

**Board of Public Utilities
of the
City of Springfield, Missouri**

**GENERAL PLUMBING SERVICES
(G&W Construction)**

Competitive Request for Proposal

RFP 63510

May 2020

SECTION 00007
SEALS PAGE



Only the specifications pertaining to design of the natural gas and water distribution facilities and associated appurtenances have been prepared under my direct supervision and the seal above applies only to that design.

END OF SECTION

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END OF SECTION

**SECTION 00100
INVITATION TO BID**

The Board of Public Utilities of the City of Springfield, Missouri, (City Utilities) invites you to submit a proposal for the work described below. Contract Documents are available online as instructed in *Section B* of this document. Questions should be directed to:

Jeff Marler		Purchasing Department
Buyer		City Utilities of Springfield, Missouri
(417) 831-8641	- OR -	[P] (417) 831-8363
(417) 831-8377		[F] (417) 831-8377
jeff.marler@cityutilities.net		[E] purchasing@cityutilities.net

A. RFP REGISTRATION

City Utilities requests that firms interested in this RFP contact the Buyer listed in the previous section and register as a bidder. City Utilities will keep contact information in a log and notify those that have registered when addenda are issued. Bidders are advised that addenda containing additional information and instruction pertaining to this RFP may be issued at any time. It is the bidder's responsibility to verify, prior to the stated proposal opening date/time, as to whether addenda have been issued.

B. SUPPLEMENTAL PROCUREMENT DOCUMENTS

Procurement Documents for **RFP 63510**, complete with detailed specifications, drawings and bid form, can be viewed and downloaded by navigating to the following Website and searching by bidding event number or name:

<https://www.cityutilities.net/bids>

or go to

www.cityutilities.net and follow these links:

- For Business (top of page)
- Purchasing
- Bidding Opportunities
- Current Bidding Events & Awards Results
- All CU Bidding Opportunities
- **63510**

You will have access to open, print and/or save pdf file(s).

C. SUMMARY SCOPE OF WORK

Furnish labor, equipment and materials for general plumbing work, typically on private property, for customer owned gas, water and sewer facilities, on both scheduled and emergency basis, for the time period June 10, 2020, to June 9, 2021. City Utilities shall have the sole option to extend the Contract in one-year increments, or any portion thereof, for a cumulative period of four additional years. Work may also be required on customer owned appliances such as but not limited to: cleaning and replacing faucets, stool valves and water heaters that are affected by debris in the service lines.

D. PRE-PROPOSAL CONFERENCE

A Pre-Proposal Conference Call will be held at **10:30am** (CDT) on **May 14, 2020**. Interested bidders may dial in to the conference call at 417-831-8550, Access Code 138538#

Participation in this Pre-Proposal Conference Call is not mandatory, but it is highly recommended.

E. PROPOSAL OPENING

All proposals must be in the hands of the Purchasing Agent of City Utilities, per one of the approved submittal methods provided in RFP Section I-F (*Proposal Submittal Methods*), by the Proposal Opening date and time, which is **May 28**, at 2:00 PM (CDT). Any proposal received after such date and time will be rejected.

Proposals will not be publicly opened or read since the selection process will be determined based upon competitive negotiated procurement procedures for proposals as described in this RFP.

All proposals shall be irrevocable for ninety (90) days after the time for opening of proposals.

F. PROPOSAL SUBMITTAL METHODS

FAX AND EMAIL RESPONSES ARE NOT ACCEPTABLE. All proposals must be received by CU Purchasing by the opening date and time stated in this document. The method of submittal is at the sole discretion and risk of the Contractor. Preparation for any submittal method should be taken well enough in advance of the posted opening date and time to allow for unexpected issues. City Utilities is not responsible for submittal failures of any kind- electronic or otherwise. Contractors utilizing CU's Electronic Bid Attachment Tool (EBAT) should verify that any attachment meets the posted electronic file type and size requirements. Contractors mailing proposals should allow sufficient time to insure receipt by the due date and time specified. Mail and express mail responses must be sealed in an opaque envelope or package and should include one set of original documents plus two (2) copies (marked appropriately as "Original" and "Copy").

*******DUE TO THE CURRENT COVID-19 PANDEMIC, WE ARE TEMPORARILY REQUIRING EXTRA SECURITY PROTOCOLS. HAND DELIVERED BIDS TO OUR PURCHASING OFFICE ARE NOT BEING ACCEPTED AT THIS TIME. PLEASE USE ONE OF THE FOLLOWING METHODS TO SUBMIT YOUR BIDS.*******

****** Proposals in response to this RFP may be submitted by any of the methods listed below ******

1. Electronic Bid Attachment Tool (EBAT)

Open to all bidders – NO REGISTRATION OR LOGIN REQUIRED. Proposals submitted via EBAT must be an approved electronic file type (PDF, DOC, XLS, TIF or ZIP) and have a total attachment size that does not exceed 50-MB.

www.cityutilities.net/EBAT

OR GO TO www.cityutilities.net and click on the following links:

- For Business (at top of page)
- Purchasing
- Bidding Opportunities
- Electronic Bid Attachment Tool (EBAT)

2. Mail / Express Mail

Proposals submitted via mail/express mail shall be sealed in an opaque envelope or package that is clearly marked on the outside with the RFP number and opening date/time. Proposals are to be addressed to:

City Utilities of Springfield, Missouri
Purchasing Manager
301 East Central (65802)
P.O. Box 551
Springfield, MO 65801-0551

3. PeopleSoft Registered On-Line Bidding System (Legacy system – enrollment closed)

*** END OF SECTION ***

SECTION 00200
RFP Requirements

A. INTERPRETATION TO BIDDER

A prospective bidder who is in doubt as to the meaning of any part of the Contract Documents or any addenda thereto, may submit a written request for interpretation. Such requests shall be directed to the CU Purchasing representative identified in this document and directly to the CU Purchasing department at one of the following options:

Purchasing Department
City Utilities of Springfield, Missouri
[P] (417) 831-8363
[F] (417) 831-8377
[E] purchasing@cityutilities.net
301 East Central (65802)
P.O. Box 551
Springfield, MO 65801-0551

Any such interpretation will be made by written addendum. City Utilities will not be responsible for any explanation or interpretation of proposed documents other than by such an addendum. An oral permission or interpretation has no legal force, authority, or effect. Any addenda must be acknowledged in the proposal and will become a part of the Contract Documents. Failure to acknowledge in the proposal all addenda issued may constitute grounds for rejection of that proposal.

All requests for interpretations must be received in the Purchasing Department no later than **five calendar days prior to the proposal opening date**. Requests received after that date will not be answered. Persons submitting a request will be responsible for its prompt delivery.

The terms “bid” and “proposal” are synonymous when used in this document.

B. GUARANTY

Each proposal must be accompanied by a Bid Bond with an adequate surety, naming the Board of Public Utilities of Springfield, Missouri, as obligee, in a penal sum equal to five percent of the maximum bid price excluding options, or in lieu thereof, a certified check drawn on a Federally insured banking institution, payable to the Board in the same amount as the penalty of the Bond. The Bond or Check shall be conditioned that should a bidder, after award, fail to enter into a contract, then the entire amount of the Bond or Check shall become the property of the Board, or the Board shall be entitled to recover the entire penal sum of the Bond or Check without further proof of damage. Bid Checks will be returned to all unsuccessful bidders within a period of thirty days following contract execution.

C. SIGNATURE ON PROPOSALS

Each proposal must be signed in ink and include the full business address of the bidder. Proposals by partnerships must be signed in the partnership name by one or more of the general partners. Proposals by a corporation must be signed by an officer of the corporation or other person authorized to bind the corporation to the proposal. The names and titles of all persons signing shall be typed or printed below their signatures.

D. EVALUATION AND SELECTION PROCESS

The proposal evaluation and selection process will be conducted under this Request for Proposal (RFP) based on competitive negotiated procurement procedures. Interviews, discussions, negotiations and a Best and Final Offer (BAFO) may be held only with selected firms from those firms who meet City Utilities requirements and fall within the competitive range as determined by City Utilities. City Utilities reserves the right to limit negotiations to those proposals which received the highest rankings during the initial evaluation phase. However, City Utilities reserves the right to award a contract to a firm solely on the basis of this initial proposal submitted and without any further interview, discussions and negotiation

If City Utilities determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, City Utilities may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

Each Proposer must comply with the requirements contained in the RFP. Deviation from the requirements will be evaluated, but may, in the discretion of the Board of Public Utilities, result in rejection of a proposal.

The Board of Public Utilities will evaluate each proposal to determine which is the lowest and best (i.e., Best Value). The Board of Public Utilities reserves the right to waive informalities and to accept or reject any or all proposals submitted.

If City Utilities determines that a proposal has failed to meet an acceptable level on any factor listed below, the City Utilities may reject that proposal.

EVALUATION CRITERIA

In evaluating the proposals, City Utilities will use the following evaluation factors to determine the lowest and best proposal. Deviation from the requirements will be evaluated, but may, in the discretion of the Board of Public Utilities, result in rejection of a proposal.

- 70% Total Cost
- 30% Adherence to RFP requirements, including responses to Section III-C, *Questions/Requests for Submittals*

Bidders should consider these factors when preparing their proposals and should provide a specific response to each of the evaluation factors.

Based on the evaluation process described, the Evaluation Committee comprised of City Utilities employees, will review the proposals.

E. BIDDER'S RESPONSIBILITIES

By submitting a proposal, each bidder represents that he is familiar with, assumes full responsibility for having familiarized himself with, and will comply with the content of the Contract Documents, the nature of the work, the locality, permits, licenses, and all local conditions, together with all applicable Federal, State, and local laws and ordinances.

F. PROPRIETARY INFORMATION

Proprietary Information: Pursuant to Section 610.021.15 R.S.Mo, City Utilities may close records that relate to scientific and technological innovations in which the owner has a proprietary interest. If you plan to submit such information with your bid and wish to keep it confidential, please submit it in a separate envelope with your bid and clearly mark it "CONFIDENTIAL AND PROPRIETARY SCIENTIFIC AND/OR TECHNOLOGICAL INFORMATION." This information must not include prices, terms and conditions, Bidder's qualifications, or any other information submitted in response to this Request for Proposal that is not exempted under Section 610.021.15. Any information that does not fall within Section 610.021.15 or other exception to Missouri's Sunshine Law (Section 610.021 R.S.Mo., et seq.) is a public record and will be disclosed upon request.

G. ERRORS IN PROPOSALS

Each bidder must carefully examine his proposal prior to submission. Failure to do so is at the bidder's risk. He is responsible for any errors therein. Claim of oversight is not a basis for permitting withdrawal of a proposal after opening. There shall be no erasures in any proposal. Any changes must be made by striking the portion to be changed with the change noted above the deleted portion, followed by the bidder's initials and date.

H. PROPOSAL WITHDRAWAL

Proposals may be withdrawn at any time prior to the time for the opening of proposals.

I. CONDITIONS AFFECTING THE WORK

Each bidder should take such steps as he thinks necessary to ascertain the nature and location of the work and any peculiar local conditions which can affect the work or its cost. Failure to do so will not relieve the bidder of his responsibility for proper estimation of the difficulty or cost of the work. City Utilities assumes no responsibility for any understanding or representation made by any person at any time, unless it is included in the Contract Documents, including addenda.

J. PREVAILING WAGE REQUIREMENT

This contract is subject to the prevailing wage law. It is agreed that all workman employed by Contractor and any subcontractor under him will be paid not less than the prevailing wage as determined by Missouri Department of Labor and Industrial Relations and Annual Wage Order, and any amendments, attached hereto and made a part hereof. Contractor shall forfeit as a penalty to the Board of Public Utilities of Springfield, Missouri, \$100.00 for each workman employed, for each calendar day or portion thereof, such workman is paid less than said wage for work done pursuant to this Contract. It is agreed that the Contract or sums payable to Contractor for the performance of this agreement are not subject to increase as a result of any change in the amount of such wage determined pursuant to Section 290.210 et. seq. R.S.Mo., Prevailing wages for renewal years will be the then current Annual Wage Order in effect at the time of renewal and any amendments, if applicable.

Recognized Annual Wage Order (AWO) **26**, Effective **June 26th, 2019**.

Copies of the referenced AWO are available at the following website or upon request:
<https://www.cityutilities.net/wp-content/uploads/purchasing-annualwageorder.pdf>

The Contractor shall be required to complete an affidavit stating that he or she has complied with the prevailing wage law prior to final payment by City Utilities. This affidavit is available at the following website or upon request: https://labor.mo.gov/sites/default/files/pubs_forms/PW-4-AI.pdf.

K. REQUIRED AFFIDAVIT FOR CONTRACTS OVER \$5,000 DOLLARS (US)

Company shall comply with the provisions of Section 285.525 through 285.550 R.S.Mo. Contract award is contingent on Company providing an acceptable notarized affidavit stating:

1. that Company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and
2. that Company does not knowingly employ any person who is an unauthorized alien in connection the contracted services.

Copy of the affidavit can be found and downloaded at CU website;
<https://www.cityutilities.net/wp-content/uploads/purchasing-complianceaffidavit.pdf>

Additionally, Company must provide documentation evidencing current enrollment in a federal work authorization program (e.g. electronic signature page from E-Verify program's Memo of Understanding (MOU)).

L. TRANSIENT EMPLOYER LAW

Any nonresident or foreign companies who employ people in Missouri must provide:

1. A certificate from the Missouri Director of Revenue showing compliance with the Transient Employer Law (285.230 R.S.Mo. et seq.); or
2. Proof of exemption from Section 285.230 R.S.Mo.

A Certificate of Compliance or proof of exemption must be submitted to City Utilities in regard to the transient employer law. Questions? See <http://dor.mo.gov/business/register/> or call (573) 751-0459.

M. PERFORMANCE AND PAYMENT BOND

Successful Bidder shall furnish a Performance and Payment Bond as security for the faithful performance and payment of all their obligations under the Purchase Order (Contract) and Section 107.170 R.S.Mo. The Bond shall be in the amount of the proposal and in the form provided herein and with such sureties as are licensed to conduct business in the State of Missouri and are named in the current list of "Surety Companies acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department, and as acceptable reinsuring companies as published in the Federal Register by the department of the Treasury.

If the surety on any Bond furnished by Bidder (Contractor) is declared bankrupt or becomes insolvent or its rights to do business is terminated or revoked in any state where any of the project is located, bidder (Contractor) shall within five days thereafter substitute another bond and surety, both of which shall be acceptable to City Utilities.

The bond shall be filed with City Utilities within ten days unless superseded in the Request for Proposal documents. The Bond shall be approved prior to the start of work.

N. SALES TAX EXEMPTION NOTICE

This is to notify Bidders that certain materials incorporated into the project are exempt from Missouri sales tax pursuant to the provisions of Section 144.062 R.S.Mo. The selected Contractor will receive a Project Exemption Certificate and a Missouri Tax Exemption letter from City Utilities to use in purchasing materials on a tax-free basis. It will be the contractor's responsibility to provide the documentation to any Subcontractor or Supplier. These documents will be used solely for purchase of materials being directly incorporated into or consumed in the construction of the work under this Agreement.

O. OSHA COMPLIANCE

Contractor shall comply with all applicable OSHA rules.

P. HARD HAT COMPLIANCE

Contractor shall be responsible for strictly adhering to City Utilities hard hat policy. Additionally, no on-site work may be performed unless a hard hat is worn.

Q. PROMPT PAYMENT

Contractor agrees to pay each Subcontractor under each Purchase Order/Agreement for satisfactory performance of its contract in accordance with Section 34.057 R. S. Mo.

R. OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

CONTRACTOR shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for its onsite employees, which includes a course in construction safety and health approved by OSHA or a similar program approved by the department which is at least as stringent as an approved OSHA program, unless such employees have previously completed the required program. All employees are required to complete the program within sixty days of beginning work on such construction project. An employee found on a work site without documentation of the successful completion of the required training shall be afforded twenty days to produce such documentation before being subject to removal from the project. This provision is subject to and Contractor shall comply with all requirements of Section 292.675 R.S.Mo.

S. DIVERSITY

City Utilities of Springfield encourages prime and general contractors to consider certified DBE, WBE and MBE's for those construction contracts which have subcontracting opportunities.

T. STANDARD BIDDING INSTRUCTIONS AND GENERAL CONDITIONS

Any order arising from this Bidding Event will be subject to the following **WHICH ARE INCORPORATED HEREIN BY REFERENCE**:

- *City Utilities of Springfield Missouri Standard Bidding Instructions* (Rev 04-2020)
- *City Utilities of Springfield Missouri General Conditions* (Rev 8-2016)

The referenced documents are available at <https://www.cityutilities.net/purchasing/general/> or upon request.

*** END OF SECTION ***

**SECTION 00410
BID FORM**

A. NAME OF BIDDER:

1. [To be used if Contractor is a corporation]
 _____, a corporation organized and existing under the laws of the State of _____, with its principal office and place of business in the City of _____, with the address of _____.

2. [To be used if Contractor is a partnership]
 _____, a partnership consisting of _____ and _____ of the City of _____ with the address of _____.

3. [To be used by an individual or sole trader]
 _____ doing business as _____, of the City of _____, with the address of _____.

**B. TO:
BOARD OF PUBLIC UTILITIES
CITY OF SPRINGFIELD, MISSOURI**

The undersigned proposes to furnish at his sole risk, cost, and expense all labor, tools, equipment, materials, supplies, facilities, transportation and other means necessary to perform the work as set out in RFP 0000063510 in strict accordance therewith, for the prices reflected below:

1. LABOR AND EQUIPMENT RATES (*Prevailing Wage Applicable)

	Bid Unit Price	Est. Annual Quantity	Extended Price
a. ** Plumber (Regular Time) Charges Per Hour	\$ _____	500	\$ _____
b. ** Plumber (Overtime) Charges Per Hour	\$ _____	40	\$ _____
c. ** Laborer (Regular Time) Charges Per Hour	\$ _____	200	\$ _____
d. ** Laborer (Overtime) Charges Per Hour	\$ _____	20	\$ _____
j. Backhoe with Operator (Regular Time) Charges Per Hour:	\$ _____	50	\$ _____
k. Backhoe with Operator (Overtime) Charges Per Hour:	\$ _____	10	\$ _____
l. Sewer Camera (Equipment Only) Charges Per Hour:	\$ _____	80	\$ _____
m. Sewer Cleanout Machine (Equipment Only) Charges Per Hour:	\$ _____	20	\$ _____

TOTAL ESTIMATED ANNUAL PRICE --- --- \$ _____

* Work could be performed in both Greene and Christian County

** Only plumbers licensed with the City of Springfield as Journeymen or higher shall be permitted to perform plumbing services under this agreement. Therefore, only licensed plumbers will be billed at the Plumber bid unit price. Laborers may be utilized to perform general labor to assist a Journeyman, but may not perform any specific plumbing work.

2. MATERIALS AND SERVICES

Contractor is to provide materials for work associated with this Contract, and/or arrange for other services using approved Subcontractors, on a cost plus stated percentage basis. With each invoice submitted to City Utilities, Contractor is required to include an invoice as proof of purchase price for any/all materials used and/or service provided in connection with a particular job. Failure to provide proof of cost will result in non-payment by City Utilities.

Materials at cost plus _____ percent

Subcontracted Services at cost plus _____ percent

3. BOND

Cost of performance bond will be paid by City Utilities. The amount to be paid will be the actual cost of the bond verified by the bonding company's invoice and will not exceed the amounts quoted by the vendor:

Cost of performance bond for the TOTAL ESTIMATED ANNUAL PRICE provided above

\$ _____

Cost per additional \$1,000.00 coverage: \$ _____

4. RENEWALS

This Contract shall be valid for a period of one year. City Utilities shall have the sole option to extend the Contract in one-year increments, or any portion thereof, for a cumulative period of four additional years.

If exercised, the option shall be executed at the same prices as quoted herein, subject to a maximum percentage of increase, if any, quoted by the vendor below for each applicable option period.

All percentages of increase shall be computed against the previous period.

1st Renewal Period (Year 2, June 10, 2021 through June 9, 2022): _____% Maximum Increase

2nd Renewal Period (Year 3, June 10, 2022 through June 9, 2023): _____% Maximum Increase

3rd Renewal Period (Year 4, June 10, 2023 through June 9, 2024): _____% Maximum Increase

4th Renewal Period (Year 5, June 10, 2024 through June 9, 2025): _____% Maximum Increase

NOTE: Failure to enter a percentage shall be interpreted to be a zero percent (0%) increases. City Utilities reserves the right to require justification for any renewal increases.

C. QUESTIONS / REQUESTS FOR SUBMITTALS

Bidder shall include with submission of proposal sufficient and detailed responses to the following questions and/or requests for submittals. Responses should be submitted in a clear form that corresponds to the numbering format contained herein. Failure to provide this information as instructed may result in rejection of proposal:

- 1 Bidder to provide complete details as to how their firm is qualified to perform the work identified within this RFP. Details should include, but not necessarily be limited to:
 - Applicable job/contract history including references (complete with owner contact information) from jobs/contracts similar in scope to this this RFP
 - Details, experience and/or resumes for employees that will work on this contract (include training programs, certifications, etc. as applicable to this RFP). PLEASE NOTE: Only plumbers licensed with the City of Springfield as Journeymen or higher shall be permitted to perform plumbing services under this agreement. Laborers may be utilized to perform general labor to assist a Journeyman, but may not perform any specific plumbing work. Employees included in response to this question should be identified accordingly and include proof of licensure / certification as appropriate.
 - General company information (years in business, name changes, etc.)
 - Information on applicable prior projects completed for City Utilities

- 2 Safety and Loss Control
 - a List your organization's Interstate Experience Modification Rate (EMR) for the past three years. Use your intrastate EMR if not interstate rated. **Attach a signed and dated letter from your workers' compensation insurance carrier verifying your EMR.**

 - b Provide your organization's Standard Occupational Classification (SOC) number.

 - c Provide your organization's injury experience for the past four years using OSHA No. 300 Logs (As an alternative, you may submit copies of your logs). The following must be addressed:
 1. Number of OSHA recordable cases:
 2. Number of lost workday cases:
 3. Number of lost workdays:
 4. Number of restricted workday cases:
 5. Number of fatalities:
 6. Number of man-hours worked:

 - d Will a full-time or part-time safety professional be utilized on this Contract? If yes, provide details including the name and contact information for the safety professional.

 - e Does your organization conduct documented safety inspections? If yes, provide details including the frequency of the safety inspections, who conducts the inspections, etc.

 - f From the three options below, provide details regarding your organization's Written Safety Program:
 - i. Written Safety Program is currently on file with City Utilities
(provide most recent revision date)

- ii. Written Safety Program is included with response to this RFP
 - iii. No Written Safety Program
- 3 Listing of Equipment:
- i. Type and Size of equipment to be used for work under this Contract
 - ii. Listing of which equipment is owned, rented and leased
- 4 Arbitration / Litigation. List of all projects undertaken in the last 5 years which have resulted in partial or final settlement of the Contract by arbitration or litigation. Provide for each project:
- i Name of client and project.
 - ii Original Contract amount.
 - iii Total claims arbitrated or litigated.
 - iv Amount of settlement of claims.

EXCEPTIONS

The undersigned declares that the following list states any and all variations from and exceptions to the requirements of the Request for Proposal and that otherwise it is the intent that the work will be performed strictly in accordance therewith. If no exceptions are taken, state "NONE". (Note: use separate page, if necessary)

SUBCONTRACTORS

List any items/services to be subcontracted with proposed subcontractor, such as electrical work, paving repair, landscaping, etc. Provide their company and employee qualifications, similar to your response to question C-1 above, where applicable, including rate schedules.

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ADDENDA

The undersigned declares that the following listed addenda have been received and all changes required by them are included in the bid amount. If no Addenda have been received, state "NONE". (Note: use separate page, if necessary)

AUTHORIZED SIGNATURE

The undersigned declares that all interested principals are named herein. No other person or firm has any interest in the bid or agreement to be entered into; that this bid is made without collusion with any other person, company, or party, submitting a bid.

The undersigned understands and agrees that the accompanying bid deposit shall become the property of City Utilities should his bid be accepted and he fail or refuse to execute the agreement and furnish a performance bond, insurance policies, and certificates of insurance as called for within the time provided.

The Bidder recognizes that City Utilities reserves the right to accept or reject any or all bids and to waive any technicality or informality therein.

In making this bid the undersigned has taken into account each provision of all of said Bid Documents.

Firm Name: _____

C/O _____
(Name of agent or sales rep) (Please print)

Title: _____

Signature: _____

Date: _____

END OF SECTION

SECTION 00520
AGREEMENT FORM (SAMPLE)

THIS AGREEMENT made and entered into this _____ day of _____ by and between the BOARD OF PUBLIC UTILITIES OF THE CITY OF SPRINGFIELD, MISSOURI, hereinafter referred to as "Owner" and

- A. [to be used if Contractor is a corporation] _____ a corporation organized and existing under the laws of the State of _____ with its principal office and place of business in the City of _____,
- B. [to be used if Contractor is a partnership] _____ a partnership consisting of ___ and _____ of the City of _____,
- C. [to be used by an individual or sole trader] _____ doing business as _____ of the City of _____, hereinafter referred to as the "CONTRACTOR."

WITNESSETH:

THAT, WHEREAS, Owner has heretofore caused to be prepared certain Contract Documents for furnishing equipment, materials, and labor, and performing work therein fully described, and the Contractor did, on the ____ day of _____, 20 __, file with Owner his offer and bid to furnish the material and perform the work described in the Contract Documents on the terms set forth in his offer, and,

WHEREAS, owner duly accepted the proposal and awarded a contract therefore to Contractor, based upon said bid,

NOW, THEREFORE, IT IS AGREED,

1. The Contract Documents (as defined in the General Conditions) are attached hereto and made a part hereof by reference, and those, together with this agreement, comprise the entire agreement between the parties.
2. The Contractor agrees, in the manner set forth in the Contract Documents, to furnish all labor, equipment, and materials necessary to perform the work herein described at the price established in the Bid Form of the Contract Documents. Time is of the essence in completion of this contract.

IN WITNESS WHEREOF, the parties have signed this Agreement on the day and year first above written.

BOARD OF PUBLIC UTILITIES OF THE CITY OF SPRINGFIELD, MISSOURI

By:

Scott Miller
General Manager

ATTEST: _____

Approved as to Form and Content:

CU Legal Counsel

Date

CONTRACTOR:

Company Name

By: Authorized Representative's Signature

Print Name

Title

ATTEST:

Signature

Print Name

Title

END OF SECTION

SECTION 00610
PERFORMANCE, LABOR & MATERIALS BOND (SAMPLE)

KNOW ALL MEN BY THESE PRESENTS: That _____, as principal and _____, as surety, are held and firmly bound to the Board of Public Utilities of the City of Springfield, Missouri, hereinafter referred to as City Utilities, in the sum of _____ and no/100 U.S. DOLLARS (\$ _____ U.S.) for the payment of which we, and each of us, hereby bind ourselves, our heirs, our executors, administrators, successors and assigns firmly by these presents; the conditions of this bond are such that:

WHEREAS, the above-named principal did on the _____ day of _____, _____, entered into a contract with City Utilities of Springfield, Missouri for:

Specification Title _____

NOW, THEREFORE, if the above-named principal shall well and truly:

1. Keep and perform all of the contract on his, its or their part to be kept and performed, and faithfully comply with all laws and regulations applicable thereto and complete the same within the time stipulated therein or within a reasonable time if no time is stipulated; and,
2. Pay for any and all materials, incorporated, consumed or used in connection with the construction of the work aforescribed, and all insurance premiums both for compensation and for all other kinds of insurance on said work above described, and for all labor performed in the work whether by the principal or by subcontractor or otherwise and at the prevailing hourly rate of wages made applicable to the work as specified by the contract (if prevailing hourly rate wages shall have been so specified). This bond is issued under the terms of Section 107.170 R.S.Mo.

Then this obligation shall be void, otherwise it shall remain in full force and effect.

It is understood and agreed that this bond shall not be avoided because of changes in the plans or specifications for the work, or because of extensions of time for the performance of work, and the surety above-named hereby waives notice of and consents to any such changes or extensions of time.

The parties hereto agree that should any litigation arise out of this bond, the venue thereof shall be in the Circuit Court of Greene County, Missouri, or the US District Court for the Western District of Missouri, Southern Division.

IN WITNESS WHEREOF, we have hereto set our hands and seals this _____ day of _____, 20____, or have caused these presents to be executed by our authorized agent on the same day and year.

Principal: _____

Surety: _____

END OF SECTION

**SECTION 00620
INSURANCE REQUIREMENTS**

Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the Work is completed and accepted by City Utilities, insurance of such types and in such amounts as may be necessary to protect it and the interests of City Utilities against all hazards or risks of loss as hereunder specified or which may arise out of the performance of the Contract Documents. The form and limits of such insurance, together with the underwriter thereof in each case, are subject to approval by City Utilities.

Regardless of such approval, it shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times during the term of the Contract. Failure of the Contractor to maintain coverage shall not relieve him of any contractual responsibility or obligation or liability under the Contract Documents.

The certificate of insurance, including evidence of the required endorsements hereunder or the policies shall be filed with City Utilities within ten (10) days after the date of the receipt of Notice of Award of the Contract to the Contractor and prior to the start of work. All insurance policies shall provide thirty (30) days written notice to be given by the insurance company in question prior to cancellation of such insurance. Such notices shall be mailed, certified mail, return receipt requested, to:

Risk Manager
City Utilities of Springfield, Missouri
301 E. Central Street
P.O. Box 551
Springfield, MO 65801-0551

The minimum coverage for the insurance referred to herein shall be in accordance with the requirements established below:

(A) Workers' Compensation* **Statutory

Employer's Liability

Bodily Injury by Accident—each accident.....	<u>\$1,000,000</u>
Bodily Injury by Disease—each employee limit.....	<u>\$1,000,000</u>
Bodily Injury by Disease—policy limit.....	<u>\$1,000,000</u>

*** Workers' Compensation: Policy or self-insurance plan with statutory limits formally approved by the State of Missouri will be required, even if no employees other than owners.**

**** Workers' Compensation coverage shall include a waiver of subrogation in favor of City Utilities where permitted by law.**

(B) Commercial General Liability Insurance***, Including Premises, Operations, Products and Completed Operations, Contractual Liability, Broad Form Property Damage, Independent Contractors; Such Coverage Shall Apply to Bodily Injury and Property Damage on an "Occurrence Form Basis" with each Occurrence Limit of.....\$1,000,000
In the Aggregate.....\$2,000,000

(C) Automobile Liability Insurance*** Covering Bodily Injury And Property Damage for Owned, Non-owned and Hired Vehicles with a Combined Single Limit of:\$1,000,000

(D) Umbrella or Excess Insurance*** (Following Form).....\$1,000,000

***** The City of Springfield, Missouri including The Board of Public Utilities of the City of Springfield, Missouri dba City Utilities of Springfield, Missouri" shall be added as an Additional Insured for the full limits of the Liability Insurance coverages, using the ISO Additional Insured-Owner endorsement, CG 20 10, for premises/operations and CG 20 37 for completed operations, or substitute endorsement providing equivalent coverage.**

Contractor shall require any and all subcontractors with whom he enters into a contract to perform Work on this Project, to protect, through insurance, against applicable hazards or risks and shall, upon request of City Utilities, provide evidence of such insurance. Contractor shall be liable for all deductible amounts from such insurance and shall indemnify and hold City Utilities harmless therefrom. These Insurance Requirements are intended to be minimum coverages, and City Utilities does not warrant that coverages or amounts will be sufficient protection for contractors or City Utilities. Contractors will be responsible for any deficiencies thereof.

NOTE:

Acord certificate changes regarding cancellation notifications do not lessen the responsibility of vendors to comply with obligations set forth in these insurance requirements. Specifically, the requirement "All insurance policies shall provide thirty (30) days written notice to be given by the insurance company in question prior to material reduction in coverage or protection of City Utilities or cancellation of such insurance." must be met wherever permitted by law.

Since the requirement cannot be met using the Acord certificate, the requirement can be met by specifically endorsing CU onto each policy to receive notifications.

**SECTION 00700
GENERAL CONDITIONS**

***** pages within this section are numbered separately *****

Link to City Utilities General Specifications:

<https://www.cityutilities.net/wp-content/uploads/purchasing-generalconditions.pdf>

SECTION 00820
GENERAL PROJECT REQUIREMENTS

PART I GENERAL

- 1.01 The work includes, but is not limited to the following:
- Furnish labor, equipment, and materials for general plumbing work, typically on private property, for customer owned gas, water, and sewer facilities on both scheduled and emergency basis. Work may also be required on customer owned appliances such as but not limited to: cleaning and replacing faucets, stool valves, and water heaters that are affected by debris in the service lines.
- 1.02 City Utilities will typically perform all site restoration, and paving repairs, but Contractor may be required to complete this work, if circumstances require.
- 1.03 Contractor is responsible for evaluating and correcting the effect of their work on the customer's electrical grounding. If contractor cannot perform this work per the National Electric Code then a subcontractor may be used. If insufficient grounding is discovered outside their scope of work, the customer shall be notified but Contractor will not be responsible for repairs.
- 1.04 Contractor may be required to camera sewer mains and laterals to verify pipes have not been damaged from boring by others, and submit signed affidavit indicating their results.
- 1.05 Contractor may be required to meet with CU personnel at the job site prior to execution date to plan and assess the job requirements. After such meeting, it is imperative that all the information discussed be passed on to the personnel performing the work, if different than the person attending the advanced meeting. Contractor is required to have personnel trained and knowledgeable in the maintenance and repair of Pressure Reducing Valves and Back-Flow Devices.
- 1.06 When reporting to any gas or water project, Contractor crew makeup shall include at least one licensed Journeyman or Master Plumber. When City Utilities personnel call to request service, they will describe the type and amount of work anticipated. At that time, they will also notify the Contractor of any unusual conditions, such as a need to install unusually long piping runs, or whether unusual pipe diameters will be involved. Contractor crews shall report to job equipped with an assortment of parts and fittings in the amount and size that should reasonably be expected to be required to perform the work described when requesting service.
- 1.07 Some repairs under this agreement are of an emergency nature: Contractor shall respond within a two-hour period, from the time of call, to any and all service requests that are designated as emergency repairs. All other requests must have response within one working day. Contractor shall be on call 24 hours a day, seven days a week, throughout the term of this agreement. Contractor will be required to have the ability to respond to multiple jobs at the same time; including times requiring emergency response outside of regular working hours, such as holiday, weekend, and evening service calls.
- 1.08 If construction drawings are supplied, some underground facilities are shown on the drawings, but **the drawings may not accurately represent the locations of the underground facilities. There may be other underground facilities that are not shown on the drawings. Contractor shall not use the drawings to locate underground facilities. Contractor is responsible for locating all underground facilities in accordance with Section 01720.**
- 1.09 If construction drawings are supplied, install water and gas facilities according to the construction drawings, in accordance with the typical Construction Standard drawings and these specifications.
- 1.10 **NOTIFICATION AND CUSTOMER RELATIONS: Notify all residents to be affected by scheduled work done under this Contract at least 48 hours, but no more than 7 days, prior to starting work in the affected area.** Notification shall be of a form and format approved by the Inspector. Execute the work in a customer/neighborhood friendly manner. In addition, notify adjacent utility customers and property owners of proposed location of work equipment parked overnight and of proposed material storage areas and stockpiles of sand, gravel and dirt. Adjust parking and

material storage to maximize customer satisfaction and to minimize traffic congestion.

PART II MATERIALS AND EQUIPMENT

2.01 Fees for services will be compensated on a time and material basis. Hourly rates shall be determined and shown on the Bid Form. Materials and subcontracted work will be billed at cost plus a standard mark-up, also to be designated on the Bid Form. Labor charges shall comply with Prevailing Wage Laws for either Greene or Christian County.

2.02 Contractor shall be responsible for the material, and for the replacement of lost, broken or stolen material. Contractor shall examine all material upon receipt, and certify suitability for use. Inspector will establish a reasonable allowance for pipe waste on each project.

2.03 Provide equipment and personnel to handle materials by methods which prevent soiling or damage to products or packaging.

2.04 STANDARD MATERIALS

Contractor crews shall report to job equipped with an assortment of parts and fittings in the amount and size that should reasonably be expected to be required to perform the work described when requesting service.

On gas piping jobs, the Contractor should report with an assortment of malleable fittings, including tees, elbows, couplings, unions, and insulated unions, as well as an assortment of nipples, all in pipe diameters of ½", ¾", 1" and 1-1/4", along with an assortment of bushings and bell reducers. They should also have at least 20 feet of each of these pipe diameters, with extra lengths of pipe for each additional address.

On water piping jobs, the Contractor should report with an assortment of ½" and ¾" fittings and pipe to repair or connect to copper, pvc, cpvc, pex or galvanized iron piping systems. They should also have ¾" and 1" stops, 3/8" x 3/8" and 3/8" x 1/2" supply line stops, and 3/8" and 3/8" x 1/2" supply lines in lengths to accommodate stools, bathroom sinks and kitchen sinks. They should also have bonding wire and clamps to correct grounding deficiencies caused by their work.

They should also report with a supply of stool flush valves, aerators for sinks, spray nozzles for kitchen sinks, and shower heads, when called on water 'trouble calls.'

On sewer repair jobs, the Contractor should report with at least 10 ft. of 4" replacement pipe, along with couplings to tie-back-in to with clay tile or PVC pipe, with enough of each to repair multiple breaks. They should also have replacement plugs for clean-outs and the pipe and materials needed to install a new clean-out, if necessary. City Utilities personnel will notify the Contractor in advance if any pipe size other than 4" is required, at which time the Contractor shall report to jobsite with a sufficient quantity of pipe and that should reasonably be expected to be required to perform the work described when requesting service.

PART III EXECUTION

3.01 Store fabricated products above ground, on blocking or skids, to prevent soiling or staining. Store loose granular materials in a well-drained area on solid surfaces. Arrange storage in a manner to provide easy access for inspection or inventory by either the Contractor or the Inspector.

3.02 Do not damage public or private property in handling or storage of materials. Do not hinder access to fire hydrants, fire and police alarms, mailboxes, water valves, gas valves and manholes. Do not use private property for storage of materials without express written permission of property owner. Provide Inspector with documentation of permission to store materials, and a certificate of acceptance from the property owner after restoration is complete.

3.03 Do not store any material, equipment, buildings, tools, vehicles or any other items owned by the

Contractor on property owned by City Utilities except at the specific sites designated by the Inspector or as shown on the drawings for storage and use by the Contractor. If no sites are designated, then the Contractor is totally responsible for locating and procuring any required site or sites.

- 3.04 Make periodic inspection of stored products to ensure that products are maintained under specific conditions, and free from damage or deterioration.
- 3.05 Keep construction area as clean as possible. Control mud and dust to prevent customer dissatisfaction and complaints. Do not allow mud and dirt to build up on sidewalks, driveways, streets, paved areas and parkways for an extended period. Do not allow mud and dirt to enter Storm Sewer system or public waterways. Keep trash, containers, packaging materials, etc., picked up on a daily basis. Grass and weeds shall be cut as needed to maintain continuity with surrounding properties.
- 3.06 Only one drive on any property may be closed at a time. Give all property owners 48 hours advance notification prior to closing driveways when possible.
- 3.07 Inclusive in the work is close coordination with all appropriate jurisdictional agencies. The Contractor is responsible for determining paving requirements not specifically shown on the drawings (temporary and permanent), construction standards, boring requirements and traffic control and safety requirements of these agencies. Contractor is responsible for coordinating the work as described herein.

END OF SECTION

SECTION 00890
PERMITS

PART I GENERAL

1.01 City Utilities will obtain railroad, Corps of Engineers, and MODOT permits. Contractor must obtain all other necessary permits and comply with all codes of construction as required by section 01410.

END OF SECTION

**SECTION 01110
WORK BY OTHERS**

PART I GENERAL

- 1.01 City Utilities personnel shall operate all main line gas valves and perform all purging of gas mains. A 48-hour advance notification is required.

- 1.02 City Utilities personnel shall operate all main line water valves and provide labor and equipment for disinfection, flushing and sampling of all water mains. Such work shall require a 48-hour advance notification.

- 1.03 City Utilities will perform all work that involves modifying components in service regulators such as orifice changes, etc.

PART II MATERIALS NOT USED

PART III EXECUTION NOT USED

END OF SECTION

SECTION 01140
CONTRACTOR'S USE OF PREMISES

PART I GENERAL

1.01 Limit use of the premises to the work indicated.

1.02 Confine operations at the site to the areas permitted under the Contract. Minimize the size and amount of damage caused to these areas. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 Do not encumber the site with materials or equipment. Do not use driveways and entrances for parking or storage of materials without express written permission of property owner. Provide Inspector with documentation of permission to store materials, and a certificate of acceptance from the property owner after restoration is complete. Confine stockpiling of materials to the areas indicated. Limit materials stored to those needed for the job.

END OF SECTION

SECTION 01200
MEASUREMENT AND PAYMENT

PART I GENERAL

- 1.01 Construct the work for the prices established by the Bid Form.
- 1.02 Any delay, additional work or extra cost to the Contractor caused by or resulting from damage to existing underground installations shall not constitute a claim for extra work, additional payment or damages.

PART II MEASUREMENT AND PAYMENT –NOT USED

PART III EXECUTION

- 3.01 With final payment request, submit affidavit certifying compliance with wage rate determination.

END OF SECTION

**SECTION 01300
COORDINATION**

- PART I GENERAL - This Section includes coordination of trades and coordination with owner and other contractors.
- PART II MATERIALS - NOT USED
- PART III EXECUTION
- 3.01 Coordinate the work of all trades under this contract.
- 3.02 Coordinate with existing operations on-site to access and use construction area during normal working hours.
- 3.03 Coordinate with the designated City Utilities' Supervisor for each job on scheduling the work. A reasonable and agreed upon amount of time to start and complete the job must be determined.
- 3.04 Coordination with Others
- A. The Contractor, by agreeing to perform work under these Contract Specifications, hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.
 - B. Other Contracts may be awarded during this Contract time. Some of these Contracts may involve on-site activity which must be coordinated with this Contract. In addition, City Utilities crews may perform other work involving on-site construction which must be coordinated with this Contract.
- 3.05 Inclusive in the Work is close coordination with all appropriate jurisdictional agencies. No additional payment will be made for compliance to jurisdictional requirements. Contractor is responsible for coordinating the Work as described herein.
- 3.06 Resolution of Disputes:
- A. The Contractor and Inspector shall attempt to resolve all disputes.
 - B. If resolution is not reached, the Contractor may request additional meetings with the Resident Engineer. If a resolution is not reached, the Contractor may request to meet with the engineering management. These meetings will be scheduled through the Resident Engineer.
 - C. In the event that the Contractor fails to satisfactorily resolve disputes or complete Work as called for in the contract such unresolved disputes or unfinished work may be held as sufficient ground by City Utilities to refuse to enter into any future contracts with the Contractor.

END OF SECTION

**SECTION 01310
PROJECT MEETINGS**

PART I GENERAL

1.01 City Utilities or Contractor may at any time request a project meeting to discuss any aspect of work.

1.02 Contractor's resident superintendent must be present at any and all meetings.

PART II MATERIALS – NOT USED

PART III EXECUTION – NOT USED

END OF SECTION

SECTION 01330
SUBMITTALS

PART I GENERAL

- 1.01 Contractor shall provide legible copies of all receipts for materials to the Inspector to receive reimbursement.

END OF SECTION

**SECTION 01350
ENVIRONMENTAL PROTECTION PROCEDURES**

PART I GENERAL

- 1.01 Conduct all construction activities in conformance with all federal, state and local laws, regulations and ordinances for the protection of the environment.

- 1.02 The work under this Contract may affect the City of Springfield’s drinking water supply. Under no circumstances shall the Contractor or any of his subcontractors allow any debris, fuel, chemicals, liquids or other materials to enter this water supply through direct or indirect means. Contain and dispose of all materials by means acceptable to the appropriate jurisdictional agency. Have materials on-site for containment of spills such as hydraulic hose breaks, etc.

PART II MATERIALS

- 2.01 No hazardous or toxic materials will be allowed in any phase of the work.

PART III EXECUTION

- 3.01 When required, City Utilities will acquire a Land Disturbance Permit and provide a Storm Water Pollution Prevention Plan (SWPPP) that the contractor is to comply with for the duration of the project.

- 3.02 Contractor shall install and maintain Best Management Practices (i.e. mulch logs, silt fences, etc.) on their portion of the work, to provide storm water sediment and erosion control during construction in accordance with construction standards to meet jurisdictional agency requirements. Best Management Practices shall also be utilized on projects when a SWPPP is not required.

END OF SECTION

SECTION 01410
REGULATORY REQUIREMENTS

PART I GENERAL

- 1.01 Conduct all construction activities in conformance with all applicable Federal, State and local laws, regulations and ordinances, including the Occupational Safety and Health Act of 1970 (OSHA) and applicable regulations of the Missouri Public Service Commission.

PART II MATERIALS – NOT USED

PART III EXECUTION – NOT USED

END OF SECTION

SECTION 01420
WATER AND NATURAL GAS CONSTRUCTION STANDARDS

PART I GENERAL

Construction Standards may be found at <http://www.cityutilities.net/business/construction.htm>. Any other construction details otherwise encountered will be provided by Resident Engineer. Copies of Construction Standards are available at City Utilities' Gas and Water Operations Center, 1321 W. Calhoun. Construction Standards and other instructions specified in the Contract Drawings shall be followed for all work on the project.

PART II MATERIALS - NOT USED

PART III EXECUTION - NOT USED

END OF SECTION

SECTION 01425
REFERENCES

PART I GENERAL

1.01 REFERENCES AND ABBREVIATIONS

The latest edition of the following specifications covers certain materials and methods to be utilized by the Contractor. Abbreviations as used in the Contract Documents mean the following:

1. AWWA: American Water Works Association
2. AGA: American Gas Association
3. AASHTO: American Association of State Highway & Transportation Officials
4. API: American Petroleum Institute
5. ASA: American Standards Association
6. DOT: United States Department of Transportation
7. AWS: American Welding Society
8. AREA: American Railway Engineering Association
9. ACI: American Concrete Institute
10. OSHA: Occupational Safety and Health Administration
11. ASTM: American Society for Testing and Materials
12. ANSI: American National Standards Institute
13. IEEE: The Institute for Electrical and Electronics Engineers
14. NACE: National Association Corrosion Engineers
15. MANGO: Missouri Association of Natural Gas Operators
16. NEC: National Electric Safety Code
17. PPI: Plastic Pipe Institute
18. DIPRA: Ductile Iron Pipe Research Association
19. UNIBELL: PVC Pipe Association

1.02 REFERENCES AND DATES

All standards references apply to the most current versions of these standards except where noted.

END OF SECTION

SECTION 01450
CONTRACTOR'S QUALITY CONTROL

PART I GENERAL

- 1.01 Establish a quality control system to ensure conformance of all items of work, including that of subcontractors, to applicable specifications and drawings with respect to the materials, workmanship, construction, finish, functional performance and identification. Provide the controls adequate to cover all layout and construction operations and keyed to the proposed construction sequence. Establish this control for all construction. City Utilities may perform inspections or tests for quality assurance as deemed necessary by Resident Engineer. Provide an outline of this quality control system and periodic reports of status upon request.
- 1.02 The Contractor's Resident Superintendent, to the extent qualified, may be used for quality control, supplemented as necessary by additional personnel for surveillance, special technicians or testing facilities to provide capability for the controls required by the specifications
- 1.03 All gas pipe connections shall be soap tested at line pressure, and a 5-minute shut-in test shall be performed before any piping system is put into service. A longer shut-in test may be required by the Inspector on large projects.

PART II MATERIALS - NOT USED

PART III EXECUTION

- 3.01 Provide for inspection of all work to ensure that materials and supplies are placed and installed in accordance with the drawings and specifications. Do not build upon or conceal any feature of work containing uncorrected defects.

END OF SECTION

**SECTION 01460
INSPECTIONS**

PART I GENERAL

1.01 All work is subject to inspection, examination or test, at any time by the Resident Engineer.

1.02 The Inspector shall be the designated representative of the Resident Engineer.

1.03 The Resident Engineer and Inspector have the right and authority to determine whether the work is being done in accordance with the requirements of the Contract Documents, drawings and specifications. The decision of the Resident Engineer as to the acceptance of any completed work or materials will be final.

PART II MATERIALS - NOT USED

PART III EXECUTION - NOT USED

END OF SECTION

**SECTION 01525
FIELD OFFICES AND SHEDS**

PART I GENERAL

1.01 The Contractor is responsible for supplying all of the facilities needed for the successful completion of the job. Locate equipment and material storage within project limits. Maintain all working, storage and parking areas in a neat and orderly manner.

1.02 Obtain and maintain all utility services needed by Contractor during construction.

1.03 **FIELD OFFICES AND SUPERVISION**

No field offices will be required. Provide Inspector with telephone numbers at which Contractor and his Resident Superintendent may be contacted at any time. Designate a minimum of two people as after hour contacts unless a message service is used.

PART II MATERIALS AND EQUIPMENT

2.01 Furnish any storage space, sanitary facilities, trash disposal and/or utilities needed by Contractor.

2.02 The Contractor will be responsible for access to and from the site without causing damage to any adjacent facilities or surrounding land.

2.03 Provide gate locks to interlock with CU's locks, if applicable. If locks are inappropriately secured prohibiting CU access, they will be forcibly removed.

PART III EXECUTION

3.01 Workers' vehicles are to be parked legally in an area designated by the Contractor.

3.02 Upon completion of the project, remove all traces of temporary facilities. Fill all disturbed grass areas, grade and seed in conformance with Section 02900.

3.03 Maintain the continuity of security systems.

3.04 Upon completion of project, remove all traces of temporary utilities unless instructed otherwise by the Inspector.

END OF SECTION

**SECTION 01720
FIELD ENGINEERING**

PART I GENERAL - This section includes requirements for surveying and job layout.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 The Contractor is solely responsible for locating all existing underground installations including, without limitation, service connections, in advance of excavating or trenching, by contacting the owners thereof, prospecting, and the use of the Missouri One-Call System and other appropriate locating services. The Contractor shall use its own information and shall not use the Drawings to locate underground facilities, since they may not accurately represent the locations of underground facilities or even the existence of all underground facilities. Contractor shall use all reasonable means necessary to avoid damage to underground facilities including, without limitation, hand-digging.

3.02 Damages to existing City Utilities gas or water lines should be reported to the Inspector, 911, and City Utilities central dispatching (417) 863-9000. City Utilities will repair all gas and water lines broken by tear-out, poor construction, blasting or any other reason due to the construction of these facilities.

3.03 In the event Contractor must temporarily interrupt gas or water service to a customer, advance notification shall be given as described in Sections 2515 and 2550. Disruptions shall be minimized, Contractor shall check with Inspector as well as Customer to confirm water is not required for life support, dialysis, etc. before interrupting any water service.

3.04 When blasting is to be performed, Contractor shall notify City Utilities 24 hours in advance so that the Inspector may be present to inspect gas and water facilities and arrange for a gas and water leak survey before and after blasting.

3.05 Instructions for Utility Staking

A. GENERAL

1. When staking is provided, Contractor shall adhere to proposed layout to the best of their ability. Any deviation from the proposed alignment shall be brought to the Inspectors attention for approval.

END OF SECTION

**SECTION 01770
CONTRACT CLOSEOUT**

PART I GENERAL

- 1.01 Within ten days after Substantial Completion of construction, City Utilities shall notify the Contractor in writing (i.e. punch list) of any defects or defaults in performance which may have been discovered upon final inspection. The Contractor shall remedy promptly all such defects or defaults before the Construction Project shall be accepted by City Utilities.
- 1.02 In the event the Contractor fails to remedy such defects or defaults within 30 days after notification, City Utilities may elect to correct these defects or defaults and deduct the cost of such corrections from the amount due the Contractor, or bill the Contractor for such corrections.

PART II MATERIALS - NOT USED

PART III EXECUTION

- 3.01 Completely remove all traces of equipment, excess materials and debris from the site after all punchlist items have been completed, inspected and approved by Inspector.
- 3.02 Clean-up site to Inspector's satisfaction and leave site as good as or better than original conditions.

END OF SECTION

SECTION 02220

DEMOLITION AND CLEARING

PART I GENERAL

1.01 DESCRIPTION: Work includes, but is not limited to:

- A. Removal of designated items.
- B. Protection of items not designated to be removed.
- C. **URBAN FOREST MANAGEMENT POLICY**
In an effort to responsibly manage the urban forest, guide all work performed under this contract to reduce damage to any trees. Perform all work in accordance with the guidelines in the booklet "Trenching and Tunneling Near Trees - A Field Pocket Guide for Qualified Utility Workers." Copies of this booklet are available for inspection at City Utilities Forester located at 828 N. Prince Lane, Springfield, MO. Copies are also available from the National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410. Any conflicts between this policy and the proposed piping alignment shown on the Drawings shall be brought to the Inspector's attention prior to any deforestation. Contractor shall be responsible for any tree damage caused by not following these procedures.

PART II MATERIALS - NOT USED

PART III EXECUTION

3.01 CONSTRUCTION LIMITS

Inspector will establish the construction limits and designate items to be removed, and may designate items to remain.

3.02 REMOVAL OF ITEMS

- A. Completely clear, grub and remove tree stumps, brush, hedge and other items within the construction limits not designated to remain.
- B. Existing structures, including, but not limited to, pavement, curbs, sidewalks or other similar objects where portions of these objects are to be left in place, shall be removed to an existing joint or a new joint sawed to a minimum depth of one inch with a true line and vertical face.
- C. Completely remove and dispose of all debris.

Disposal of concrete and other materials – all concrete and masonry, drainage pipes, reinforcement steel, structural steel, castings or timbers not salvageable shall be disposed of by the Contractor to the satisfaction of the Inspector. Any of the above materials deposited adjacent to the project shall be deposited with written approval of the property owner. Submit written approval of the property owner to the Inspector.

3.03

PROTECTION OF REMAINING ITEMS

- A. The Inspector may designate existing above-ground structures, trees, shrubs and plants that are to remain. Contractor shall preserve without damage these items throughout the construction period.
- B. Contractor shall restore fences to original condition or better upon completion of the work. Make temporary closures during construction.
- C. Contractor shall protect and restore ornamental trees and shrubs.

3.04

RESTORATION

- A. City Utilities may choose to perform some or all of the demolition, clearing, and/or restoration work. Contractor shall perform all work in a manner that minimizes the amount of restoration work required.

END OF SECTION

**SECTION 02315
EXCAVATION AND BACKFILLING FOR PIPING**

PART I GENERAL

1.01 DESCRIPTION: Work includes, but is not limited to the following as they apply to all customer owned facilities:

- A. Trenching and trench backfilling.
- B. Blasting and rock excavation.
- C. Rough and finish grading.
- D. Furnishing and installing granular fill.

1.02 REGULATORY COMPLIANCE

All excavation and backfill is subject to regulations and permits of appropriate jurisdictional agencies.

PART II MATERIALS AND EQUIPMENT

2.01 FILL MATERIAL

All fill material shall conform to City Utilities' Construction Standards and is subject to approval of the Inspector.

2.02 BACKFILL IN NON PAVED AREAS

- A. Other than pipe bedding, backfill with suitable materials excavated from trench and processed as required, or borrowed from other locations. Material shall be free from organic matter, refuse, ashes, cinders or other unsuitable materials, and shall not be frozen. Materials shall be free from gravel, stone or shale particles greater in any dimension than four inches for the first foot of backfill above the pipe embedment material to establish a clear zone. Backfill above the clear zone may have materials up to a maximum of twelve inches in any dimension. As an alternate to the clear zone requirement, contractor may elect to provide an additional six inches of pipe embedment material over and above the requirements called for in the construction standards. Backfill material shall contain sufficient fines to provide a dense mass capable of being compacted.
- B. Casing piping installed by open trenching shall be bedded and backfilled with select backfill.

2.03 BACKFILL IN PAVED AREAS

- A. Other than pipe bedding as called out in the applicable Construction Standards, backfill trenches in designated area with material that meets the appropriate jurisdictional agency's requirements.
- B. Casing piping installed by open trenching of roadways shall be bedded and backfilled full depth with granular material meeting the specifications of the appropriate jurisdictional agency.
- C. This material will be required under sidewalks, existing paved areas, proposed paved areas, unpaved "driven-over" areas utilized as drives or parking lots, and as necessary on excavations paralleling proposed or existing streets and drives to avoid settlement of curbs or paving.

- D. When flowable fill is required, gas or water lines shall be covered with rock shield.

2.04

PIPE BEDDING MATERIALS

- A. Bed all gas mains, water mains, gas services, and water services with limestone sand.

PART III

EXECUTION

3.01

TRENCHING

- A. Centerline: Maintain centerline of the trench in a straight line with minimum bends or changes in direction. When trenching in pavement, saw cut the pavement in a straight line on both sides of the future excavations.
- B. Length: Minimize the amount of open trench length at any time on the same street. Fill trenches as soon as practical after pipe is placed in the ditch and placement and bedding is approved by the Inspector. Coordinate closing of driveways with the individual property owners. Provide adequate access to all businesses during their operating hours.
- C. Width: Maintain width of trench ample to permit pipe to be laid and jointed properly, and backfill to be placed and compacted as specified in accordance with applicable construction standards.
- D. Depth: Depth shall be as shown in construction standards, unless otherwise indicated on the construction drawings. Measurements shall be made from the low side of the trench. Areas where design depth differs from standard depth will be noted on construction drawings however minor deviations in grade are to be expected in order to avoid other infrastructure.

Where crossing roadways, piping shall be installed as required by the jurisdictional agency's permit.

- E. Adjacent Structures, Water, Sewer, Gas Line and Telephone Cable Crossings:
 - 1. Follow such method of course as may be approved by the Inspector in passing all underground structures.
 - 2. Exercise extreme care in crossing or paralleling water, sewer, gas lines and telephone cables. Cross or parallel all structures at Contractor's sole risk and responsibility. Should any damage occur to such lines, Contractor is fully liable and will pay full cost of repairing same.
 - 3. Make all arrangements and pay for relocation and bracing where poles or anchors are affected by the trenching operation.
- F. Foundation for Pipe:
 - 1. Grade the trench bottom as required to achieve uniform and continuous bearing and support for the pipe on solid and undisturbed earth free from rocks and other obstructions that could cause point loads throughout the length of pipe. Finish subgrade to a straight line between pipe joints.
 - 2. Place, grade and compact to a uniform depth a minimum of six inches of specified bedding material in the ditch bottom prior to placing any pipe in the ditch.

3. Where trench excavation is inadvertently carried below specified grade, backfill with approved trench excavated material in 6-inch lifts compacted to provide a firm and unyielding subgrade.
 4. Where the bottom of trench at subgrade is found to be unstable or include ashes, cinders, refuse or other organic material, excavate and remove such unsuitable material and fill according to Item 3, above.
- G. Trench Bracing and Shoring: Support all trenches in accordance with all pertinent and applicable codes, rules and regulations.
- H. Protect the public from any excavations, particularly those left open during times when Contractor is not present.

3.02 SPOIL AREAS

- A. Store no spoil off the right-of-ways or easements unless prior written permission has been obtained from the property owner and a copy of said agreement provided to the Inspector.
- B. Locate and maintain off-site spoil areas for excess excavated materials. Restore these areas to satisfactory condition before final payment is approved. Provide a certificate of acceptance from the owner of the spoil area to the Inspector.

3.03 PIPE BEDDING

Pipe bedding shall conform to all applicable construction standards.

3.04 BACKFILL AND COMPACTION

- A. Do not backfill trench until work is inspected and approval to proceed with backfill has been given by the Inspector. Complete backfilling promptly after approval to proceed.
- B. Place material in six inch lifts and compact as necessary to avoid settlement of ditch line.

3.05 ROCK EXCAVATION

- A. All blasting is performed at the Contractor's sole risk. The Contractor is solely responsible for any and all damages caused by blasting to any adjacent structure or any other underground facilities. If damage does occur to any above or below ground facilities, including other City Utilities facilities, the Contractor is fully liable.
- B. Presence of rock shall not relieve Contractor of depth requirements given in paragraph 3.01
- C. In high hazard areas, remove rock by jackhammering as necessary. Make determination of whether or not rock can be blasted, but Contractor shall be fully liable for any damages.
- D. Perform all blasting in accordance with the City of Springfield's General Ordinance #4714, even for areas outside the jurisdiction of the City of Springfield. Only persons holding blasting licenses as issued by the Springfield Fire Department may perform blasting. Contractor must present areas desired to be blasted to Resident Engineer for prior approval. Upon approval contractor must obtain any necessary blasting permits and submit a copy to the Resident Engineer.

3.06 OPEN CUTTING ROADWAYS

Open cut roadways only as approved by the governing authority. If approval to open cut is not received, crossing must be installed using approved trenchless methods.

3.07

TRAFFIC CONTROL

Control traffic in accordance with the latest edition of the Manual on Uniform Traffic Control Devices and with the approval of the jurisdictional agency.

END OF SECTION

**SECTION 02320
UTILITY CASINGS**

PART I GENERAL

1.01 SUMMARY

- A. This section applies to casing pipe installed by tunneling or open cut.
- B. Casings for Gas and Water lines shall be installed per applicable Construction Standards.

1.02 REFERENCES

- A. Applicable Standards:
 - 1. American Petroleum Institute (API)
 - a. API 1104 – Standard for Welding Pipelines and Related Facilities
 - b. API RP 1102 – Standard for Steel Casings
 - 2. American Society for Testing and Materials (ASTM)
 - a. A36 – Structural steel
 - b. A570 – Hot-rolled carbon steel sheet and strip, structural quality
 - 3. American Water Works Association (AWWA)
 - a. C206 – Field welding of steel water pipe
 - 4. Steel Structures Painting Council (SSPC)
 - a. SP-3 – Power tool cleaning

1.03 SUBMITTALS

Contractor is to submit shop drawings for proposed casing spacers and other items specified by Resident Engineer for approval prior to shipment.

PART II PRODUCTS

2.01 MATERIALS

All materials shall conform to current City Utilities specifications. HDPE 4710 DR 11-13.5 black with yellow stripes gas piping that meets ASTM D2513 is permissible for use as gas casing.

PART III. EXECUTION

3.01 INSTALLATION

- A. All work shall, as a minimum, meet the requirements of API RP1102, the highway, railroad or utility having jurisdiction and shall be subject to their inspection and approval.
- B. Casing pipes installed by tunneling shall conform to the following requirements and section 2410:
 - 1. Casings rejected due to misalignment or other failures to conform to specifications shall be abandoned in place. The ends of the abandoned casing

shall be capped or plugged to provide a tight seal.. Casing pipe shall not be recovered for reuse.

2. Casing spacers are not required when installing polyethylene gas or water pipe in a polyethylene casing unless called for on design drawings.

C. Casing Pipes installed by open cut shall conform to the following requirements and section 2315:

1. Bottom of casing may be installed on graded, compacted earth or gravel bedding per section 2315.

D. Joints

1. All joints along pipe casings shall be joined to conform to the requirements of sections 2510 and 2550. Contractor personnel will not be required to be qualified for joining casing piping.

3.02

GROUTING

A. Where voids are present the casing pipe shall be grouted per the appropriate jurisdictional requirements.

END OF SECTION

**SECTION 02410
TUNNELING**

PART I GENERAL

1.01 DESCRIPTION

Includes augering, boring, driving, drilling, pipe bursting, moleing or other methods approved by Resident Engineer.

1.02 INSTALLATION

- A. Any gas pipe installed by tunneling shall either be encased in a steel casing or sleeved in polyethylene gas pipe according to construction standards, except as noted in Item B.
- B. Only steel gas pipe with polymer concrete coating over fusion bonded epoxy coating with 'Powercrete' coated joints may be installed uncased as described in the construction standards. Manufactures cure times on field applied coatings shall be strictly adhered to.
- C. All water pipe intended to be cased shall be noted on the design drawings and shall be installed according to the construction standards.
- D. Optional Casing Installations: In locations where tunneling is not required by the Contract Documents, Contractor may elect to tunnel gas or water lines to avoid surface restoration, but only with Resident Engineer's approval.

PART II MATERIALS AND EQUIPMENT

2.01 Drilling Fluids: All drilling fluids must be environmentally acceptable and shall be completely contained throughout the drilling process.

PART III EXECUTION

3.01 DIAMETER OF TUNNEL EXCAVATIONS

- B. Perform all directional drilling in accordance with ASTM F1962 and PPI standards.
- C. Maintain diameter of tunnel excavations large enough to allow insertion of the pipe without causing damage to the pipe. Diameter of tunnel excavation shall minimize the amount of annular space between the excavation and the piping.
- D. Maintain diameter of tunnel excavation no more than 2 inches greater than the size of the pipe except 1 ¼" and smaller pipe may be inserted in a 4" tunnel excavation or otherwise approved by Resident Engineer.

3.02 GENERAL TUNNELLING SPECIFICATIONS

- A. Tunnel depth shall be at standard depth to the top of casing pipe unless more cover is required by governing jurisdictional agencies, unless otherwise noted on the design drawings.
- B. Establish initial angle of tunnel excavation to maintain design depth throughout the tunnel excavation.

- C. In the event of unforeseen deflections encountered during the tunnel excavation, a vertical upward deflection of up to six inches, vertical downward deflection of up to 24 inches, and lateral deflections up to 18 inches are allowed, provided there is no conflict with existing or proposed facilities. Deflections greater than this are unacceptable, and may require reborings or trenching to the appropriate depth.
- D. During directional drilling, the boring head shall be located utilizing underground locating equipment capable of pinpointing the drill head. This shall be done at least once for every ten feet of drilling length in both the horizontal and vertical directions and provided to inspector in writing.
- E. All foreign line crossings (water, sewer, telephone, fiber optic, etc.) shall be exposed prior to and during the tunneling process in accordance with all state and local provisions. CU owned gas or water lines exposed shall be backfilled per applicable construction standards.
- F. Piping installed in tunnel excavation shall be pulled back in one continuous section, as one continuous operation unless otherwise directed by Resident Engineer.
- G. Contractor shall utilize a swivel or other means to minimize rotation of the pipe during pullback.
- H. Contractor shall provide adequate support rollers for the pipe during pullback. Rollers and cradles shall be of a type to prevent damage to the pipe and coating and of sufficient number to prevent overstressing of the pipe due to sag bends during pullback.
- I. In the event the contractor must abandon the tunnel excavation before completion of the full excavation, the contractor shall seal the hole per the appropriate jurisdictional agency's guidelines.
- J. Observe the bend radius of the piping being installed per the applicable construction standards and manufacturers recommendations.
- K. Tracer wire shall be attached to the pull head of the drilling rig and be installed with all gas and water piping. Wire used is to be in accordance with the applicable construction standards.
- L. When pulling polyethylene gas or water piping into a bore a weak link shall be used to prevent putting the piping to be installed under too much tensile load in accordance with ASTM F1804. A commercially purchased weak link is acceptable or contractor can fabricate one using a one foot section of the next smaller size plastic pipe that is placed between the pull head and the leading edge of the pipe being installed.
- M. When polyethylene pipe is being installed, an additional 5% pipe length shall be installed at both the entry and exit points to allow for relaxation due to temperature. MDPE and HDPE expansion/contraction according to PPI TR-21 handbook are expected to be 1.1 inch per 100 feet per 10 degrees temperature change. Allow piping to achieve the same temperature as the ground to counter act pipe creep prior to making tie-ins at the ends of the piping. The typical relaxation time should be twenty four hours.

END OF SECTION

**SECTION 02510
WATER PIPING**

PART I GENERAL

1.01 DESCRIPTION Includes, but is not limited to installation of customer owned water lines.

1.02 PRODUCT HANDLING

A. Use all means necessary to protect the material before, during and after installation.

1. Contractor is responsible for damage to piping and materials.

B. In the event of damage, Contractor shall immediately make all repairs and replacements to the approval of the Inspector.

PART II MATERIALS AND EQUIPMENT

2.01 All materials will conform to City Utilities material specifications unless otherwise indicated on the design drawings or in these specifications. When installing materials not included in City Utilities' material specifications, those materials shall meet the currently accepted water industry standards.

2.02 INSTALLATION IN CONTAMINATED AREAS

When installing water piping in areas of known soil contamination the entire pipe length spanning the contamination area must be installed in welded steel casing including service lines unless the materials noted below are used. The casing should extend beyond the area of contamination at each end to ensure there is no contact with the ends of the casing. When contaminated soils are encountered unexpectedly, contractor shall immediately notify Resident Engineer. Engineer may require additional precautions to protect water quality.

2.03 All valves shall be of open right (clockwise) design, except small quarter-turn valves, which shall open left.

PART III EXECUTION

3.01 INSTALLATION – GENERAL

Install pipe in strict accordance with the manufacturers' installation instructions and laying schedules. Run true to grade and alignment as shown on the drawings with fittings and valves at the required locations. Match and make connections to existing fittings at the points of termination of the piping system. Make tie-ins onto existing live water mains under the supervision of the Inspector using approved equipment and materials. Do not operate any valves, blowoffs or similar equipment on the existing water system of City Utilities.

3.02 INSTALLATION METHODS

Install pipe by trenching as specified in Technical Specifications, Section 02315, by tunneling as specified in Section 02410, and/or by casing as specified in Section 02320.

3.03 PIPE CLEANING AND PREPARATION

A. Thoroughly clean and inspect all pipe and fittings for damage before placing in the trench. If damage to pipe is found during inspection, repair or replace the pipe as directed by the Inspector.

B. Prevent foreign material from entering the pipe while it is being installed. Allow no debris, tools, clothing or other materials in the pipe.

- C. When pipe laying is not in progress for an extended period of time such as nights and weekends, close the open ends of pipe with a water tight plug. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. Do not lay pipe in water or when trench conditions are unsuitable.

3.04 PIPE SUPPORT AND EMBEDMENT

Support the barrel of the pipe by the granular leveling course with bell holes excavated for the bell end. Having so supported the pipe, embed it with granular material after joining pipe.

3.05 JOINING PIPE

- A. Push-on Joints – In accordance with manufacturers recommendations, lay pipe with bell ends facing in the direction of laying unless directed otherwise by the Inspector. After placing a length of pipe in the trench, clean and lubricate the gasket and gasket groove. Center the spigot end in the bell. Force pipe home giving care to not over-bell the pipe, and bring to correct line and grade. Prevent dirt from entering the joint space.
- B. Threaded Joints - Pipe dope or thread tape shall be applied to the threads prior to joining. Threaded joints are only to be used on 2” and smaller water lines.
- C. Compression (Pack or Mechanical) Joints - Install and tighten compression fittings per manufacturer’s instructions.
- D. Flange joints - assemble joints above ground and lower into trench, unless otherwise acceptable to the Inspector. Tighten bolts per manufacturer’s instructions.
- E. Restrained Joints - Install per manufacturer’s instructions and as detailed on the drawings.
- F. HDPE connections – Join HDPE pipe per ASTM F2620 and Plastic Pipe Institute (PPI) TR-33/2006 “Generic Butt Fusion Joining Procedures for Field Joining of Polyethylene Pipe” www.plasticpipe.org.

Butt fusions are the preferred method of joining with electrofusion and socket fusion also permissible when joining HDPE to HDPE. Data loggers shall be used when fusing 8” and larger HDPE. When joining HDPE to DI or PVC piping a MJ or threaded transition fitting shall be fused to the HDPE to make the change in materials.

Mechanical fittings are only permissible when called for on the design drawing or otherwise called for within the specifications. A stainless steel stiffener sized to encompass the entire bearing length of the compression fitting to the HDPE pipe is required when using approved mechanical or compression fittings.

All fusion joints shall be made by competent joiners who shall have been tested and approved in advance by City Utilities, and who have properly maintained this qualification. The test shall include destructive test of joints of each type to be made on the project.

Contractor shall make all fusions in accordance with the current manufactures’ recommended procedures.

Contractor shall provide an approved machine when butt fusions are to be made. Contractor shall provide all necessary tools, approved by the Inspector, to complete all required fusion. All tools shall be electrically heated only. Fuel-fired tools shall not be acceptable. Only tools specifically designed for the joining of polyethylene water pipe shall be used. All tools shall be kept clean.

Contractor shall provide an approved electrofusion machine when electrofusion fittings are to be installed. Contractor shall provide all necessary tools to complete all required fusions to the satisfaction of the Inspector.

The pipe shall be prepared using an approved scraper designed for use with polyethylene piping. Paint-type scrapers will not be allowed unless approved by Resident Engineer.

3.06 PERMISSIBLE DEFLECTION AT JOINTS

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, to avoid obstructions or plumb valve stems, or where long-radius curves are permitted, deflect in accordance with the manufacturer's recommendations and construction standards for satisfactory joining.

3.07 TIE-IN POINTS AND CROSSINGS

Expose existing casings, mains, storm drains, other utilities, and other obstacles well in advance of trenching and pipe laying to avoid abrupt changes in vertical alignment and the use of unnecessary fittings at tie-in points and crossings.

3.08 CUTTING OF PIPE

Cut pipe for inserting valves, fittings or closure pieces without damage to the pipe or cement lining and leave a smooth end at right angles to the axis of the pipe. Make all cuts in accordance with the manufacturer's instructions. Only cut 16" or larger ductile iron pipe after it has been gauged to determine if the diameter of the pipe is within tolerance at the proposed cut location. HDPE pipe shall be cut with a guillotine style cutter or a chain saw with no lubricant in the bar oiler. Other methods will require approval by Inspector.

3.09 BENDING OF HDPE PIPING:

- A. Install fittings at all locations as specified in the drawings.
- B. At locations where fittings are not specifically called for, HDPE pipe may be bent to route the line as required; however, bends which would produce excessive stress on the pipe shall not be allowed. The minimum bending radius shall adhere to the appropriate water Standard. Bends of a lesser radius shall not be permitted, and an appropriate fitting (elbow) shall be installed as necessary.

3.10 SQUEEZE-OFF OF HDPE PIPING:

- A. Where available, City Utilities personnel shall utilize valves to control the flow of water in HDPE pipes. However, squeeze-off may be utilized where necessary to control the flow of water. Where valves or squeeze off points do not allow a dry connection to be made, dry ice and bread may be utilized at the direction of the Inspector in order to make a fusion connection.
- B. Contractor shall squeeze-off pipe using a properly designed tool and shall not damage the pipe. The tools shall be equipped with appropriate gap stops. The tools shall be squared and centered on the pipe and shall be located at least three pipe diameters away from the nearest fitting or fusion joint. All squeeze-off shall be performed with the Inspector present.
- C. The same location of pipe shall not be squeezed-off more than once. All squeeze-off locations shall be marked on the pipe by wrapping the pipe with electrical tape.

- D. After squeeze-off, pipe shall be re-rounded. All squeeze-off operations shall conform to manufactures' recommendations.

3.11

VALVE AND FITTING INSTALLATION

A. Valves and Fittings

Set and join valves, fittings, plugs and caps to pipe in accordance with the manufacturer's recommendation. Valves shall be installed so operating nut is plumb so valve key will easily operate the valve within the box. Valve extension shafts shall not be used unless called for specifically on the design drawings. Valves shall be installed so that the operating nut is no more than eight feet below finished grade unless approved by the Inspector.

B. Valve Boxes

Install the valve box as to not transfer surface loads directly onto the valve. Center and plumb valve box over the operating nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed by the Inspector.

C. Anchorage for Valves and Fittings

All fittings shall have suitable thrust protection as indicated on the design drawing or in the construction standards.

3.12

SERVICE LINES AND METER SETS

- A. Water services: The minimum size of service lines shall be 1" piping from main to meter set unless otherwise called for on the construction drawings. Meter sets shall be constructed per the construction drawings and applicable standards. Meters shall be installed as close as practical to the customer's property line or easement line. Services and meters shall be installed according to the applicable construction standards and design drawings. New piping shall be installed from the outlet of the meter setting to the customer's property line and tied over to the existing customer piping if it exists. No heat bending of piping material shall be allowed.

- B. Fire Services: The minimum size of fire service lines shall be 2" piping from the main to the customer's property line or easement line. The customer's piping shall be considered the property line or easement line unless a fire service valve is installed, in that case, the customer's ownership will be the point immediately downstream of the valve. All CU owned fire services shall be pressure tested and disinfected per section 2515 when also serving a domestic service.

3.13

LOCATOR WIRE & WARNING TAPE

- A. Install #10 AWG LDPE solid copper locator wire blue in color on all trenched water piping. Install #12 AWG LDPE steel/copper clad blue locate wire on all tunneled water piping.
- B. Install tracer wire per Construction Standards.
- C. Secure tracer wire to main by tape every 20 feet. Connect wire to existing locator wire where present. Do not connect wire to any existing metal mains. Connect wire utilizing approved epoxy filled connectors.
- E. Bring tracer wire up to surface for locating purposes at all meter pits, fire hydrants and valve installations per applicable construction standards.

- F. Warning tape shall be installed with all water lines that are installed by trenching per applicable construction standards.

3.14 SERVICE RENEWALS AND TIE-OVERS

- A. Install new meter set and new meter tile per standards, retire existing service and install new customer service piping from the outlet of the meter tile to behind the property line to reconnect the customer's piping per applicable standards. Meters shall be installed as close as practical to the customer's property line or easement line.
- B. All plumbing work shall conform to all applicable code requirements.
- C. Coordinate with Inspector regarding the routing of the customer line and the scheduling of the work.
- D. Services shall be completely renewed main to meter and backside of service tied to customers piping as called for within this specification unless specifically called out to remain and be tied over to the new main on the design drawings.

3.15 RETIREMENT OF EXISTING SERVICES AND METER SETTINGS

Where services are called to be retired, retire at the main by closing the curb stop valve and installing a threaded brass plug. When the main is also being retired physical retirement of the services at the main is not required. Remove meters from the existing setting and return to City Utilities. Remove rings and lids for reuse in relocated service installations or for return to City Utilities material yard. When retiring a meter tile, the elevation shall be adjusted to a position below grade backfill according to Section 2315 and restore surface per Section 02700 or Section 02900.

When service lines and meter sets not shown on the design drawings are encountered during the course of construction, notify the Inspector to determine whether service is to be replaced or abandoned.

3.16 REMOVAL OF DAMAGED PIPE

HDPE pipe found to have surface damage at a depth equal to or greater than 10% of the wall thickness, as determined by the Inspector, shall not be acceptable. Contractor shall cut out and replace with undamaged section of HDPE pipe, at the Contractor's expense.

Other piping materials or fittings found to have damage unacceptable to the Inspector, shall be cut out and replaced with undamaged materials, at the Contractor's expense..

3.17 ASBESTOS CEMENT PIPE REPAIRS, DEMOLITION, AND DISPOSAL

Work on asbestos cement (AC) pipe shall only be performed by OSHA trained personnel overseen by a "competent person" as defined by OSHA. All work shall be in accordance with EPA's *National Emission Standards for Hazardous Air Pollutants (NESHAP)*, EPA's *Governmental Employee Worker Protection Rule*, and *Missouri DNR's Air Asbestos Rule*.

- A. Excavation: When excavating an AC water main, take precautions to prevent the backhoe teeth from scraping or gouging the pipe.
- B. Pipe Preparation: AC pipe must be kept wet at all times while cutting, scraping, chipping, or otherwise abrading the pipe. Water mixed with a surfactant (soap, detergent or other agent, designed to reduce surface tension of the water) must be used to wet the pipe. A Hudson type sprayer shall be used to apply the solution. The solution shall be applied frequently to areas of the pipe being abraded.

- C. Cutting: Asbestos-containing pipe shall *never* be cut with a high-speed mechanical saw. Pipe shall be severed with a hand-operated pipe cutter or uncoupled and removed in entire joint lengths.
- D. Coring (tapping): When tapping into an AC pipe do not use high-speed mechanical boring equipment. Minimize dust by using a hand-operated drill or auger. If the tapping hole is too large for a hand drill, use an electric drill specially equipped with a HEPA vacuum attachment. Treat all collected dust, crumbs, coupons, etc. as asbestos waste.
- E. Retirement/Removal: Unless otherwise indicated on the drawings, all existing AC pipe shall be abandoned in place. All cost for the proper disposal of AC pipe; which is removed without written authorization of the Resident Engineer, shall be borne by the Contractor.
- F. Decontamination: All tools and equipment used during the maintenance of the AC pipe shall be thoroughly cleaned with soap, water, and disposable towels. All materials such as towels used for cleaning, gloves, or plastic sheeting that becomes contaminated with asbestos containing material shall be disposed of properly.
- G. Disposal: Contractor is responsible for ensuring all sections and pieces of AC pipe and materials that cannot be abandoned in place are properly packaged and disposed of at a licensed solid waste landfill approved by CU. If desired, CU will assist the Contractor in the landfill's waste approval process. However, costs for disposal are borne by the Contractor, unless otherwise indicated on the drawings or in these specifications. Contractor will document disposal by providing to CU the waste manifest(s) signed and returned to the contractor by the landfill representative.

END OF SECTION

**SECTION 02515
DISINFECTION AND TESTING**

PART I GENERAL

1.01 This covers disinfection and testing of the water distribution system.

PART II MATERIALS AND EQUIPMENT

2.01 Supply all materials and equipment to complete the work described in Section III.

PART III EXECUTION

3.01 TESTING

A. Preventative Measures During Construction

During construction, the interior as well as all sealing surfaces of pipe, fittings, and other accessories should be kept as clean as possible. Inspect the interior of all pipes prior to installation. If dirt enters the pipe, it should be removed. All openings in pipelines should be closed with watertight plugs whenever the trench is unattended. Sealing, lubricating, or gasket materials used in pipe installation should be stored and handled in a manner that avoids contamination and be suitable for use with potable water.

B. Tracer Wire Testing

Test tracer wire to verify a continuous signal on the wire. Contractor shall dig up and repair tracer wire where the signal isn't continuous.

C. HDPE Destructive Testing

City Utilities reserves the right to perform destructive testing on up to 10% of the HDPE fusion joints installed by the Contractor on the project. Contractor is responsible for cutting out the joint identified by the Inspector or Resident Engineer and replacing the section removed with a new section of fused HDPE pipe. The pipe joint shall be tested using a side-bend test. If the pipe joint fails, the Contractor shall be responsible for additional testing.

3.02 CONTINUITY OF SERVICE

Prior to closing any valves, notify all affected customers 24 hours in advance and state how long the service will be curtailed. Cause no customer to be without service for more than eight hours. Schedule all tie-ins and other operations affecting customer service only as approved by the Inspector. Carefully plan such operations in advance, verify materials and conditions, and work continuously until all customers are in service. Some off-hour work and overtime labor may be required to avoid causing unnecessary hardship for business, schools, etc.

END OF SECTION

**SECTION 02550
MECHANICAL – NATURAL GAS PIPING**

PART I GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, installation, retirement and/or relocation of customer owned gas lines, including pipe, valves and fittings.

1.02 PRODUCT HANDLING:

- A. Use all means necessary to protect the material before, during and after installation.
 - 1. Use wooden skids or padding for material storage.
 - 2. Contractor is responsible for all dents, gouges, coating defects and/or dimensional variations.
- B. In the event of damage, immediately make all repairs and replacements to the approval of the Inspector.

PART II PRODUCTS

2.01 Unless otherwise indicated on project specifications, plastic gas pipe, along with plastic valves and fittings, shall be (polyethylene) PE 2708 material, and steel gas pipe shall be API5L Grade B or X42 with fusion bonded epoxy coating.

PART III EXECUTION

3.01 INSTALLATION – GENERAL:

Contractor shall install gas lines at required grades with all fittings and valves at the locations indicated on the Drawings, when applicable.

3.02 INSTALLATION METHODS:

- A. Install gas pipe by trenching as set forth in Section 02315, Excavation and Backfilling, or by tunneling as set forth in Section 02410, Tunneling.
- B. The minimum allowable depth for a service line to be inserted on private property shall be 18” when inserted into plastic service lines and 12” when inserted into steel service lines. The minimum depth on Right of Way shall be 18”.

3.03 PIPE CLEANING:

- A. Prevent foreign material from entering the pipe while it is being installed. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.
- B. When pipe laying is not in progress, close the open ends of pipe with a watertight plug or other approved means. This provision shall apply during meal breaks as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry. Pipe shall not be laid in water or when trench conditions are unsuitable.

3.04 GAS LINE DEHYDRATION:

Contractor shall be responsible for installing gas piping in a manner that does not allow water to enter the pipe.

If the Inspector determines there is water in any gas piping, the Contractor shall be responsible for dehydration of the line to the Inspector's satisfaction.

3.05 REMOVAL OF DAMAGED PIPE

Gas pipe found to have surface damage at a depth equal to or greater than 10% of the wall thickness, as determined by the Inspector, shall not be acceptable. Contractor shall cut out and replace with undamaged section of pipe, at the expense of the contractor

Other gas fittings or materials found to have damage unacceptable to the Inspector, shall be cut out and replaced at the expense of the contractor.

3.06 PLASTIC PIPE JOINING METHODS:

A. Polyethylene pipe shall be joined by heat fusion or electrofusion. Joining of similar types of pipe shall typically be made by heat fusion. All joints consisting of dissimilar types of pipe shall be joined by electrofusion. Mechanical fittings are only permissible for temporary installations or when called for on the design drawing or specifications.

B. All fusion joints shall be made by competent joiners who shall have been tested and approved in advance by City Utilities, and who have properly maintained this qualification. The test shall comply with the requirements of the Missouri Public Service Commission Regulations. The test shall include destructive test of joints of each type to be made on the project.

C. Heat Fusion Procedures:

1. Contractor shall make all fusions in accordance with City Utilities current recommended procedures.

2. Contractor shall provide all tools and an acceptable butt fusion machine capable of fusing all sizes of piping for the project. All tools shall be electrically heated only. Fuel-fired tools shall not be acceptable. Only tools specifically designed for the joining of polyethylene gas pipe shall be used. All tools shall be kept clean.

D. Electrofusion:

3. Contractor shall provide all tools and an acceptable electrofusion machine capable of fusing all sizes of piping for the project.

4. The pipe shall be prepared using an approved scraper designed for use with medium density polyethylene piping. Paint-type scrapers will not be allowed.

3.07 VALVE AND FITTING INSTALLATION:

A. Contractor shall set valves and fittings and join to pipe as shown on the design drawings and construction standards.

B. Contractor shall install a valve box for every valve. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve. The box cover shall be flush with the surface of the finished grade or as directed by the Inspector.

3.08 BENDING OF POLYETHYLENE (PLASTIC) PIPE:

A. Install fittings at all locations as specified in the drawings.

B.

B. At locations where fittings are not specifically called for, plastic pipe may be bent to route the line as required; however, bends which would produce excessive stress on the pipe

shall not be allowed. The bending radius shall adhere to the manufactures recommendations and the gas construction standards. Where bend radius will not conform to the construction standards and manufacturers recommendations, an appropriate fitting (elbow) shall be installed as necessary.

3.09 CUTTING OF POLYETHYLENE (PLASTIC) PIPE:

- A. Cut pipe square and remove all burrs and cuttings prior to joining.
- B. Pipe may be cut with a hacksaw or carpenter's saw, or a specifically designed plastic pipe cutter may be used.
- C. Standard metal pipe wheel-cutters are not acceptable.

3.10 SQUEEZE-OFF OF POLYETHYLENE (PLASTIC) PIPE:

- A. Where available, City Utilities personnel shall utilize valves to control the flow of gas in plastic pipes. However, squeeze-off may be utilized where necessary.
- B. Contractor shall squeeze-off pipe using a properly designed tool and shall not damage the pipe. The tools shall be equipped with appropriate gap stops. The tools shall be squared and centered on the pipe and shall be located at least three pipe diameters away from the nearest fitting or fusion joint. All squeeze-off shall be performed with the Inspector present.
- C. The same location of pipe shall not be squeezed-off more than once. All squeeze-off locations shall be marked by wrapping the pipe with electrical tape.
- D. After squeeze-off, pipe shall be re-rounded. All squeeze-off operations shall conform to ASTM F1041, latest revision.

3.11 LOCATOR WIRE:

- A. Contractor shall install locator wire with all new piping, except with plastic pipe inserted in steel pipe. When inserting in steel pipe, the tracer wire shall be thermite welded to the casing pipe per construction standards to provide continuity. Plastic service lines that do not have existing tracer wire shall be replaced with a new service line with tracer wire. Contractor may elect to pipe burst the existing service line if it is of sufficient depth, and install a casing with tracer wire attached to the outside along with a new service line.
- B. Installation shall be as indicated in Construction Standards.
- D. Contractor shall connect wire to existing locator wire where present. Do not connect wire to any existing steel gas mains remaining in service. Connect wire utilizing a direct bury splice kit.

3.12 PRESSURE TESTING:

- A. New Installations:
 - 1. Contractor shall subject all new piping installed to an air or nitrogen pressure test unless otherwise specified in the Contract Documents.
 - 3. Contractor shall test all new underground lines at 90 psig for a minimum of fifteen minutes. Long or larger services may require additional time, per construction standards.
 - 4. Contractor shall provide all material and equipment required for the pressure tests, including temporary test heads and gauges . Gauges shall be accurate to

within one percent and shall register the applicable test pressure near the center of the scale.

5. Inspector shall determine acceptability of all pressure tests, including the calibration history of all gauges used.
- B. Final Tie-Ins: Soap test all final connections which cannot be air pressure tested after the tie-in section is pressurized with gas.
- C. Inspector may also test any of the work after it is pressurized with gas leak detecting equipment.
- D. Leakage: If any of the above described tests on new installations result in leakage, the defective pipe, joint or fitting shall be located and repaired, and tests shall be made again after the correction is made.

3.13 CONTINUITY OF SERVICE:

- A. Contractor shall follow direction of the Inspector to maintain a maximum degree of continuous service to City Utilities' customers.
- B. Service shall not be interrupted overnight unless special arrangements are made with the involved customers by Contractor.
- C. Once Contractor has begun a specific procedure which requires an interruption of service, Inspector shall have the authority to require the Contractor to work continuously until said service is restored.
- D. Contractor shall notify customers 24 hours in advance of service interruptions.

3.14 RESTORATION OF SERVICE:

Contractor must have the ability to restore gas service to Customer, and relight all gas appliances. However, City Utilities will typically perform this type of work. When Contractor is required to restore service, they shall notify Inspector once all appliances are re-lit and work is complete

3.15 RETIRED GAS MAIN AND SERVICES:

- A. Other than minimum lengths as shown on the drawing and where retired gas main conflicts with the installation of this projects' improvements, Contractor may leave retired gas main in place. All retired gas mains shall be purged with air to be free from gas and have the ends plugged or sealed with caps or foam sealant, as approved by the Inspector.

3.16 PIPING WITH ASBESTOS COATING REPAIRS, DEMOLITION, AND DISPOSAL

Work on piping with asbestos material within the coating of the pipe shall only be performed by OSHA trained personnel overseen by a "competent person" as defined by OSHA. All work shall be in accordance with EPA's *National Emission Standards for Hazardous Air Pollutants (NESHAP)*, EPA's *Governmental Employee Worker Protection Rule*, and *Missouri DNR's Air Asbestos Rule*.

- A. Excavation: When excavating a gas pipe with asbestos coating, take precautions to prevent the backhoe teeth from scraping or gouging the pipe.
- B. Pipe Preparation: Piping with asbestos coatings must be kept wet at all times while cutting, scraping, chipping, or otherwise abrading the pipe coating. Water mixed with a surfactant (soap, detergent or other agent, designed to reduce surface tension of the water) must be used to wet the pipe. A Hudson type sprayer shall be used to apply the solution. The solution shall be applied frequently to areas of the pipe coating being removed.

- C. Cutting and Coring (tapping and tie-ins): Piping with asbestos coating shall *never* be cut using a high-speed mechanical saw without first removing the coating. When tapping or coring, remove all coating from the affected area prior to installing any tapping fittings on piping with asbestos containing coating. A hammer or similar tool shall be used to break away large chunks of the coating from the pipe. A putty knife or similar tool shall be used to remove any remaining layers of the asphaltic coating. Plastic sheeting shall be placed beneath or beside the pipe to collect all coating as it is removed. Treat all collected coating, dust, crumbs as asbestos waste. Once coating removal is complete, ensure that all pieces of coating are retained on the plastic sheeting and properly disposed.
- D. Retirement/Removal: Unless otherwise indicated on the drawings, all existing piping with asbestos containing coating shall be abandoned in place. All cost for the proper disposal of pipe; which is removed without direction and written authorization of the Resident Engineer, shall be borne by the Contractor.
- E. Decontamination: All tools and equipment used during the maintenance of piping with asbestos coating shall be thoroughly cleaned with soap, water, and disposable towels. All materials such as towels used for cleaning, gloves, or plastic sheeting that becomes contaminated with asbestos containing material shall be disposed of properly.
- F. Disposal: Contractor is responsible for ensuring all sections and pieces of piping with asbestos containing coating that cannot be abandoned in place are properly packaged and disposed of at a licensed solid waste landfill approved by CU. This also includes any coating debris collected. Prevent damage to the coating when transporting pipe sections. Frayed coating edges must be wrapped in plastic or secured with duct tape. The pipe length should be limited to 20 feet, or as dictated by the disposal contractor. Do not transport pipe with loose coating unless it is adequately wrapped in plastic. If desired, CU will assist the Contractor in the landfill's waste approval process. However, costs for disposal are borne by the Contractor, unless otherwise indicated on the drawings or in these specifications. Contractor will document disposal by providing to CU the waste manifest(s) signed and returned to the Contractor by the landfill representative.

END OF SECTION

**SECTION 02700
PAVING AND SURFACING**

PART I GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, pavement replacement in streets, driveways and sidewalks.

1.02 RELATED WORK SPECIFIED ELSEWHERE: Excavation and Backfilling; Section 02315.

PART II MATERIALS AND EQUIPMENT

2.01 Meet appropriate jurisdictional agency paving standards.

PART III EXECUTION

3.01 GENERAL PAVING REPLACEMENT:

- A. When trench excavations are made in existing paving in streets, parking lots or driveways, backfill immediately with compacted granular material according to excavation specifications to restore access.
- B. Contractor must then notify Inspector that work is complete. Inspector will then arrange for other contractors to provide temporary as well as permanent pavement repairs.
- C. Contractor will be responsible for any additional pavement repairs necessary due to their carelessness during construction.

END OF SECTION

**SECTION 02900
LANDSCAPING**

PART 1 GENERAL

1.01 DESCRIPTION: Includes, but is not limited to, the items listed below.

- A. Performing preliminary cleanup.
- B. Planting bushes, trees or plants.
- C. Applying topsoil to disturbed areas on right-of-way and easements.
- D. Hydraulic seeding of disturbed areas.
- E. Cultivation and drilling of disturbed pasture or cropland areas.
- F. Re-seeding during specified seeding windows.
- G. All disturbed areas to be restored to as good as or better than original condition.
- H. The Inspector will determine pre-existing conditions and will designate areas that need to be seeded, sodded and/or landscaped.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

- A. Excavation and Backfilling; Section 02315.
- B. Demolition and Clearing; Section 02220.

PART II MATERIALS AND EQUIPMENT

2.01 TOPSOIL:

- A. Fertile, friable soil of loamy character, free of sub-soil, stumps, refuse and other foreign material.
- B. Normal amount of natural humus and reasonably free of roots, hard dirt, heavy or stiff clay, coarse sand, noxious weeds, noxious weed seeds, sticks, brush and other litter.
- C. Obtained from well-drained, arable land and be of an even texture.
- D. Not infested with nematodes or with any other noxious animal life or toxic substances.
- E. Sandy loam of low fertility, even though mixed with leaf mold, manure or other fertilizers is not acceptable.

2.02 GRASS SEED:

- A. Clean, dry new crop seed.
- B. Provide grass seed for established areas in a blend as specified below, unless directed otherwise by the landowner or Inspector:
 - 1. 75% by weight of a three-way blend (equal parts) of turf fescues, consisting of any three of the following varieties: Olympic, Falcon, Bonanza, Rebel, Hound Dog, Astro 2000, Eldorado, Wrangler, FineLawn One, Anthem or Apache.

2. 15% by weight of Perennial Rye, consisting of one or more of the following varieties: Affinity, Derby, Regal, Manhattan or Chateau.
 3. 10% by weight of Bluegrass, consisting of either Kentucky Bluegrass, Park Bluegrass or both.
 4. Purity 98%.
 5. Germination 85%.
- C. Complies with standards of the Official Seed Analysis of North America.
- D. Recommended for full sun exposure in Springfield, Missouri.
- E. Seed shall be free from Johnson Grass, Canadian Thistle or field bind weed seed.

2.03 FERTILIZER:

Provide a mixture containing 13 pounds each of soluble nitrogen, phosphate and potash per 100 pounds.

2.04 MULCH FOR HYDRAULICALLY SEEDED AREAS:

Provide a mixture of 50% recycled slick paper mulch and 50% ground corrugated paper mulch by weight. The recycled slick paper mulch shall be produced from printers slick paper containing wood cellulose and kaolin clay. Newsprint is not allowed. The slick paper mulch shall have a maximum moisture content of 8% by weight, and shall have a pH of 4.5 to 6.5. The corrugated paper mulch shall have a moisture capacity of 700 grams water per 100 grams dry mulch minimum, a dry moisture content of 12% maximum, and a pH of 5.0 to 8.0. All mulch materials must be free of any germination or growth-inhibiting substances, green in color, and have the property of being evenly dispersed and suspended when agitated in water.

Clean wheat straw shall be applied over the hydraulic mulch.

2.05 SOD:

Sod shall be placed as shown on the plans.

PART III EXECUTION

3.01 PRELIMINARY CLEANUP:

Clear disturbed areas, including those disturbed by trenching, storing of dirt, pipe laying, pipe storage, movement of equipment and other work of all rubbish, brush, rock, trash and excess dirt in a timely manner as soon as the ditch is backfilled, depending upon existing conditions and level of public concern. This may be required as often as daily. The Inspector will determine an appropriate schedule depending upon job conditions. Rake surface as necessary to remove all above items, including all rock measuring two-inches or more in its greatest dimension. In pasture and cropland areas, remove all above items in a timely fashion. Tractor-drawn equipment, including rock rakes and steel roller drum are allowed.

3.02 PLANTING:

Contractor shall replace individual trees, plants and shrubs as necessary or as directed by the Inspector. Plant in accordance with "Planting Trees and Shrubs" by the University of Missouri - Columbia Extension Division (Publication No. 6850). Replacement trees, plants and shrubs shall be nursery grown and of the same type, strain, size and value as those removed. Plant replacement trees, plants and shrubs as soon as possible after installation of mains, with due consideration given to optimal times of the year to plant the given species.

3.03

APPLICATION OF TOPSOIL:

Established lawn and parkway areas

After preliminary cleanup has been performed, apply topsoil meeting the requirements of PART II, MATERIALS AND EQUIPMENT to a minimum depth of four inches to disturbed areas. Pulverize topsoil and grade to match existing terrain. Rake surface smooth for sod or to provide a good seedbed for hydraulic seeding as specified below.

3.04

SEEDING:

Perform initial seeding as soon as practical after preliminary cleanup and application of topsoil. Seeding windows are specified as follows: Perform autumn seeding between August 15 and October 15, and spring seeding between March 15 and May 15. If initial seeding is performed within either of the specified seeding windows, the only additional work required of the Contractor shall be warranty work. When seeding outside a normal seeding window quick germinating seed shall be used such as winter wheat or perennial rye to establish ground cover. Contractor may be required to provide and install erosion control blankets to protect these areas. Re-seeding during the next earliest seeding window shall be considered part of the work if initial seeding falls outside either of the specified seeding windows. The Inspector will determine if re-seeding is required.

- A. **HYDRAULIC SEEDING:** Restore all disturbed areas, except for pasture and cropland, by hydraulic seeding. Mix seed, fertilizer and mulch with water and constantly agitate so that a uniform mixture can be applied hydraulically to the specified areas. Do not add the seed to the water more than four hours before application. Calculate ratios of seed, fertilizer, mulch and water so that seed will be applied at the rate of twelve pounds minimum per 1000 square feet of area, fertilizer will be applied at the rate of eight pounds minimum per 1000 square feet of area, and mulch will be applied at the rate of 1000 pounds minimum dry weight per acre. Wet application rate of the mixture shall be 2000 pounds per acre minimum. Blow wheat straw mulch onto the hydraulic mulch within one hour of application of the hydraulic mulch.
- B. Restoration of disturbed pasture and cropland areas:
 - 1. Seed bed preparation: Tillage - prepare a seed bed by use of tillage operations that leaves a seed bed free of weeds. Leave the vegetative material destroyed by such operations on the surface. Several diskings or harrowings over same area may be required to provide a satisfactory seedbed.
 - 2. Seeding method: Drilling - Plant the recommended seed with a grass drill equipped with double coulter furrow openers with depth bands and press wheels. Seed should be planted 1/4" to 1/2" deep. Cultipacking is required following seeding.
 - 3. Fertilizer requirements: Apply fertilizer at the rate 8 pounds minimum per 1,000 square feet.
 - 4. Seeding rates and mixture: Apply seed grass(es) at the rate (pure live seed or bulk seed per acre) of 30 lb/acre, or as recommended by the seed supplier.
 - 5. Where permanent seeding must be delayed due to seasonal seeding or climate conditions, quick germinating seed such as winter wheat or perennial rye will be applied. Contractor may be required to provide erosion control blanket to provide protection to the disturbed areas until vegetation can be established. Subsequently drill temporary cover with no-till methods to establish permanent crop cover.
- C. Restoration of slopes: When areas with slopes 3:1 or greater are restored a biodegradable erosion control blanket shall be installed over the seedbed to protect the slope (Propex CS2 or approved equal). Contractor shall supply the fabric and staples and install per manufacturer's recommendations.

END OF SECTION

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