TEST LEAD CABLES PER DRAWING CP–01.
2. INTERCEPT HDD PIPE AT DEPTH TO 90 INTO THE SPHERICAL TEE, OTHERWISE USE 45'S.
3. TRIM SEGMENTABLE FITTING (05) AS NECESSARY.
4. TRENCHBACK MAY BE NECESSARY DEPENDING ON FINAL BORE CONDITIONS. THE ABOVE GROUND APPURTENANCES (BLOWOFF AND ISOLATION VALVE) TO BE SET NEAR EDGE OF ROAD ROW.
5. SEE DETAIL 01 FOR VENT AND TUBING VALVES.
6. UPON FINAL LOCATION, WORK WITH LAND OWNER TO IDENTIFY FACILITIES AT EDGE OF CULTIVATED FIELD; SMALL BOLLARD, PLASTIC TS/CANE POLE.

ISSUE FOR BID

SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	10–01–2024

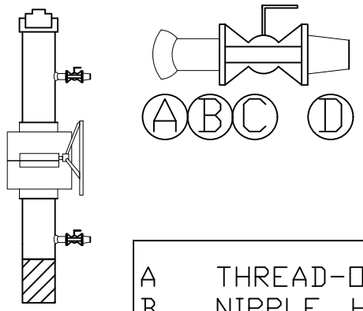
PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
NORTH PIPING ISO

PIP–002

PAINT/COAT BARE
2-INCH PIPE.

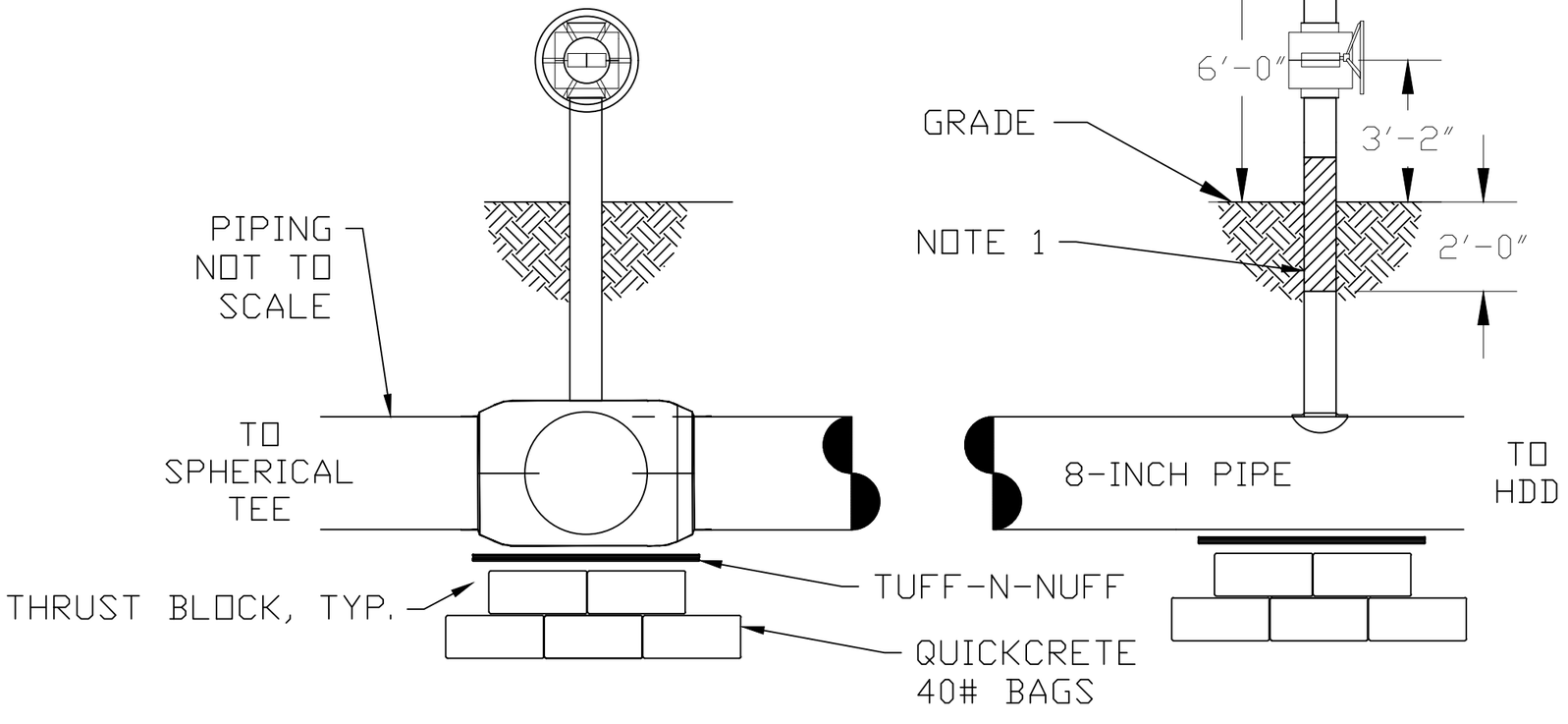
1/2-INCH TAP, FOUR
LOCATIONS, TYP.

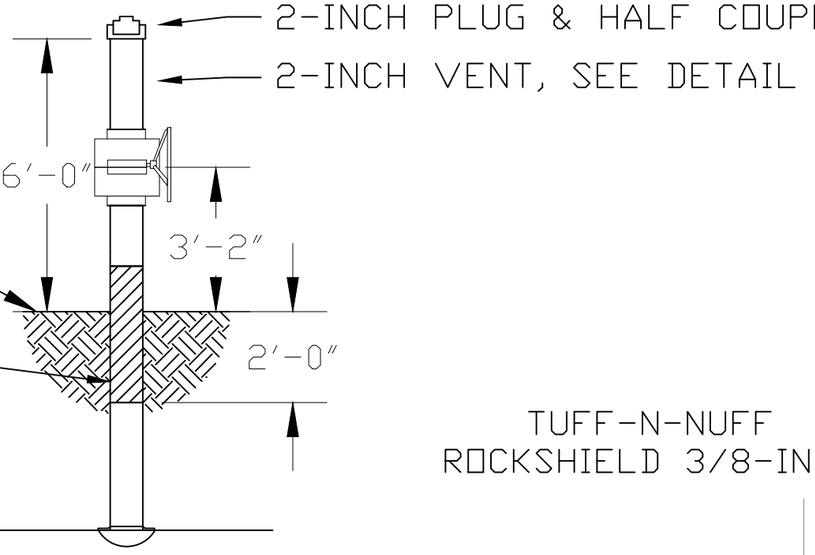


NOTES

1. AT SOIL TO AIR TRANSITION, WRAP PIPE 2 FEET BELOW GRADE TO 1 FOOT ABOVE, APPLY UV TOP COAT, RD6 OR APPROVED EQUIVALENT.
2. AT THRUST BLOCKS, MIN SIX LAYERS OF ROCKSHIELD BETWEEN BOTTOM OF PIPE/VALVE AND QUICKCRETE BAGS, TUFF-N-NUFF OR APPROVED EQUIVALENT. USE NYLON STRAPS OR PLASTIC TIES TO SECURE.
3. THRUST BLOCK, QUICKCRETE BAGS PLACED ON UNDISTURBED SOIL. STACK LAYERS AS NECESSARY. MIN FOUR LOCATIONS.
4. EXISTING PIPE DEPTH TO BE FIELD DETERMINED, ASSUMED AT 6 FEET, VALVE EXTENSIONS ARE SET AT 9-FEET. ADDITIONAL 45 DEG ELLS TO BE USED AS NECESSARY.
5. SPHERICAL TEE LOCATION TO BE PAST EXISTING BURIED FLANGES.

A	THREAD-O-LET, 1/2-IN FNPT BY 2-INCH, STEEL, 1000#
B	NIPPLE, HEX, SST, 1/2-IN MNPT BY 2-INCH, SWAGELOK, SS-8-HLN-2.0, 1000# MIN.
C	VALVE, FE/FE, 2-IN, 3000#, SWAGELOK, SS-63TF8
D	PLUG, 1/2-IN, SST, SWAGELOK SS-8-P, 1000# MIN





TUFF-N-NUFF
ROCKSHIELD 3/8-INCH

ISSUE
FOR
BID

SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	09-15-2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816-500-8886

CITY OF FULTON, MO
I-70 CROSSING
RISER & THRUST BL.

DET-01

EXOTHERMIC WELD PROCEDURE

STEPS FOR PREPARING PIPE:

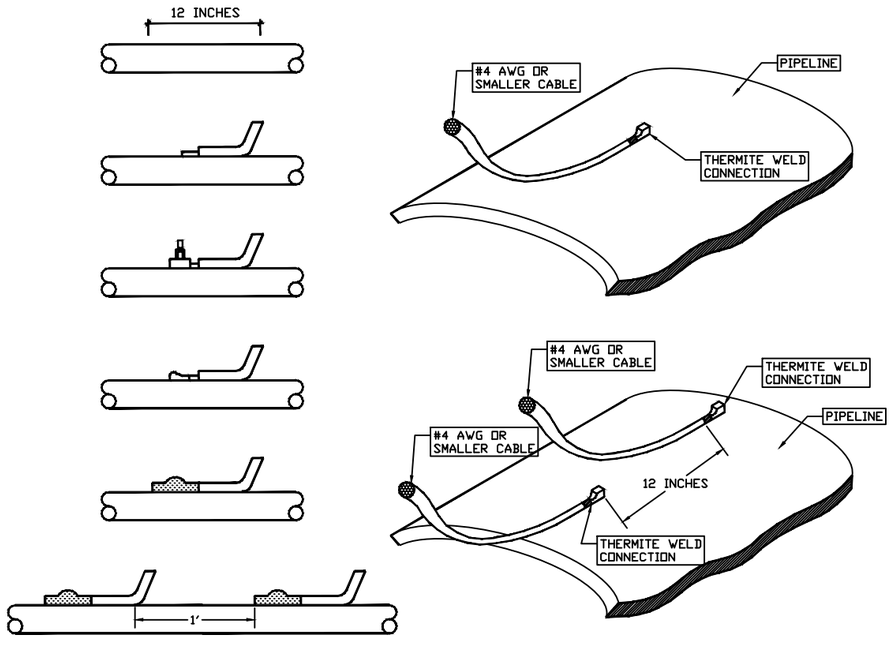
1. REMOVE A 2" SQUARE SECTION OF COATING, FILE SURFACE TO BRIGHT METAL AND DRY.
2. HIGH PRESSURE PIPE MUST BE TESTED FOR WALL LAMINATIONS PRIOR TO WELDING.
3. WRAP TEST LEAD WIRE AROUND PIPE TO REDUCE STRAIN ON THERMITE WELD. NEVER WRAP CASING WIRE AROUND PIPELINE.
4. STRIP INSULATION FROM WIRE, SLIP ON COPPER SLEEVE (#10 WIRE AND SMALLER), AND CRIMP. PLACE WIRE AGAINST METAL SURFACE.
5. PLACE PREPARED WELDER OVER WIRE AND HOLD FIRMLY WHILE MAKING CONNECTION. APPLY SPARK TO SIDE OF WELDER WITH FLINT GUN.
6. REMOVE HOLD AND LET COOL.
7. AFTER WELD HAS COOLED, HIT WELD SEVERAL TIMES WITH HAMMER TO ENSURE WELD IS INTACT.
8. PROTECT WELDMENT AS REQUIRED, USING VISCOTAQ REPAIR KIT WITH ALCOHOL WIPE AND 60 GRIT SAND PAPER

REPAIR COATING USING APPROVED PRODUCTS:

1. PREPARE SURFACE USING CARBORUNDUM CLOTH OR 60 GRIT SANDPAPER.
2. WIPE CLEAN WITH AN ISOPROPYL ALCOHOL SOAKED CLOTH.
3. SAND SURFACE AND MINIMUM 1 INCH OF SURROUNDING FUSION BOND EPOXY COATING.
4. REMOVE PACKAGING PEEL-OFF RELEASE LINER.
5. PLACE VISCOTAQ COATING PATCH OVER EXOTHERMIC WELD/WIRE CONNECTION. MAKE SURE COATING PATCH COVERS ENTIRE AREA WHERE MAINLINE COATING WAS DISTURBED. MULTIPLE PATCHES CAN BE USED IF NEEDED. DENSO MAY BE USED TO PROPERLY CLEANED AREA.
6. APPLY PRESSURE TO PATCH TO ENSURE COMPLETE ADHESION. PLACE ADHESION PATCH UNDER WIRE AS WELL.

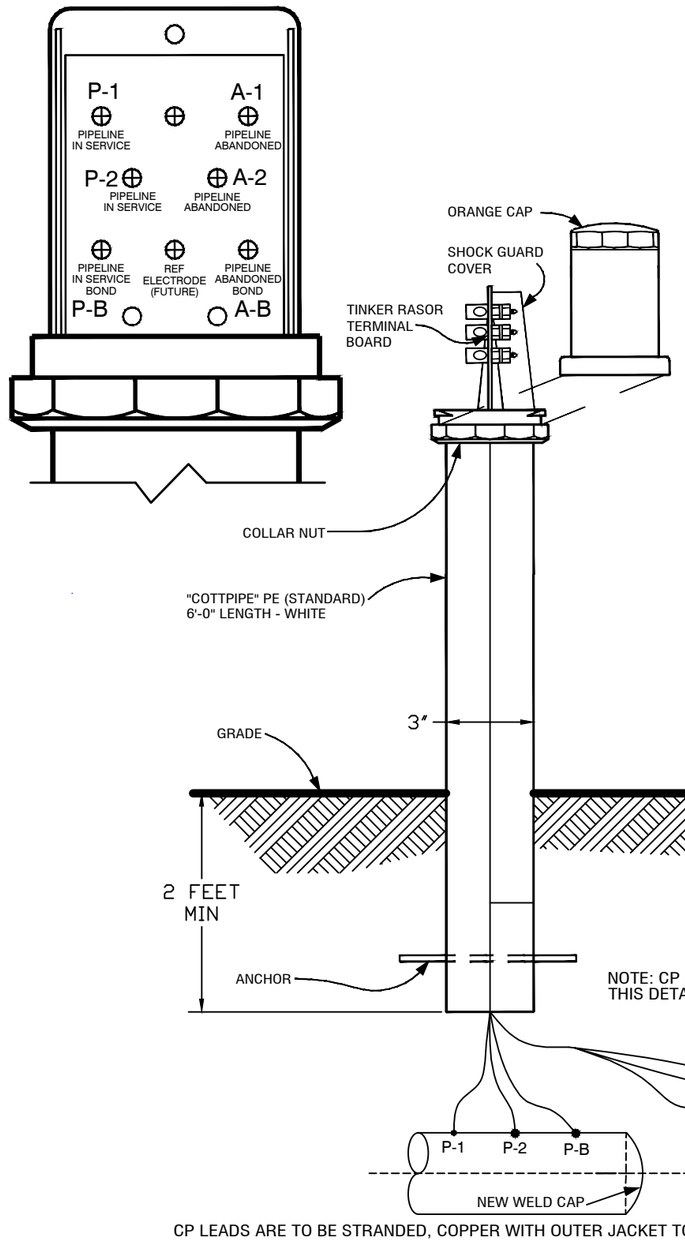
TYPICAL HORIZONTAL PIPE CONNECTIONS

- MAXIMUM CADWELD CHARGE TO BE USED IS CA-15.
- FOR ANY REQUIREMENTS OF 2 OR MORE EXOTHERMIC WELDS AT THE SAME LOCATION, START AT THE SPECIFIED POINT AND GO ONE FOOT IN THE NECESSARY DIRECTION FOR THE NEXT CONNECTION.
- #4 AWG IS MAXIMUM CABLE SIZE CAPABLE OF BEING ATTACHED TO PIPE WITH A SINGLE THERMITE WELD.
- 30" MINIMUM BENDING RADIUS FOR ALL CABLE.



TEST STATION

USE RING TERMINALS TO TERMINATE ON BOLTS.



LEGEND	
BACK PANEL TYPE	T3 - SHOCKGUARD
CAP COLOR	ORANGE
COLLAR COLOR	-
NO. OF TERMINALS	11
TERMINAL TYPE	STANDARD
POST TYPE	STANDARD
WIRE COLOR	-
PIPELINE (P-1)	#12, BLACK
PIPELINE (P-2)	#12, BLACK
PIPELINE BOND (P-B)	#8, BLACK
ABAND. TEST (A-1)	#12, WHITE
ABAND, TEST (A-2)	#12, WHITE
ABAND. BOND (A-B)	#8, WHITE
COUPON MODEL & PRC NO.	NONE

NOTE: WHITE ELECTRICAL TAPE TO MARK THE CASING LEADS ARE ACCEPTABLE.

NOTE: CP LEADS ARE TO BE WRAPPED AROUND PIPE. THIS DETAIL IS NOT SHOWN IN THIS SCHEMATIC.

CP LEADS ARE TO BE STRANDED, COPPER WITH OUTER JACKET TO BE UL RATED AND LISTED: DIRECT BURIAL; XHHN OR RHW-2.
OKONITE # 112-24-2101, #12AWG, 7 STR, CU, RHW-2 WITH JACKET MARKED "DIRECT BURIAL" OR EQUIVALENT.

ISSUE FOR BID

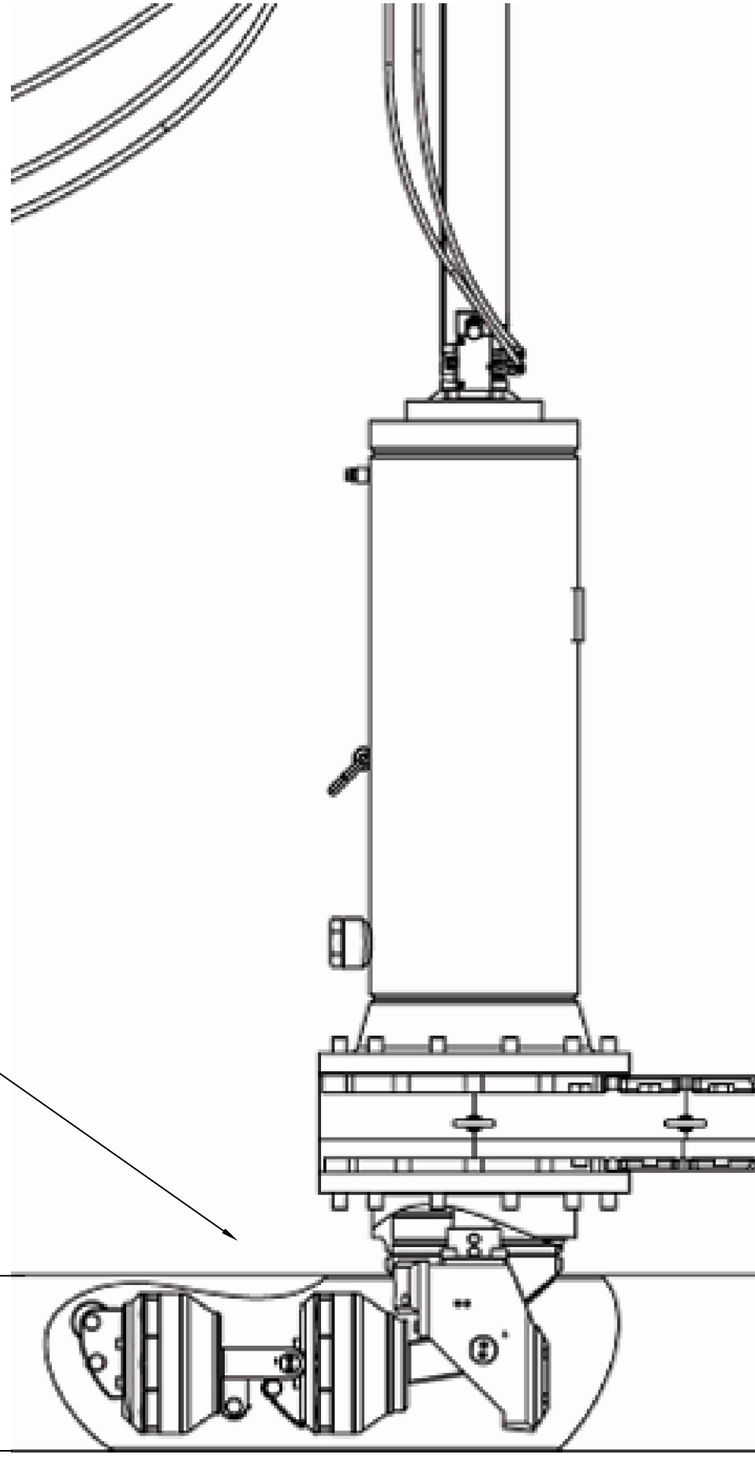
SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	09-15-2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816-500-8886

CITY OF FULTON, MO
I-70 CROSSING
CP DETAIL

DET-002

FITTING
MAOP
570 PSIG



TDW TOR 2-INCH
THREAD-O-RING FITTING

FOR BLOCK
AND BLEED ISOLATION

BLOWDOWN TOR

Dimensions and Part Numbers

SHORTSTOPP® 300D Spherical 3-WAY™ Tee

T.D. Williamson
2100.008.04, pg.2

■ 2- & 3-inch

■ 4- through 12-inch

300D Spherical 3-WAY™ Tee Class 300

Maximum Allowable Operating Pressure in PSI, Per ASME B31.8 at -20 to +100° F

Size		Design Factor					Weight	
Inches	DN	0.72	0.60	0.50	0.40	Part Number	Lbs.	Kg.
2	50	740	740	740	740	26-0935-0000	17	18
3	80	740	740	740	740	26-0936-0000	23	11
4	100	740	740	740	740	26-0937-0000	80	36
6	150	740	740	659	527	06-7378-0000	156	70.8
8	200	740	684	570	456	06-7379-0000	248	112.5
10	250	740	690	575	460	26-1141-0000	364	165.1
12	300	740	630	525	420	26-1142-0000	502	227.7

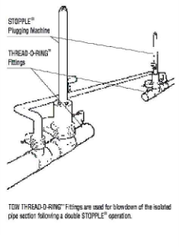
The above fittings are complete with cap or blind flange, studs, nuts, gasket, O-ring, and plug.

THREAD-O-RING™ Fittings

For Sizes: 2- and 3- inches

T.D. Williamson
Bulletin No: 2100.001.04
Version: 04.2023
Supersedes: 2100.001.03 (12.2015)

■ Typical Setup Using THREAD-O-RING™ Fittings



TDW THREAD-O-RING™ Fittings are used for blowdown of the isolated pipe section following a double STOPPLE® operation.

**

NOTE: THE STOPPER SHOWN IS FOR A LOW PRESSURE TAP AND PLUG. THE ACTUAL HIGH PRESSURE PLUG ONLY HAS ONE SEALING MECHANISM.

ISSUE
FOR
BID

SCALE – N/A	
PLAN:	
PROFILE:	
DESIGNED BY:	TEC
CHECKED:	KAC
DATE:	09–17–2024

PLUS
Platte Landing Utility Services
6138 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
TDW TAPPING DETAIL

DET–03

CITY OF FULTON, MO.
PROVIDE HEAT SHEETS AND MILL TEST REPORTS (MTR) FOR ALL PRESSURE CONTAINING PIPE.

ITEM NO.		QTY	UOM	DESCRIPTION
1	Pipe 8 Inch	600	FT	PIPE, 8.625-INCH OD, CARBON STEEL, 0.250 WT, X-52, ERW, API-5L, A106, BE, coated 14 mils FBE and 40 mils ARO.
4	Elbow 8 Inch, 90	4	EA	ELL, 8.625-INCH OD, CARBON STEEL, 90 DEG, STD RADIUS, ASME B16.9, 0.322 WT, WPHY-52, ASTM A234, MSS SP75, SEGMENTABLE, BARE
5	Elbow 8 Inch, 45	4	EA	ELL, 8.625-INCH OD, CARBON STEEL, 45 DEG, STD RADIUS, ASME B16.9, 0.322 WT, WPHY-52, ASTM A234, MSS SP75, SEGMENTABLE, BARE
2	8" Ball Valve	2	EA	BALL VALVE, 8-INCH, CARBON STEEL, FULL PORT, API-6D, WE, 740#, WITH GEAR REDUCER and 9 FT EXTENSION, GREASE ZERTS, TAR COATED, CAMERON T31 OR APPROVED EQUIVALENT
3	Saddle	2	EA	SADDLE, 8x2, REINFORCING WELD PAD, SMLS, A234 WPB, Branch = 2 inch, Run Pipe = 8.625
21	Pipe 2 Inch	20	FT	PIPE, 2-INCH, CARBON STEEL, API-5L, SEAMLESS, X-42, 0.250 WT, A234, BARE
22	2" Ball Valve	2	EA	BALL VALVE, 2-INCH, CARBON STEEL, FULL PORT, API-6D, WE, 740#, LOCKABLE LEVER OPERATOR, CAMERON T31 OR APPROVED EQUIVALENT
6	Cap 8 inch	4	EA	CAP, 8.625-INCH OD, CARBON STEEL, STD, WPHY-52, ASTM A234, WE, Bare
23	Thread-o-let	4	EA	THREAD-O-LET, CARBON STEEL, CLASS 3000, A105, 2 INCH RUN PIPE BY 1/2 INCH FE NPT OUTLET, BONNEY FORGE OR EQUIVALENT
24	2 inch pipe coupling	2	EA	PIPE HALF COUPLING, 2-INCH, CARBON STEEL, CLASS 3000, A105, FE NPT BY WELD/PLAIN END, BONNEY FORGE OR EQUIVALENT
25	2 inch plug	2	EA	PIPE PLUG, 2-INCH, MALE NPT, CARBON STEEL, CLASS 3000, A105, HEX HEAD, ASME B16.11, BONNEY FORGE OR EQUIVALENT
26	1/2 inch SST hex nipple	4	EA	SWAGELOK, SS-8-HLN-2.0, NIPPLE, HEX, SST 316, 1/2 INCH MALE NPT BY 2 INCH LONG, 3000# MIN
27	1/2 inch SST ball valve	4	EA	SWAGELOK, SS-63TF8, SST 316 BALL VALVE, 1/2 INCH, 3000#, FNPT, 60 SERIES
28	1/2 inch plug	4	EA	SWAGELOK, SS-8-P, PLUG, SST 316, 1/2 INCH MALE NPT, 3000# MIN
	CP Test Station	2	EA	TINKER RASOR, T-3 CP TEST STATION, 11 TERMINAL FOR 3.5 INCH OD RISER PIPE
	Cable	A/R	FT	OKONITE # 112-24-2101, #12AWG, 7 STR, CU, RHW-2 WITH JACKET MARKED "DIRECT BURIAL" OR EQUIVALENT.
	Cable	A/R	FT	OKONITE # 112-24-2191, #8AWG, 7 STR, CU, RHW-2 WITH JACKET MARKED "DIRECT BURIAL" OR EQUIVALENT.
	RD6 with UV top coat	A/R	FT	RD6 PIPE WRAP WITH UV TOP COAT, QUATITIES AS REQUIRED
7	8" TDW SPHER. TEE	2	EA	TDW SHORT STOPP 300D SPHERICAL 3-WAY TEE, 8-INCH, 570 PSIG MAOP AT CLASS 3. WITH COMPLETION PLUGS AND COMPLETE KIT.
	TDW TOR	2	EA	TDW THREAD-O-RING FITTING (TOR), 2 INCH, HIGH PRESSURE
	Rock Shield	A/R	FT	TUFF-N-NUFF ROCKSHIELD, 3/8 INCH THICK, P/N 54199Y0, GROEBNER
	Protal 7300	A/R	KT	DENSO, PROTOL 7300, APPLIED TO 40 MILS FOR HDD WELDS, 20 MILS OPEN CUT WELDS
	COATING BRUSHES	A/R	EA	DENSO, POLYESTER BRISTLE BRUSHES, 4-INCH.
	PAINT	A/R		ALKYD ENAMEL WITH ZINC BASED PRIMER OR ZINC IMBEDDED ENAMEL, RUSTOLEUM FOR ABOVE GROUND PIPING
	SWPPP SILT FENCE	A/R		SILT FENCING, ESTIMATE 4000 LINEAR FEET, MIN.
	SWPPP WATTLE	A/R		WATTLES, AS REQUIRED
	SWPPP GEOFABRIC	A/R		GEOFABRIC
	SWPPP PLASTIC SHEET	A/R		HEAVY DUTY/INDUSTRIAL GRADE POLYESTER PLASTIC SHEET, HDD MUD
	SWPPP MISC	A/R		ANY OTHER MATERIAL REQUIRED FOR A COMPLETE JOB.

ISSUE FOR BID

SCALE – N/A
PLAN:
PROFILE:
DESIGNED BY: TEC
CHECKED: KAC
DATE: 10–01–2024

PLUS
Platte Landing Utility Services
6118 Arbor Way
Parkville, MO 64152
816–500–8886

CITY OF FULTON, MO
I–70 CROSSING
BILL OF MATERIALS

BOM–01