

PROFESSIONAL, SPECIALIZED OR TECHNICAL SERVICES CONTRACT
PROJECT NO. 60810049 – CITY-WIDE SEWER LINE CLEANING, CLOSED CIRCUIT
TELEVISION (CCTV) INSPECTION, AND MANHOLE LOCATING AND OPENING
FOR OVERFLOW CONTROL PROGRAM PROJECTS RENEWAL NO. 2
WATER SERVICES DEPARTMENT

THIS CONTRACT is between KANSAS CITY, MISSOURI, a constitutionally chartered municipal corporation (“City”), and Ace Pipe Cleaning, Inc. (“Contractor”). City and Contractor agree as follows:

PART I
SPECIAL TERMS AND CONDITIONS

Sec. 1. Compensation.

- A. The amount the City will pay Contractor under this contract will not exceed \$1,500,000.00.
- B. Contractor will bill the City, as described in Task 104 of Attachment A-Scope of Services on a unit price basis and hourly rate basis as listed in Attachment B-Unit Prices, in a form acceptable to the City.
- C. It shall be a condition precedent to payment of any invoice from Contractor that Contractor is in compliance with, and not in breach or default of, all terms, covenants and conditions of this Contract. If damages are sustained by City as a result of breach or default by Contractor, City may withhold payment(s) to Contractor for the purpose of set off until such time as the exact amount of damages due City from Contractor may be determined.
- D. No request for payment will be processed unless the request is in proper form, correctly computed, and is approved as payable under the terms of this Contract.
- E. No request for payment will be processed unless it is accompanied by a copy of the most recent 00485.01 M/WBE Monthly Utilization Report submitted to the City’s Human Relations Department.
- F. City is not liable for any obligation incurred by Contractor except as approved under the provisions of this Contract.

Sec. 2. Responsibilities of Contractor. Contractor shall perform the following Scope of Services: **See Attachment A – Scope of Services.**

Sec. 3. Notices. All notices required by this Agreement shall be in writing to the following:

City:

Office of the Director
Address: 4800 East 63rd Street
Kansas City, MO 64130
Phone: (816) 513-0504
E-mail address: Wes.Minder@kcmo.org

Contractor:

Ace Pipe Cleaning, Inc.
Mark Calvert
6601 Universal Avenue
Kansas City, Missouri 64120
Phone: (816) 241-2891
E-mail address: mcalvert@acepipe.com

All notices are effective a) when delivered in person, b) upon confirmation of receipt when transmitted by facsimile transmission or by electronic mail, c) upon receipt after dispatch by registered or certified mail, postage prepaid, d) on the next business day if transmitted by overnight courier (with confirmation of delivery), or e) three business days after the date of mailing, whichever is earlier.

Sec. 4. Merger. This Contract consists of Part I, Special Terms and Conditions and any Attachments and any documents incorporated by reference; and Part II, Standard Terms and Conditions. This Contract, including any Attachments and incorporated documents, constitutes the entire agreement between City and Contractor with respect to this subject matter.

Sec. 5. Conflict Between Contract Parts. In the event of any conflict or ambiguity between the Special Terms and Conditions of Part I and the Standard Terms and Conditions of Part II of this Contract, Part I will be controlling.

Sec. 6. Term of Contract. The work to be performed under this contract shall begin on the date specified in the written Notice to Proceed issued by the Office of Director for Water Services. The work shall be completed within schedule provided in Part II of **Attachment A-Scope of Services**. The Director is authorized to enter in to an amendment to extend the term of this Contract and time of performance for this Contract.

The period of performance under the contract is provided in the Scope of Services at fixed and firm prices with a unilateral contractual right on the part of the City to extend this price agreement for an additional three (2) one-year periods. The continuation of the incumbent Contractor in the option year(s) is a prerogative of the City and is not a contractual right of the Contractor. The City's decision in regard to exercising the option(s) is not subject to appeal. The option year prices will be determined by the City by negotiation with the Contractor. NOTE: YEARLY INCREASES ARE NOT AUTOMATIC. THE CONTRACTOR MUST PROVIDE WRITTEN PROOF THAT THE REQUESTED INCREASE IS WARRANTED.

Sec. 7. Attachments to Part I. The following documents are Attachments to Part I of this Contract and are attached hereto and incorporated herein by this reference:

Attachment A – Scope of Services

Attachment B – Unit Prices

Attachment C – CREO KC Documents

CREO KC 08: Contractor Utilization Plan/Request for Waiver

CREO KC 10: Timetable for MBE/WBE Utilization

CREO KC 11: Request for Modification or Substitution

00450.01: Letter of Intent to Subcontract

01290.14: Contractor Affidavit for Final Payment

01290.15: Subcontractor Affidavit for Final Payment

Attachment D – 00616 Performance Bond
Attachment E – 00515.01 Employee Eligibility Verification Affidavit
Attachment F – Non-Construction Subcontractor List
Attachment G – Sewer Pipe Inspection Protocol
Attachment H – 02676 Sewer Line Cleaning Specification
Attachment I – 02180 Clearing and Grubbing Specification

Sec. 8. Responsibilities of City. See **Attachment A-Scope of Services.**

Sec. 9. Subcontracting. Contractor agrees that it will only subcontract with the subcontractor(s) it has listed on **Attachment F-Subcontractor List Non-Construction.**

Sec. 10. Contract Information Management System. Contractor shall comply with City's Contract Information Management System requirements. Contractor shall use City's Internet web-based Contract Information Management System/Project Management Communications Tool provided by City and protocols included in that software during the term of this Contract. Contractor shall maintain user applications to City's provided system for all personnel, subcontractors or suppliers as applicable.

Sec. 11. Minority and Women's Business Enterprises. City is committed to ensuring that minority and women's business enterprises (M/WBE) participate to the maximum extent possible in the performance of City contracts. If M/WBE participation goals have been set for this Contract, Contractor agrees to comply with all requirements of City's Minority and Women's Business Enterprise Program as enacted in City's Code Sections 3-421 through 3-469 and as hereinafter amended. Contractor shall make its good faith efforts in carrying out this policy by implementing its contractor utilization plan, which is attached as an document in **Attachment C.** If Contractor fails to achieve the M/WBE goals stated in its contractor utilization plan, as amended, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain or estimate at the time of execution of this contract. Therefore, in order to liquidate those damages, the monetary difference between the amount of the M/WBE goals set forth in this contractor utilization plan, as amended, and the amount actually paid to qualified MBEs and WBEs for performing a commercially useful function will be deducted from the Contractor's payments as liquidated damages. In determining the amount actually paid to qualified MBEs and WBEs, no credit will be given for the portion of participation that was not approved by the Director of City's Human Relations Division, unless the Director determines that the Contractor acted in good faith. No deduction for liquidated damages will be made when, for reasons beyond the control of the Contractor, the M/WBE participation stated in the Contractor Utilization Plan, as amended and approved by the Director, is not met.

Sec. 12. Performance Bond. Contractor shall furnish a Performance Bond to City on City furnished forms executed by a Surety, in the amount of \$1,500,000.00 guaranteeing Contractor's faithful performance of each and every term of this Contract and all authorized changes.

All bonds required to be purchased and maintained by Contractor shall be obtained from surety or insurance companies that are duly licensed in the State of Missouri and in the jurisdiction in which the Project is located, if not in Missouri, to issue bonds for the limits and coverages so required. All surety and insurance companies shall hold an A.M. Best rating of B+, V, or better. A certified copy of the agent's authority to act must accompany all bonds signed by an agent.

If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state where any part of the Project is located, Contractor shall within twenty (20) days thereafter substitute another bond and surety, both of which must be acceptable to City.

Sec. 13. Intellectual Property Rights. Contractor agrees, on its behalf and on behalf of its employees and agents, that it will promptly communicate and disclose to City all computer programs, documentation, software and other copyrightable works (“copyrightable works”) conceived, reduced to practice or made by Contractor or its agents, whether solely or jointly with others, during the term of this Contract resulting from or related to any work Contractor or its agents may do on behalf of City or at its request. All inventions and copyrightable works that Contractor is obligated to disclose shall be and remain entirely the property of City. It is agreed that all inventions and copyrightable works are works made for hire and shall be the exclusive property of City. Contractor hereby assigns to City any rights it may have in such copyrightable works. Contractor shall cooperate with City in obtaining any copyrights or patents.

Sec. 19. Effectiveness; Date. This contract will become effective when the City's Director of Finance has signed it. The date this contract is signed by the City's Director of Finance will be deemed the date of this contract.

Each party is signing this contract on the date stated opposite the party's signature.

THIS CONTRACT CONTAINS INDEMNIFICATION PROVISIONS

CONTRACTOR

I hereby certify that I have authority to execute this document on behalf of Contractor

Date: _ _ _ _

By: _____

Name: _____

Title: _____

KANSAS CITY, MISSOURI

Date: _ _ _ _

By: _____

Name: Wes Minder, P.E.

Title: Water Services Director

Approved as to form:

Assistant City Attorney

I hereby certify that there is a balance, otherwise unencumbered, to the credit of the appropriation to which the foregoing expenditure is to be charged, and a cash balance, otherwise unencumbered, in the treasury, to the credit of the fund from which payment is to be made, each sufficient to meet the obligation hereby incurred.

Director of Finance

Date

PART II

STANDARD TERMS AND CONDITIONS

Sec. 1. Indemnification: Definitions

A. For purposes of this Section 1 only, the following terms shall have the meanings listed:

a. **Claims** means all claims, damages, liability, losses, costs and expenses, court costs and reasonable attorneys' fees, including attorneys' fees incurred by the City in the enforcement of this indemnity obligation.

b. **Contractor's Agents** means Contractor's officers, employees, subconsultants, subcontractors, successors, assigns, invitees, and other agents.

c. **City** means City and its agents, officials, officers and employees.

B. Contractor's obligations under this Paragraph with respect to indemnification for acts or omissions, including negligence, of City, shall be limited to the coverage and limits of insurance that Contractor is required to procure and maintain under this Contract. Contractor affirms that it has had the opportunity to recover the costs of the liability insurance required in this Contract in its contract price.

C. Contractor shall defend, indemnify and hold harmless City from and against all claims arising out of or resulting from all acts or omissions in connection with this Contract caused in whole or in part by Contractor or Contractor's Agents, regardless of whether or not caused in part by any act or omission, including negligence, of City. Contractor is not obligated under this Section to indemnify City for the sole negligence of City.

D. Nothing in this section shall apply to indemnification for professional negligence which is specified in a separate provision of this Contract.

E. In no event shall the language in this Section constitute or be construed as a waiver or limitation of the City's

rights or defenses with regard to sovereign immunity, governmental immunity, or other official immunities and protections as provided by the federal and state constitutions or by law.

Sec. 2. Indemnification for Professional Negligence.

If this contract is for professional services, Contractor shall indemnify, and hold harmless City and any of its agencies, officials, officers, or employees from and against all claims, damages, liability, losses, costs, and expenses, including reasonable attorneys' fees, arising out of any negligent acts or omissions in connection with this Contract, caused by Contractor, its employees, agents, subcontractors, or caused by others for whom Contractor is liable, in the performance of professional services under this Contract. Contractor is not obligated under this section to indemnify City for the negligent acts of City or any of its agencies, officials, officers, or employees.

Sec. 3. Independent Contractor.

Contractor is an independent contractor and is not City's agent. Contractor has no authority to take any action or execute any documents on behalf of City.

Sec. 4. Insurance.

A. Contractor shall procure and maintain in effect throughout the duration of this Contract insurance coverage not less than the types and amounts specified in this section. In the event that additional insurance, not specified herein, is required during the term of this Contract, Contractor shall supply such insurance at City's cost. Policies containing a Self-Insured Retention are unacceptable to City unless City approves in writing the Contractor's Self-Insured Retention.

1. Commercial General Liability Insurance: with limits of \$1,000,000 per occurrence and \$2,000,000 aggregate, written on an "occurrence" basis. The policy shall be written or endorsed to include the following provisions:

- a. Severability of Interests Coverage applying to Additional Insureds
- b. Per Project Aggregate Liability Limit or, where not available, the aggregate limit shall be \$2,000,000.
- c. No Contractual Liability Limitation Endorsement.
- d. Additional Insured Endorsement, ISO form CG20 10, or its equivalent.

2. If applicable, Workers' Compensation Insurance, as required by statute, including Employers Liability with limits of:

Workers' Compensation Statutory Employers Liability \$100,000 accident with limits of:

- \$500,000 disease-policy limit
- \$100,000 disease-each employee

3. Commercial Automobile Liability Insurance: with a limit of \$1,000,000 written on an "occurrence" basis, covering owned, hired, and non-owned automobiles. If the Contractor owns vehicles, coverage shall be provided on an "any auto" basis. If the Contractor does not own any vehicles, coverage shall be provided on a "hired autos" and "nonowned autos" basis. The insurance will be written on a Commercial Business Auto form, or an acceptable equivalent, and will protect against claims arising out of the operation of motor vehicles, as to acts done in connection with the Agreement, by Contractor.

4. If applicable, Professional Liability Insurance with limits per claim and annual aggregate of \$1,000,000.

B. The Commercial General Liability Insurance specified above shall provide that City and its agencies, officials, officers, and employees, while acting within the scope of their authority, will be named as additional insureds for the services performed under this Contract. Contractor shall provide to City at execution of this Contract a certificate of insurance showing all required endorsements and additional insureds. The certificates of insurance will contain a provision stating that should any of the policies described in the certificate be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

C. All insurance coverage must be written by companies that have an A.M. Best's rating of

"A-V" or better, and are licensed or approved by the State of Missouri to do business in Missouri.

D. Contractor's failure to maintain the required insurance coverage will not relieve Contractor of its contractual obligation to indemnify the City pursuant to Sections 1 and 2. If the coverage afforded is cancelled or changed or its renewal is refused, Contractor shall give at least thirty (30) days prior written notice to City. In the event of Contractor's failure to maintain the required insurance in effect, City may order Contractor to immediately stop work, and upon ten (10) days notice and an opportunity to cure, may pursue its remedies for breach of this Contract as provided for herein and by law.

E. In no event shall the language in this Section constitute or be construed as a waiver or limitation of the City's rights or defenses with regard to sovereign immunity, governmental immunity, or other official immunities and protections as provided by the federal and state constitutions or by law.

Sec. 5. Governing Law.

This Contract shall be construed and governed in accordance with the laws of the State of Missouri without giving effect to Missouri's choice of law provisions. The City and Contractor: (1) submit to the jurisdiction of the state and federal courts located in Jackson County, Missouri; (2) waive any and all objections to jurisdiction and venue; and (3) will not raise forum *non conveniens* as an objection to the location of any litigation.

Sec. 6. Compliance with Laws.

Contractor shall comply with all federal, state and local laws, ordinances and regulations applicable to the work and this Agreement. Contractor shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under this Agreement..

Sec. 7. Termination for Convenience.

A. City may, at any time upon ten (10) days notice to Contractor specifying the effective date of termination, terminate this Contract, in whole or in part. If this Contract is terminated by City, City shall be liable only for payment for services rendered before the effective date

of termination. Contractor shall prepare an accounting of the services performed and money spent by Contractor up to the effective date of termination and shall return to City any remaining sums within thirty (30) days of such date.

B. If this Contract is terminated prior to Contractor's completion of services, all work or materials prepared or obtained by Contractor pursuant to this contract shall become City's property.

C. If this Contract is terminated prior to Contractor's completion of the services to be performed hereunder, Contractor shall return to City any sums paid in advance by City for services that would otherwise have had to be rendered between the effective date of termination and the original ending date of the Contract. Contractor shall prepare an accounting of the services performed and money spent by Contractor up to the effective date of termination and shall return to City any remaining sums within thirty (30) days of such date.

Sec. 8. Default and Remedies.

If Contractor shall be in default or breach of any provision of this Contract, City may terminate this contract, suspend City's performance, withhold payment or invoke any other legal or equitable remedy after giving Contractor notice and opportunity to correct such default or breach.

Sec. 9. Waiver.

Waiver by City of any term, covenant, or condition hereof shall not operate as a waiver of any subsequent breach of the same or of any other term, covenant or condition. No term, covenant, or condition of this Contract can be waived except by written consent of City, and forbearance or indulgence by City in any regard whatsoever shall not constitute a waiver of same to be performed by Contractor to which the same may apply and, until complete performance by Contractor of the term, covenant or condition, City shall be entitled to invoke any remedy available to it under this Contract or by law despite any such forbearance or indulgence.

Sec. 10. Modification.

Unless stated otherwise in this Contract, no provision of this Contract may be waived, modified or amended except in writing signed by City.

Sec. 11. Headings; Construction of Contract.

The headings of each section of this Contract are for reference only. Unless the context of this Contract clearly requires otherwise, all terms and words used herein, regardless of the number and gender in which used, shall be construed to include any other number, singular or plural, or any other gender, masculine, feminine or neuter, the same as if such words had been fully and properly written in that number or gender.

Sec. 12. Severability of Provisions.

Except as specifically provided in this Contract, all of the provisions of this Contract shall be severable. In the event that any provision of this Contract is found by a court of competent jurisdiction to be unconstitutional or unlawful, the remaining provisions of this Contract shall be valid unless the court finds that the valid provisions of this Contract are so essentially and inseparably connected with and so dependent upon the invalid provision(s) that it cannot be presumed that the parties to this Contract could have included the valid provisions without the invalid provision(s); or unless the court finds that the valid provisions, standing alone, are incapable of being performed in accordance with the intentions of the parties.

Sec. 13. Records.

A. For purposes of this section:

1. "City" shall mean the City Auditor, the City's Internal Auditor, the city's Director of Human Relations, the city Manager, the City department administering this Contract and their delegates and agents.

2. "Record" shall mean any document, book, paper, photograph, map, sound recordings or other material, regardless of physical form or characteristics, made or received in connection with this Contract and all Contract amendments and renewals.

B. Contractor shall maintain and retain all Records for a term of five (5) years that shall begin after the expiration or termination of this Contract and all Contract amendments. City shall have a right to examine or audit all Records and Contractor shall provide access to City of all Records upon ten (10) days written notice from the City.

C. The books, documents and records of Contractor in connection with this Contract shall be made available to the City Auditor, the City's Internal Auditor, the City's Director of Human Relations and the City department administering this Contract within ten (10) days after the written request is made.

Sec. 14. Affirmative Action.

If this Contract exceeds \$300,000.00 and Contractor employs fifty (50) or more people, Contractor shall comply with City's Affirmative Action requirements in accordance with the provisions of Chapter 38 of City's Code, the rules and regulations relating to those sections, and any additions or amendments thereto; in executing any Contract subject to said provisions, Contractor warrants that it has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract. Contractor shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 38 of City's Code. CONTRACTOR shall:

a. Execute and submit the City of Kansas City, Missouri CREO Affirmative Action Program Affidavit warranting that the Contractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract.

b. Submit, in print or electronic format, a copy of Contractor's current certificate of compliance to the City's Civil Rights and Equal Opportunity Department (CREO) prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years. If, and only if, Contractor does not

possess a current certification of compliance, Contractor shall submit, in print or electronic format, a copy of its affirmative action program to CREO prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years.

c. Require any Subcontractor awarded a subcontract exceeding \$300,000.00 to affirm that Subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.

d. Obtain from any Subcontractor awarded a subcontract exceeding \$300,000.00 a copy of the Subcontractor's current certificate of compliance and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed. If, and only if, Subcontractor does not possess a current certificate of compliance, Contractor shall obtain a copy of the Subcontractor's affirmative action program and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed.

Sec. 15. Tax Compliance.

Contractor shall provide proof of compliance with the City's tax ordinances administered by the City's Commissioner of Revenue as a precondition to the City making the first payment under this contract or any contract renewal when the total contract amount exceeds \$150,000.00. If contractor performs work on a contract that is for a term longer than one (1) year, the contractor also shall submit to the City proof of compliance with the City's tax ordinances administered by the City's Commissioner of Revenue as a condition precedent to the City making final payment under the contract.

Sec. 16. Assignability and Subcontracting

(a) Assignability. Contractor shall not assign or transfer any part or all of Contractor's obligation or interest in this Contract without

prior written approval of City. If Contractor shall assign or transfer any of its obligations or interests under this Contract without the City's prior written approval, it shall constitute a material breach of this Contract. This provision shall not prohibit contractor from subcontracting as otherwise provided for herein.

(b) Subcontracting. Contractor shall not subcontract any part or all of Contractor's obligations or interests in this Contract unless the subcontractor has been identified in a format required by City. If Contractor shall subcontract any part of Contractor's obligations or interests under this Contract without having identified the subcontractor, it shall constitute a material breach of this Contract. The utilization of subcontractors shall not relieve Contractor of any of its responsibilities under the Contract, and Contractor shall remain responsible to City for the negligent acts, errors, omissions or neglect of any subcontractor and of such subcontractor's officers, agents and employees. City shall have the right to reject, at any point during the term of this Contract, any subcontractor identified by Contractor, and to require that any subcontractor cease working under this Contract. City's right shall be exercisable in its sole and subjective discretion. City shall not be obligated to pay or be liable for payment of any monies which may be due to any subcontractor. Contractor shall include in any subcontract a requirement that the subcontractor comply with all requirements of this Contract in performing Contractor's services hereunder.

Sec. 17. Conflicts of Interest.

Contractor certifies that no officer or employee of City has, or will have, a direct or indirect financial or personal interest in this Contract, and that no officer or employee of City, or member of such officer's or employee's immediate family, either has negotiated, or has or will have an arrangement, concerning employment to perform services on behalf of Contractor in this Contract.

Sec. 18. Buy American Preference.

It is the policy of the City that any manufactured goods or commodities used or supplied in the performance of any City contract or any subcontract thereto shall be manufactured or produced in the United States whenever possible.

Sec. 19. Professional Services – Conflict of Interest Certification.

If this Contract is for professional services other than for medical doctors or appraisers, Contractor certifies that Contractor is not an expert witness for any party in litigation against the City at the time of the issuance of this Contract.

Sec. 20. Attorney Services – Conflict of Interest Certification.

If this Contract is for professional attorney services, Contractor certifies that Contractor and any of its individual attorneys, do not represent any party in litigation against the City at the time of the issuance of this Contract. Contractor's certification shall not apply to: representation in municipal court; attorneys employed by a not-for-profit legal services corporation; litigation where the City is named as a nominal party; litigation that has been filed with the agreement of the City and the party represented by the attorney; or where the City Council has otherwise waived this requirement. Nothing set forth in this section shall be deemed to supersede the Rules of Professional Conduct for Attorneys.

Sec. 21. Employee Eligibility Verification

If this Contract exceeds five thousand dollars(\$5,000.00), Contractor shall execute and submit an affidavit, in a form prescribed by City, affirming that Contractor does not knowingly employ any person in connection with the contracted services who does not have the legal right or authorization under federal law to work in the United States as defined in 8 U. S. C. § 1324a(h)(3). Contractor shall attach to the affidavit documentation sufficient to establish Contractor's enrollment and participation in an electronic verification of work program operated by the United States Department of Homeland Security (E-Verify) or an equivalent federal work authorization program operated by the United States Department of

Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986. Contractor may obtain additional information about E-Verify and enroll at www.dhs.gov/xprevprot/programs/gc_118522_1678150.shtm. For those Contractors enrolled in E-Verify, the first and last pages of the E-Verify Memorandum of Understanding that Contractor will obtain upon successfully enrolling in the program shall constitute sufficient documentation for purposes of complying with this Section. Contractor shall submit the affidavit and attachments to the City prior to execution of the Contract, or at any point during the term of the Contract if requested by City.

Sec. 22 Quality Assurance Act.

If this Contract exceeds \$160,000.00, CONTRACTOR certifies CONTRACTOR will pay all employees who will work on this Contract in the city limits of Kansas City, Missouri at least \$15.00 per hour in compliance with the CITY's Quality Services Assurance Act, Section 3-66, Code of Ordinances or CITY has granted CONTRACTOR an exemption.

Sec. 23 Anti-Discrimination Against Israel.

If this Contract exceeds \$100,000.00 and Design Professional employs at least ten employees, pursuant to Section 34.600, RSMo., by executing this Contract, Design Professional certifies it is not currently engaged in and shall not, for the duration of this contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

Sec. 24 Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall, on the grounds of race, color, or national or origin (including limited English proficient individuals), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The City of Kansas City, Missouri requires

compliance with the requirements of Title VI in all of its programs and activities regardless of the funding source.

Contractor shall not discriminate on the grounds of race, color, or national or origin (including limited English proficient individuals).

ATTACHMENT A

SCOPE OF SERVICES

ATTACHMENT A

SCOPE OF SERVICES

Contractor: Ace Pipe Cleaning, Inc.
Owner: City of Kansas City, Missouri
Project: City-Wide Sewer Line Cleaning, Closed Circuit Television (CCTV) Inspection, and Manhole Locating and Opening for Overflow Control Program Projects Renewal No. 2
Contract No: 1277-2
Project No: 60810049

I. GENERAL

The following paragraphs provide a general description of the Work required of this Scope of Services. Subsequent paragraphs describe in detail the services to be provided by CONTRACTOR for completion of sewer line cleaning, CCTV inspection, manhole locating, manhole cover opening, and easement clearing in Kansas City, Missouri.

- A. The Project. The City of Kansas City (CITY), Missouri intends to perform sewer line cleaning and CCTV inspection of the sewers in support of various projects located in multiple drainage basins and the Annual Sewer Rehabilitation (ASR) program. As such, the CITY is contracting with CONTRACTOR to provide the necessary services.
- B. Background Information. The CITY is undertaking this Project to evaluate sewers in support of reducing sewer overflows in the sanitary and combined sewer system by implementing city-wide rehabilitation recommendations to be performed by others. Sewer line cleaning and CCTV inspection will be performed to obtain detailed sewer condition assessment data for evaluation by others and for projects under the CITY's Smart Sewer Program (SSP). Data/video processing and quality control and quality assurance shall be conducted by the CONTRACTOR. Specific sewer lines to be cleaned and CCTV inspected by CONTRACTOR will be provided by the CITY. A majority of the sewer cleaning and CCTV inspection will occur in pipe with diameters of less than 48 inches; however, there will be some sewer cleaning and CCTV inspection of sewer lines up to 118-inches in diameter. In addition:
1. CONTRACTOR shall open manhole lids identified by CITY's SSP Team as "could not open" (CNO).
 2. CONTRACTOR shall locate, expose and verify buried or sunken manholes that could not be located (CNL) by CITY's SSP Team or that are identified by CONTRACTOR's field or CCTV inspection crews.
 3. CONTRACTOR shall perform clearing and grubbing in easements as necessary to obtain access to manholes for cleaning and CCTV inspections.
- C. Follow-On Phases. At the discretion of the CITY, the CONTRACTOR may be requested to provide additional services.

- D. General Description of Activities. The Basic Scope of Services to be performed by CONTRACTOR consists of furnishing all labor, equipment and materials (as necessary) for sewer line cleaning and CCTV inspection, locating and opening manholes, opening covers on manholes previously located by CITY's SSP Team, and clearing and grubbing as necessary to obtain access to manholes for cleaning and CCTV inspection and manhole locating.
- E. Task Series Listing. The Basic Scope of Services is organized under the following Task Series:
1. Task Series 100 - Project Management and Administration
 2. Task Series 200 - Sewer Line Cleaning
 3. Task Series 300 - CCTV Inspection
 4. Task Series 400 - Manhole Locating and Opening
 5. Task Series 500 - Clearing and Grubbing In Easements
- F. Explicit Responsibilities. The Basic Scope of Services explicitly sets forth what CONTRACTOR shall perform and does not implicitly put any additional responsibilities or duties upon the CONTRACTOR. The CONTRACTOR agrees to provide the specific Basic Services as identified herein. CONTRACTOR shall provide unit prices, hourly rates, and a proposed not-to-exceed price for the services and quantities described in **Attachment B**.
- G. Out of Scope Services. The CONTRACTOR agrees to provide the specific Basic Services as identified herein; work not specifically discussed herein will not be performed without an amendment or written authorization from the CITY.
- H. Detailed Task Descriptions. The CONTRACTOR will provide the following Basic Services for each Task Series as written below. All activities described herein shall be performed in accordance with the *Kansas City, Missouri Water Services Department Sewer Pipe Inspection Protocol* (PROTOCOL) dated October 2022, Section 02676 - Sewer Line Cleaning and Section 02200 - Clearing Grubbing. The PROTOCOL, specifications 02676 and 02200 are incorporated into this Contract as **Attachments G, H, and I**, respectively.

II. PROJECT SCHEDULE MILESTONES

- A. CONTRACTOR shall complete all Work and all deliverables shall be accepted by CITY for Task Series 100 through 500, no later than 360 calendar days after Notice to Proceed (NTP), with exception of sewer lines that could not be accessed by CONTRACTOR for reasons beyond CONTRACTOR's control as determined by CITY.
- B. CITY will perform quality control reviews within three (3) weeks upon receipt of deliverable and will provide CONTRACTOR

III. BASIC SCOPE OF SERVICES

- A. The CONTRACTOR will provide the following Basic Services for each Task Series as written below.

TASK SERIES 100 - PROJECT MANAGEMENT AND ADMINISTRATION

The purpose of Project Management and Administration will be to manage, direct and oversee each element of Basic Services identified herein and subcontractors employed by the CONTRACTOR in completion of the Work. The following management activities will be provided by CONTRACTOR.

Task 101 Project Management Services

CONTRACTOR will provide project management services necessary for the administration of the Project, including efforts required for proper resource allocation, schedule development and monitoring, budget review and control, client coordination, internal quality assurance/quality control (QA/QC) activities and other standard and customary activities required for timely completion of the Work. CONTRACTOR will prepare and submit invoices in a form that is acceptable to the CITY. CONTRACTOR shall deliver daily notification via e-mail to CITY project manager identifying number of crews and approximate working location of each crew for the day.

Task 102 Schedule Development and Monitoring

CONTRACTOR shall submit a proposed project schedule for the CITY's acceptance within ten (10) calendar days after a written Notice to Proceed is issued by the CITY. The proposed project schedule shall include a detailed and comprehensive schedule utilizing a critical path method diagram network that shows start and finish Milestone dates for each deliverable including field work and all other activities necessary to meet the contract completion dates stated in Section II, Paragraph A. After final acceptance of the proposed project schedule by the CITY, it shall be considered the project baseline schedule and shall be used by the CONTRACTOR for planning, scheduling, managing, and executing the Work. The project baseline schedule shall not be changed without the written consent of CITY. CONTRACTOR shall provide, at least once every thirty (30) calendar days, updated information on the project schedule. The updated information on the project schedule shall not modify any Milestone dates in the project schedule that the CITY has previously approved.

Task 103 Monthly Project Progress Status Reports

CONTRACTOR shall prepare and submit to CITY monthly project progress status reports that identify the Work that has been performed in the period, work activities anticipated in the next month, action items required of the CITY for an efficient and effective delivery of CONTRACTOR's services, potential project scope variances with corrective actions suggested by CONTRACTOR, a general assessment of CONTRACTOR's ability to meet project HRD goals and schedule milestones, including identification of any delays beyond its control, and an estimate of the work percent completion for each task series in the Scope of Services based on the value of the work completed.

The monthly project status report shall also include a 'Project Summary Report', 'Cannot Access List with Map of Proposed Clearing Requests (if applicable)', and 'Cable Footage Calibration Logs', all in accordance with the CCTV PROTOCOL. In addition, the CONTRACTOR shall provide a monthly project schedule update and a summary table showing; the total length of sewer within each basin, the length of sewer that has been cleaned and/or CCTV inspected, the length of sewer that needs to be cleaned and/or CCTV inspected, total number of CNL and CNO manholes within each basin, number of CNL/CNO manholes completed, number of CNL/CNO manholes to be completed, and percent complete for all quantified work elements.

A short narrative shall be provided describing the work activities performed for each task within a given task series. CITY will provide direction to CONTRACTOR in a timely manner with respect to each potential variance discussed in each monthly project progress status report.

Task 104 Invoicing

CONTRACTOR shall submit invoices for Task Series 200, 300 and 400 at each deliverable completion. CONTRACTOR will not be paid until the data has been accepted by CITY in accordance with the CITY's quality control and quality assurance process as described in the PROTOCOL. CONTRACTOR shall be paid the unit prices and hourly rates listed in **Attachment B**. To be paid the hourly rates CONTRACTOR shall meet or exceed the "Minimum Requirements for Hourly Rates" as detailed in **Attachment B**.

Each invoice submittal will consist of 1) an invoice showing unit rates and quantities for each Task Series with backup as required, 2) a M/WBE utilization report required by the CITY's Human Relations Department (HRD).

Task 105 Monthly Project Coordination Meetings

Participate in up to twelve (12) monthly coordination meetings to discuss submittals, project progress, budget and schedule status, current issues, and potential variances in the scope of work. Anticipated future activities and CITY action items will also be discussed. Prepare and submit an agenda to CITY prior to each meeting and prepare/distribute meeting minutes.

Task 106 Subcontractor Management

CONTRACTOR will manage the efforts of its subcontractors. CONTRACTOR will develop scopes of work for each subcontractor, monitor their progress, review and approve their invoices, oversee adherence to the approved QA/QC plan, monitor adherence to document preparation standards of CONTRACTOR and CITY, and generally oversee each subcontractor's project performance. CITY has established MBE and WBE goals of 15 percent and 10 percent, respectively, for the project. CONTRACTOR will prepare monthly M/WBE subcontractor utilization reports and submit in the required format to the CITY's Civil Rights and Equal Opportunity (CREO) Department.

Task 107 Work Order Management

The CITY shall enter the assets to be cleaned for each Basin into the CITY's web-based work order management application for work order creation prior to the start of basin work. On a monthly basis, CONTRACTOR shall submit completed work orders for closure approval. If required, CONTRACTOR shall modify work orders and/or enter additional assets within the CITY's web-based work order management application based on assets cleaned during that pay cycle. CONTRACTOR shall follow the work tracking application user protocol provided by the CITY.

Payment Considerations:

Separate payment shall not be made for project management and administration but shall be included in the unit price for CCTV inspection as detailed in **Attachment B**.

TASK SERIES 200 - SEWER LINE CLEANING

The purpose of the Sewer Line Cleaning is to clean the sewers of debris and any flow obstructions to allow the CCTV camera to pass through the sewer for inspection and documentation of defects.

Task 201 Sewer Cleaning

Conduct light and heavy sewer cleaning as required to allow for CCTV camera passage. The majority of the sewer diameters to be cleaned will be 12-inches or less. The CITY will provide a listing of the lines to be cleaned and CCTV inspected and a geodatabase of the characterized sewer system. **Table 1** below identifies the approximate lineal feet for each diameter size of sewers that may require cleaning. CONTRACTOR shall conduct sewer cleaning in conformance with the requirements of the CCTV PROTOCOL and Section 02676 – Sewer Line Cleaning specification incorporated into this Contract as **Attachment G** and **Attachment H**, respectively.

Table 1 – Approximate Sewer Cleaning Information

FY23 Small Diameter ASR (remaining footage unable to be completed under 1277-1, approximately 190,000 LF)	4	22	20	42
	6	691	3,594	4,285
	8	17,518	41,914	59,432
	10	14,481	16,773	31,254
	12	30,358	22,161	52,518
	14	466	619	1,084
	15	39,020	10,314	49,335
	16	731	537	1,267
	18	35,342	12,118	47,460
	20	351	0	351
	21	4,552	3,116	7,668
	24	12,810	6,678	19,489
	26	0	439	439
	27	312	1,518	1,830
	30	1,923	5,041	6,964
	33	350	128	479
	34	55	321	375
	36	1,237	2,195	3,433
	38	0	197	197
	39	415	428	843
	42	65	397	462
	44	317	346	664
	45	0	347	347
	48	0	16	16
	52	0	60	60
	54	0	46	46
60	0	492	492	
64	0	92	92	
66	0	23	23	
70	0	198	198	
72	0	73	73	
90	0	488	488	
114	0	208	208	

		161,015	130,896	291,911
FY23 Small Diameter - Downtown	0	801	128	928
	6	0	121	121
	8	394	333	727
	10	0	639	639
	12	5,716	13,197	18,913
	14	14	0	14
	15	1,191	4,520	5,711
	16	0	1,657	1,657
	18	1,150	4,382	5,532
	20	0	934	934
	24	1,284	331	1,615
	28	0	736	736
	30	120	916	1,036
	36	427	989	1,417
	42	171	1,086	1,258
	11,267	29,970	41,238	

The CONTRACTOR shall start work within ten (10) calendar days after a written Notice to Proceed is issued by the CITY. All sewer cleaning work must be completed by the end of the contract time regardless of the size, type or condition of the sewer. It is the responsibility of the CONTRACTOR to provide sufficient equipment and workforce to complete the work within the established Contract time as defined in Section II of this Scope of Services.

The cleaning equipment shall be a type generally recognized by the trade for the purpose being used and that has proved satisfactory. The equipment shall be capable of removing roots, dirt, grease, rocks, bricks, sand, and other materials and minor obstructions from the sewer pipes and manhole channels. Light sewer cleaning shall be completed with a high velocity jet-cleaning machine and/or a root cutter and shall be defined as up to three (3) slow passes with a high velocity jet-cleaner and one (1) pass with a root cutter, if roots are present. All sewer cleaning work shall be performed in an upstream to downstream system-wide approach.

Precautions shall be taken to minimize risk of the cleaning operation (equipment) causing damage to pipes being cleaned or damage or flooding to public and/or private property being served by the sewer being cleaned. It shall be the CONTRACTOR's sole responsibility to clean and or repair private and public property damaged or flooded during the cleaning process to its original condition or better at the CONTRACTOR's own expense. If cleaning equipment gets trapped inside the sewer, CONTRACTOR shall notify CITY. It shall be the CONTRACTOR's sole responsibility to remove the equipment from the sewer in a timely manner and make necessary repairs to pipe, manholes and restoration of the area to its original condition or better at the CONTRACTOR's own expense.

If the cleaning equipment fails to traverse the entire pipeline section or CONTRACTOR believes that the amount of debris present in a pipe segment cannot be removed by light cleaning, CONTRACTOR shall use CCTV to record the blockage or document the debris amount and submit documentation for the proposed cleaning method and an estimate of time to clear the debris to CITY's representative. CITY will respond to heavy and mechanical cleaning requests within three

(3) hours of receipt Monday through Friday 8am to 5pm, excluding holidays. Upon receipt of Notice to Proceed approval from the CITY, CONTRACTOR shall attempt to remove the blockage or debris through the use of heavy cleaning and/or mechanical cleaning. If the blockage cannot be removed, CITY shall be notified. CITY shall be notified if the time to remove the debris exceeds 25% of the original estimate at the time of discovery.

The CITY will provide a location at the Buckeye Pump Station for debris disposal at no charge to the CONTRACTOR. CONTRACTOR shall be responsible for transport of debris to the Buckeye Pump Station (5201 NE Birmingham Road). CONTRACTOR shall dump debris into the open dump drying bed site. CONTRACTOR shall dewater their trucks prior to dumping debris into the CITY's drying bed. If CONTRACTOR fails to comply with the above requirements CONTRACTOR will be required to dispose of debris at another non-CITY facility at the CONTRACTOR's cost.

CONTRACTOR shall be able to utilize water from the CITY's potable water system for cleaning operation but shall be responsible for obtaining a water meter from CITY and shall assume responsibility for required deposit and for payment of the water used. A backflow preventer will be required unless the CONTRACTOR's equipment meets the requirements for Air Gap usage set by the Rules of Department of Natural Resources Division 60 Public Drinking Water Program, Chapter 11- Backflow Prevention 10 CSR 60-11.010:

"(4) Department-Approved Backflow Prevention Assemblies (B). The discharge pipe of an approved air-gap shall terminate a minimum of two (2) pipe diameters of the discharge pipe above the flood level rim of the receiving vessel: in no case shall the distance be less than one inch (1)".

If a backflow preventer is required, Missouri Department of Natural Resources (MDNR) requires that an inspection of the backflow preventer is required every time it is moved and relocated with the water meter. The CITY's Water Meter Group will complete the backflow preventer inspections, but it may take up to 72 hours after notification for each inspection to occur, so the CONTRACTOR shall plan accordingly in staging their work and obtaining water for cleaning operations. All costs associated with water meter deposit, backflow preventer inspections and staging of work is ancillary to the cleaning and CCTV work and no separate payment will be made.

Payment Considerations for Cleaning in Easements or Rights-of-Way:

Rights-of-Way and Easement Cleaning Definition: Work within Rights-of-Way is defined as any manhole (required for access) that is located within fifty (50) feet from a street or access roadway edge. Work within an Easement is defined as any manhole (required for access) that is located further than fifty (50) feet from a street or access roadway edge and meets the "Minimum Requirements for Hourly Work" as detailed in **Attachment B**.

1. Light Cleaning in Rights-of-Way: Separate payment for light cleaning will not be made, but shall be included in unit price for cleaning and CCTV inspection in Rights-of-Way as listed in **Attachment B**.
2. Light Cleaning in Easements: Separate payment for light cleaning will not be made, but shall be included in unit price for cleaning and CCTV inspection in easements listed in **Attachment B**.
3. Heavy Cleaning in Rights-of-Way: The CONTRACTOR shall be paid the heavy cleaning hourly rates listed in **Attachment B**. Heavy Cleaning hours shall be tracked and invoiced on a **per pipe segment** basis. If actual heavy cleaning hours differ from those listed in

Attachment B, the contract price shall be adjusted through the use of the hourly unit price in **Attachment B**.

4. Heavy Cleaning in Easements: The CONTRACTOR shall be paid the heavy cleaning hourly rates listed in **Attachment B**. Heavy Cleaning hours shall be tracked and invoiced on a per pipe segment basis. If actual heavy cleaning hours differ from those listed in **Attachment B**, the contract price shall be adjusted through the use of the hourly unit price in **Attachment B**.
5. Mechanical Cleaning in Rights-of-Way: The CONTRACTOR shall be paid the mechanical cleaning hourly rates listed in **Attachment B**. Mechanical Cleaning hours shall be tracked and invoiced on a per pipe segment basis. If actual mechanical cleaning hours exceed those listed in **Attachment B**, the contract price shall be adjusted through the use of the hourly unit price in **Attachment B**.
6. Mechanical Cleaning in Easements: The CONTRACTOR shall be paid the mechanical cleaning hourly rates listed in **Attachment B**. Mechanical Cleaning hours shall be tracked and invoiced on a **per pipe segment** basis. If actual mechanical cleaning hours differ from those listed in **Attachment B**, the contract price shall be adjusted through the use of the hourly unit price in **Attachment B**.

Deliverables:

See Deliverables listed under Task 301.

TASK SERIES 300 - CCTV INSPECTION

The purpose of the CCTV inspection is to identify and document the defects and provide condition assessment of the sewer. All CCTV inspection, defect identification, video/data documentation and storage shall be completed in conformance with the requirements of the PROTOCOL.

Task 301 CCTV Inspection

The CONTRACTOR shall be responsible for completing closed circuit television (CCTV) inspection reports/video for sewers as shown in **Table 1** in Task 201, as identified by the CITY's SSP Team. **Table 1** in Task 201 provides a list of the approximate lineal feet of the pipe diameters that will be televised in easements and Rights-of-Way. A detailed Inspection List, based on manhole inspections performed by CITY's SSP Team, will be provided by the CITY prior to commencing work. If CCTV camera or ancillary equipment gets trapped inside the sewer, CONTRACTOR shall notify CITY. It shall be the CONTRACTOR's responsibility to notify CITY and remove the equipment from the sewer and make necessary repairs to pipe, manholes and restoration of the area to its original condition or better at CONTRACTOR's own expense. If a full-length CCTV inspection cannot be completed due to a blockage, CONTRACTOR shall notify CITY and perform a reverse setup and obtain data for as much of the remaining pipe segment as possible.

The CONTRACTOR shall start work within ten (10) calendar days after a written Notice to Proceed is issued by the CITY. All CCTV inspection work must be completed by the end of the Contract time as specified in Section II of this Scope of Services regardless of the size, type or condition of the sewer. It is the responsibility of the CONTRACTOR to provide sufficient equipment and workforce to complete the work within the established Contract times as defined in Section II of this Scope of Services.

Payment Considerations:

1. Full Length CCTV Inspection in Rights-of-Way: Unit prices shall be paid for light cleaning and CCTV inspection on a per foot basis for both services as listed in **Attachment B**. Work within Rights-of-Way work is defined as any manhole (required for access) that is located within 50 feet from a street or access roadway edge. The definition of whether a sewer line is considered easement or Right-of-Way will be predetermined by the CITY based on GIS mapping. Any disputes on the definition, based on actual field conditions or incorrect mapping, shall be sent to the CITY's attention for consideration and final determination. The basis for payment will be the total pipe length between manholes along the existing sewer centerline from manhole wall to manhole wall as determined by CCTV inspection. If the actual lineal footage of light cleaning and CCTV inspection differs from the quantities listed in **Attachment B**, the contract price shall be adjusted through the use of the per foot unit prices in **Attachment B**.
2. Full Length CCTV Inspection in Easements: Unit prices shall be paid for light cleaning and CCTV inspection in easements on a per foot basis for both services as listed in **Attachment B**. Easement work is defined as any manholes (required for access) that is located further than fifty (50) feet from a street or access roadway edge and may require the use of one additional laborer or an easement machine. The definition of whether a sewer line is considered easement or Right-of-Way will be predetermined by the CITY based on GIS mapping. Any disputes on the definition, based on actual field conditions or incorrect mapping, shall be sent to the CITY's attention for consideration and final determination. The basis for payment will be the total pipe length between manholes along the existing sewer centerline from manhole wall to manhole wall as determined by CCTV inspection. If the actual lineal footage of light cleaning and CCTV inspection differs, the quantities listed in **Attachment B**, the contract price shall be adjusted through the use of the per foot unit prices in **Attachment B**.
3. Partial CCTV Inspection: If a full length CCTV inspection cannot be made after heavy/mechanical cleaning to remove blockages, CONTRACTOR shall perform CCTV inspection of the accessible length (including initial and reverse set up) and shall be paid for the CCTV footage completed based on the unit prices listed in **Attachment B** for full length CCTV inspection. A reverse set up must be complete or justification given why it couldn't be completed in order to receive payment for the initial partial CCTV inspections. No payment will be made for partial inspections when blockages have been removed and a full length inspection was or could have been completed.
4. Full Length CCTV Inspection Only: If light cleaning cannot be performed due to cleaning equipment inaccessibility of sewer lines located in deep easement areas; full length CCTV inspection only may be performed and shall be paid for based on the unit prices listed in **Attachment B** for full length CCTV inspection only. CCTV inspection only shall be conducted in a manner that provides an unobstructed view of the pipe above the flowline and the pipe shall be free of debris and obstructions that significantly impede visibility. If these requirements are unable to be met while performing CCTV inspection only, CONTRACTOR shall immediately inform CITY of the conditions and the CITY will provide guidance for proceeding. Pre-approval by CITY is required for the use of full length CCTV inspection only as described in **Attachment B**. CONTRACTOR shall not

charge hourly rates unless the “Minimum Requirements for Hourly Work” is met as described in **Attachment B**.

5. Additional Field Investigation: The CONTRACTOR shall be paid additional field investigation hourly rates listed in **Attachment B** for CCTV exploration to identify or confirm abandoned sewer line segments. Pre-approval by CITY is required for the use of additional field investigation services as described in **Attachment B**. CONTRACTOR shall not charge hourly rates unless the “Minimum Requirements for Hourly Work” is met as described in **Attachment B**.
6. Additional Field Services: The CONTRACTOR shall be paid additional field services hourly rates listed in **Attachment B** for location services to obtain GPS coordinates of sub-meter or better accuracy. Pre-approval by CITY is required for the use of additional field services as described in **Attachment B**. CONTRACTOR shall not charge hourly rates unless the “Minimum Requirements for Hourly Work” is met as described in **Attachment B**.
7. CCTV Inspection Re-Setup: The CONTRACTOR shall be paid a CCTV inspection re-setup fee per each as listed in Attachment B for equipment setup due to additional root cutting. Pre-approval by CITY is required for the use of CCTV inspection re-setup fee as described in **Attachment B**. CONTRACTOR shall not charge hourly rates unless the “Minimum Requirements for Hourly Work” is met as described in **Attachment B**.
8. Full Length CCTV Inspection for FY23 Small Diameter ASR work: Unit prices shall be paid for light cleaning and CCTV inspection on a per foot basis for both services as listed in Attachment B for FY23 Small Diameter ASR work only. The basis for payment will be the total pipe length between manholes along the existing sewer centerline from manhole wall to manhole wall as determined by CCTV inspection. If the actual lineal footage of light cleaning and CCTV Inspection differs from the quantities listed in Attachment B, the contract price shall be adjusted through the use of the per foot unit prices in Attachment B

Deliverables:

Deliverables shall be made **by drainage basin** at two (2) stages of completion, 50% and 100% of the total footage, as specified in Section II of this Scope of Services. Contractor shall submit deliverables in accordance to the CCTV PROTOCOL and in accordance with Task 102 of this Contract. CONTRACTOR shall deliver a monthly ‘Project Summary Report’, ‘Cannot Access List with Map of Proposed Clearing Requests (if applicable)’, and ‘Cable Footage Calibration Logs’, all in accordance with the CCTV PROTOCOL. The monthly deliverable of the ‘Project Summary Report’ does not excuse the CONTRACTOR from delivering a ‘Project Summary Report’ with the 50% and 100% completion deliverables.

TASK SERIES 400 - MANHOLE LOCATING AND OPENING

During the course of the performance of manhole inspections by CITY’s SSP Team, there will be manholes that cannot be opened or could not be located. CONTRACTOR shall locate and open manholes as they are identified by CITY’s SSP Team. “Can Not Locate (CNL)” and a “Can Not Open (CNO)” lists will be developed and provided to the CONTRACTOR at the same time as the Cleaning/CCTV Inspection Lists. The CONTRACTOR shall locate and open the listed manholes within the established Contract times as defined in Section II of this Scope of Services. The

CONTRACTOR will need to allocate the resources (equipment and manpower) to locate and/or open the identified manholes within the designated time frame as defined in Section II of this Scope of Services. In the course of the sewer cleaning and CCTV inspection work, the CONTRACTOR may find existing manholes below grade that are not on the original list to be located or opened. If this occurs, the CONTRACTOR shall locate the manhole as described in Task 401. The approximate anticipated number of CNL and CNO manholes is 510 and 130, respectively.

Task 401 MANHOLE LOCATING

The CONTRACTOR shall attempt to locate buried manholes a minimum of thirty (30) minutes per manhole by using metal detectors, GPS equipment with sub-meter accuracy or better, probing rods, locating sondes, CCTV camera, measuring wheels, or other technology as approved by the CITY. Metal detectors shall be capable of locating intermediate sized metal objects at a minimum of three (3) feet depth.

1. Manholes buried below pavement. CONTRACTOR shall locate sewer manholes using metal detectors and CCTV camera with locating sonde and surface measurement verification or other means to be determined by CONTRACTOR and approved by CITY. CONTRACTOR shall verify the manhole location using at least two (2) methods. For example, use of a locating sonde and CCTV length verification from the upstream and/or downstream manhole/s. After locating the manhole, CONTRACTOR shall mark the location on the pavement surface and the adjacent curb with footage offset written on the curb, drive a 2-inch or longer mag nail into the pavement at the manhole location, and then obtain GPS coordinates of sub-meter or better accuracy. CONTRACTOR shall also obtain at least two (2) area photographs from differing vantage points (i.e. facing north and south) documenting the manhole location and the surrounding area. The manhole number and camera direction shall be written on a white board or sign and be legible in the photographs. The photograph shall be taken at a vantage point that allows the marking paint to be visible and at least one identifiable fixed land mark visible in the background or side ground. All photos shall be named with the manhole number, date, and photo number utilizing the following schema: S100-500_20160325_01.
2. Manholes buried less than or equal to 12-inches: CONTRACTOR shall locate manholes buried in unpaved areas using metal detectors, probing rods, shovels, or CCTV camera with locating sonde. After locating the manhole and determining that it is buried less than 12 inches deep, CONTRACTOR shall unearth the manhole, open it, verify that it is the correct manhole (i.e. not a storm manhole), drive a wood lathe with the manhole number written on it and a 6-inch or longer mag stake on the manhole, and then obtain GPS coordinates with sub-meter or better accuracy. CONTRACTOR shall also obtain at least two (2) area photographs from differing vantage points (i.e. facing north and south) documenting the manhole location and the surrounding area. The manhole number and camera direction shall be written on a white board or sign and be legible in the photographs. The photograph shall be taken at a vantage point that allows the marking paint to be visible and at least one identifiable fixed land mark visible in the background or side ground. All photos shall be named with the manhole number, date, and photo number utilizing the following schema: S100-500_20160325_01. All manholes unearthed in residential areas shall be reburied and surface restored using existing turf salvaged during unearthing.

3. Manholes buried more than 12-inches: CONTRACTOR shall locate manholes buried in unpaved areas using metal detectors, probing rods, shovels, and CCTV camera with locating sonde and surface measurement verification or other means as determined by the CONTRACTOR and approved by CITY. CONTRACTOR shall verify the manhole location using at least two (2) methods. For example, use of a locating sonde and CCTV length verification from the upstream and/or downstream manhole/s. After locating the manhole and determining that it is buried more than 12-inches deep, CONTRACTOR shall verify that it is the correct manhole (i.e. not a storm manhole) using CCTV and locating sonde, drive a wood lathe with the manhole number written on it and a 6-inch or longer mag stake on the manhole, and then obtain GPS coordinates with sub-meter or better accuracy. CONTRACTOR shall also obtain at least two (2) area photographs from differing vantage points (i.e. facing north and south) documenting the manhole location and the surrounding area. The manhole number and camera direction shall be written on a white board or sign and be legible in the photographs. The photograph shall be taken at a vantage point that allows the marking paint to be visible and at least one (1) identifiable fixed land mark visible in the background or side ground. All photos shall be named with the manhole number, date, and photo number utilizing the following schema: S100-500_20160325_01.

Payment Considerations:

1. Manholes buried below pavement: Locating and verify manholes buried below pavement shall be paid for on a unit price basis as listed in **Attachment B**. If the quantities differ from the quantities listed in **Attachment B**, the contract price shall be adjusted through the use of the unit prices in **Attachment B**.
2. Manholes buried less than 12-inches: Locating and opening manholes buried less than 12-inches deep shall be paid for on a unit price basis for manholes in easements and manholes in Rights-of-Way as listed in **Attachment B**. Easement work is defined as any manholes that is located further than fifty (50) feet from a street or access roadway (public or private). If the quantities differ from the quantities listed in **Attachment B**, the contract price shall be adjusted through the use of the unit prices in **Attachment B**.
3. Manholes buried more than 12-inches: Locating and verify manholes buried more than 12-inches deep shall be paid for on a unit price basis for manholes in easements and manholes in rights-of-way as listed in **Attachment B**. Easement work is defined as any MH that is located further than fifty (50) feet from a street or access roadway (public or private) center. If the quantities differ from the quantities listed in **Attachment B**, the contract price shall be adjusted through the use of the unit prices in **Attachment B**.
4. Does not exist manhole: If CONTRACTOR determines through CCTV that a manhole does not exist or is abandoned, the CONTRACTOR shall be paid \$150 for the partial manhole location effort as listed in **Attachment B**. If the CONTRACTOR is unable to determine through CCTV that a manhole does not exist or is abandoned, the CONTRACTOR will not be paid unless pre-approved by the CITY to perform additional field investigation services to confirm abandoned sewer systems and be paid in accordance with Task 301.
5. Discovered manholes: If CONTRACTOR through the course of CCTV discovers an existing manhole not identified on the CITY's GIS, the CONTRACTOR shall locate the

manhole on the ground surface in accordance with Task 401. CONTRACTOR will be paid in accordance with Task 401 for locating the manhole.

Deliverables:

Deliverables shall be made **by drainage basin** at two (2) stages of completion, 50% and 100%, to correspond with the same assets included in CCTV deliverables in Task Series 300 and, as specified in Section II of this Scope of Services. CONTRACTOR shall submit an excel spreadsheet of the located manholes, containing the XY coordinates based on Missouri State Coordinate System of 1983, West Zone and NAVD88, photo references, buried depth, location (Right-of-Way or easement), paved or unpaved, and any significant issues that will affect the City's ability to access and/or raise the manhole (i.e. under fence, under shed, 3 feet tall retaining wall in conflict, under pile of debris in a junk yard, wood fence post in conflict, etc.). CONTRACTOR shall also submit photographs in compliance with this Scope of Services.

Task 402 MANHOLE OPENING

CONTRACTOR shall employ reasonable efforts to open all manholes including use of sledgehammers, pry bars, bond breaking agents, and other equipment.

If a manhole cover is cracked or broken during the opening process, the CONTRACTOR shall attempt to replace the broken cover with a cover provided by the CITY and carried on CONTRACTOR's equipment. Note, it is not guaranteed that the CITY will have manhole covers in stock or that the manhole cover will fit the existing frame. If the cover cannot be replaced, CONTRACTOR shall contact the CITY and the CITY will replace the cover. CONTRACTOR shall be responsible for securing the manhole site in unpaved areas and remaining at the manhole location in paved areas until CITY crews arrive or alternatively the CONTRACTOR can secure the site with street closures or street plates in compliance with City of Kansas City Public Works traffic control regulations.

If the bolts are cut, broken or damaged on a bolt down manhole cover during the opening process, the CONTRACTOR shall replace the lid and contact the CITY who will be responsible for replacing and resetting the bolts and replacing any damaged portion of the manhole frame and cover.

Payment Considerations:

CONTRACTOR shall be paid on a unit price basis for each manhole that is opened as listed in **Attachment B**. No payment shall be made for manholes that are not opened. If the actual quantity for manhole opening differs that listed in **Attachment B**, the contract price shall be adjusted through the use of the unit price in **Attachment B**.

Deliverables:

CONTRACTOR shall submit to CITY a listing of manholes that were opened or could not be opened at two (2) points of completion for each basin at 50% and 100% completion, as specified in Section II of this Scope of Services.

TASK SERIES 500 - CLEARING AND GRUBBING IN EASEMENTS

Task 501 Clearing and Grubbing

CONTRACTOR shall clear easements in wooded areas as necessary to obtain access to manholes for CONTRACTOR's cleaning and CCTV equipment. CONTRACTOR shall be responsible for erosion control, work required for removal and disposal of vegetation, trees, and debris, and restoration. All work shall be performed in accordance with Specification 02200 - Clearing and Grubbing in **Attachment I**. CONTRACTOR shall coordinate with CITY and property owner's to determine the best route to access manholes and define the clearing limits before any clearing work begins. CONTRACTOR shall be responsible for locating the manholes within the proposed clearing limits. When possible, line of sight from manhole to manhole shall be used to determine the bearing direction. If line of sight is not possible, CONTRACTOR shall notify CITY and provide a fee estimate for surveying services to stake the clearing limits. CONTRACTOR shall not proceed with surveying services until CITY issues a Notice to Proceed. CONTRACTOR will be responsible for contacting landowners and obtaining permission to perform clearing work. CONTRACTOR shall submit clearing requests as specified in the CCTV PROTOCOL. CONTRACTOR shall submit anticipated cost associated with the proposed clearing requests.

Payment Considerations:

CONTRACTOR shall be paid hourly rates for clearing and grubbing, disposal, restoration and surveying as listed in **Attachment B**. If the actual quantities for clearing and grubbing and restoration differ from those listed in **Attachment B**, the contract price shall be adjusted through the use of the unit or hourly rates in **Attachment B**. Pre-approval by CITY is required for the use of the field supervisor services, additional laborer, and survey services as described in **Attachment B**. CONTRACTOR shall not charge hourly rates unless the "Minimum Requirements for Hourly Work" is met as described in **Attachment B**.

Deliverables:

CONTRACTOR shall submit a red-lined map of actual easements or access cleared, digital photographs documenting restoration work, and hours expended for clearing and grubbing, disposal and restoration, and surveying as approved by the CITY's representative to the CITY.

IV. CITY'S RESPONSIBILITIES

CITY will furnish, as required by Basic Services and not at the expense of the CONTRACTOR, the following items:

- A. Provide assistance by placing at CONTRACTOR's disposal available information pertinent to the assignment, including GIS data, information for lines to be cleaned and inspected using CCTV, located, or opened and any other data relative thereto.
- B. CITY's Project Manager will coordinate meetings between City staff and the CONTRACTOR.
- C. Provide location at the Buckeye Pump Station for debris disposal at no cost to CONTRACTOR.
- D. Provide "Can Not Locate (CNL)" and "Can Not Open (CNO)" manhole lists developed by CITY's SSP to CONTRACTOR.
- E. Conduct backflow prevention inspection within 72 hours of being notified by CONTRACTOR of water meter location used for sewer cleaning.
- F. Repair sewer blockages that cannot be removed by CONTRACTOR using cleaning.
- G. Replacement of broken manhole covers if CONTRACTOR cannot replace.

- H. Replacement and resetting the bolts on bolt down manhole covers.
- I. Assist with contacting landowners and obtaining permission to perform clearing work.

(End of Scope of Services)

DRAFT

ATTACHMENT B

UNIT PRICES



Proposer: Ace Pipe Cleaning

ATTACHMENT B - UNIT PRICES

Project No. 60810049, Contract No. 1277-2

Project Title: City-Wide Sewer Line Cleaning, Closed Circuit Television (CCTV) Inspection, and Manhole Locating and Opening for OCP Projects

Item No.	Item Description:	Units	Quantity	Contract 1277-2		Minimum Requirements for Unit Rates
				Rate	Total	
Task Series 100	Project Management	Months	N/A			NA - Included with CCTV Inspection
Task Series 200	Sewer Cleaning					
201	Heavy Cleaning (Rights-of-Way)	Hours	500	\$	-	One cleaning truck and one operator
202	Heavy Cleaning (Easements)	Hours	300	\$	-	One cleaning truck, one operator, and one laborer
203	Mechanical Cleaning (Rights-of-Way)	Hours	100	\$	-	One cleaning truck, two bucket machines, and three operators
204	Mechanical Cleaning (Easements)	Hours	100	\$	-	One cleaning truck, two bucket machines, three operators, and one laborer
	Task Series 200 Total			\$	-	
Task Series 300	CCTV Inspection (Includes Project Management & Light Cleaning under Task Series 100 & 200)					
	Full Length CCTV Inspection in Rights-of-Way					
301	Sewer Sizes 6-in to 12-in	Linear Feet	1,000	\$	-	NA
302	Sewer Sizes 14-in to 18-in	Linear Feet	1,000	\$	-	NA
303	Sewer Sizes 20-in to 24-in	Linear Feet	1,000	\$	-	NA
304	Sewer Sizes 26-in to 36-in	Linear Feet	1,000	\$	-	NA
305	Sewer Sizes 38-in to 60-in	Linear Feet	1,000	\$	-	NA
306	Sewer Sizes 66-in to 118-in	Linear Feet	1,000	\$	-	NA
	Full Length CCTV Inspection in Easements					
307	Sewer Sizes 6-in to 12-in	Linear Feet	1,000	\$	-	NA
308	Sewer Sizes 14-in to 18-in	Linear Feet	1,000	\$	-	NA
309	Sewer Sizes 20-in to 24-in	Linear Feet	1,000	\$	-	NA
310	Sewer Sizes 26-in to 36-in	Linear Feet	1,000	\$	-	NA
311	Sewer Sizes 38-in to 60-in	Linear Feet	1,000	\$	-	NA
312	Sewer Sizes 66-in to 118-in	Linear Feet	1,000	\$	-	NA
313	Full Length CCTV Inspection Only	Hours	100	\$	-	Two man field crew to perform CCTV only in deep easements inaccessible by cleaning equipment (City approval required)
314	Additional Field Investigation	Hours	50	\$	-	Two man field crew to perform additional field investigation to confirm abandoned sewer systems (City approval required)
315	Additional Field Services	Hours	50	\$	-	One man field crew to perform additional field services for GPS locating (City approval required)
316	CCTV Inspection Re-Setup	Each	50	\$	-	Two man field crew to re-setup CCTV inspection if required due to additional root cutting/heavy cleaning (City approval required)
317	Full Length CCTV Inspection for FY23 Small Diameter ASR	Linear Feet	241,000	\$	-	Cleaning and CCTV equipment, one operator per equipment, and one laborer (FY23 Small Diameter ASR work only unless approved by the City)
	Task Series 300 Total			\$	-	
Task Series 400	Manhole Opening and Locating					
401	Manhole Locate Buried Below Pavement	Each	50	\$	-	NA
402	Manhole Locate Buried Less Than or Equal to 12" (Rights-of-Way)	Each	100	\$	-	
403	Manhole Locate Buried Less Than or Equal to 12" (Easement)	Each	150	\$	-	NA
404	Manhole Locate Buried Greater Than 12" (Rights-of-Way)	Each	20	\$	-	NA
405	Manhole Locate Buried Greater Than 12" (Easement)	Each	50	\$	-	NA
406	Unsuccessful Manhole Location (Does Not Exist)	Each	50	\$	-	NA
407	Manhole Opening	Each	50	\$	-	NA
	Task Series 400 Total			\$	-	
Task Series 500	Clearing and Grubbing in Easements as Necessary to Obtain Access to Manholes CCTV Inspection					
501	Clearing and Grubbing and Disposal (Labor and Equipment)	Hours	250	\$	-	Two chainsaws, one haul truck with a minimum GVWR of 15,000 lbs, 2 laborers
502	Clearing and Grubbing and Disposal (Labor and Equipment)	Hours	250	\$	-	One excavator or track loader, one operator
503	Restoration (Labor and Equipment)	Hours	100	\$	-	One skid loader, one operator
504	Soil (Material Only)	Cubic Yards	100	\$	-	In accordance with specification section 02200 Clearing and Grubbing
505	2-inch to 3-inch Rock (Material Only)	Tons	50	\$	-	In accordance with specification section 02200 Clearing and Grubbing
506	Seed and Mulch Placed	SF	100,000	\$	-	In accordance with specification section 02200 Clearing and Grubbing
507	Survey Field Services (Labor and Equipment)	Hours	100	\$	-	All required equipment and personal to complete easement limits staking (City approval required)
508	Survey Office Services	Hours	50	\$	-	All required personal to research easements and develop easement clearing limits coordinates (City approval required)
509	Additional Laborer	Hours	300	\$	-	One laborer to assist with clearing, grubbing, disposal, or restoration (City approval required)
510	Field Supervisor Services	Hours	250	\$	-	One field supervisor: to obtain permission from property owners to perform clearing work; or to inspect areas requiring clearing to identify the required access (to be used only if clearing work is not performed). (City approval required)
	Task Series 500 Total			\$	-	
TOTAL						

ATTACHMENT C

CREO KC DOCUMENTS



CONTRACTOR UTILIZATION PLAN/REQUEST FOR WAIVER

Project Number _____

Project Title _____

(Department Project)

Department

(Bidder/Proposer)

STATE OF _____)

) ss

COUNTY OF _____)

I, _____, of lawful age and upon my oath state as follows:

1. This Affidavit is made for the purpose of complying with the provisions of the MBE/WBE submittal requirements on the above project and the MBE/WBE Program and is given on behalf of the Bidder/Proposer listed below. It sets out the Bidder/Proposer's plan to utilize MBE and/or WBE contractors on the project.
2. The project target goals are _____% MBE and _____% WBE.
3. Bidder/Proposer assures that it will utilize a minimum of the following percentages of MBE/WBE participation in the above project:

| **BIDDER/PROPOSER PARTICIPATION:** _____% MBE _____% WBE

| **POST-BID/POST-RFP ESTIMATED BUDGET:** \$ _____

4. The following are the M/WBE subcontractors whose utilization Bidder/Proposer warrants will meet or exceed the above-listed Bidder/Proposer Participation. Bidder/Proposer warrants that it will utilize the M/WBE subcontractors to provide the goods/services described in the applicable Letter(s) of Intent to Subcontract, copies of which shall collectively be deemed incorporated herein. (*All firms must currently be certified by Kansas City, Missouri*)

| Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____



Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____

Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____

Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____

Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____

Name of M/WBE Firm _____

Address _____

Telephone No. _____

I.R.S. No. _____

(List additional M/WBEs, if any, on additional page and attach to this form)

- 4. The following is a breakdown of the percentage of the total contract amount that Bidder/Proposer agrees to pay to each listed M/WBE:

MBE/WBE BREAKDOWN SHEET

MBE FIRMS:

Name of MBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



TOTAL MBE \$ / TOTAL MBE %: \$ _____ %

WBE FIRMS:

Name of WBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
TOTAL WBE \$ / TOTAL WBE %:		\$ _____	_____ %	

*“Subcontract Amount” refers to the dollar amount that Bidder/Proposer has agreed to pay each M/WBE subcontractor as of the date of contracting and is indicated here solely for the purpose of calculating the percentage that this sum represents in proportion to the total contract amount. Any contract amendments and/or change orders changing the total contract amount may alter the amount due an M/WBE under their subcontract for purposes of meeting or exceeding the Bidder/Proposer participation.

**“Weighted Value” means the portion of the subcontract amount that will be credited towards meeting the Bidder/Proposer participation. See CREO KC Forms and Instructions for allowable credit and special instructions for suppliers.

- Bidder/Proposer acknowledges that the monetary amount to be paid each listed M/WBE for their work, and which is approved herein, is an amount corresponding to the percentage of the total contract amount allocable to each listed M/WBE as calculated in the MBE/WBE Breakdown Sheet. Bidder/Proposer further acknowledges that this amount may be higher than the subcontract amount listed therein as change orders and/or amendments changing the total contract amount may correspondingly increase the amount of compensation due an M/WBE for purposes of meeting or exceeding the Bidder/Proposer participation

6. Bidder/Proposer acknowledges that it is responsible for considering the effect that any change orders and/or amendments changing the total contract amount may have on its ability to meet or exceed the Bidder/Proposer participation. Bidder/Proposer further acknowledges that it is responsible for submitting a Request for Modification or Substitution if it will be unable to meet or exceed the Bidder/Proposer participation set forth herein.
7. If Bidder/Proposer has not achieved both the M/WBE goal(s) set for this Project, Bidder/Proposer hereby requests a waiver of the MBE and/or WBE goal(s) that Bidder/Proposer has failed to achieve
8. Bidder/Proposer will present documentation of its good faith efforts, a narrative summary detailing its efforts and the reasons its efforts were unsuccessful when requested by the City.
9. I hereby certify that I am authorized to make this Affidavit on behalf of the Bidder/Proposer named below and who shall abide by the terms set forth herein:

Bidder/Proposer primary contact: _____

Address: _____

Phone Number: _____

Facsimile number: _____

E-mail Address: _____

By: _____

Title: _____

Date: _____

(Attach corporate seal if applicable)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____

Notary Public





REQUEST FOR MODIFICATION OR SUBSTITUTION

(This Form **must** be submitted to CREO KC to request substitutions for an MBE/WBE listed in the Contractor Utilization Plan or for modification of the amount of MBE/WBE participation listed in the Contractor Utilization Plan. This Form shall be an amendment to the Contractor Utilization Plan.)

BIDDER/PROPOSER/CONTRACTOR: _____

ADDRESS: _____

PROJECT NUMBER OR TITLE: _____

AMENDMENT/CHANGE ORDER NO: (if applicable) _____

Project Goals:	_____ % MBE	_____ % WBE
Contractor Utilization Plan:	_____ % MBE	_____ % WBE

1. I am the duly authorized representative of the above Bidder/Contractor/Proposer and am authorized to request this substitution or modification on behalf of the Bidder/Contractor/Proposer.

2. I hereby request that the Director of CREO KC recommend or approve: (check appropriate space(s))

a. _____ A substitution of the certified MBE/WBE firm _____,
(Name of new firm)
 to perform _____,
(Scope of work to be performed by new firm)

for the MBE/WBE firm _____ which is currently
(Name of old firm)
 listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan to
 perform the following scope of work: _____.
(Scope of work of old firm)

b. _____ A modification of the amount of MBE/WBE participation currently listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan from
 _____ % MBE _____ % WBE *(Fill in % of MBE/WBE Participation currently listed on Contractor Utilization Plan)*

TO

_____ % MBE _____ % WBE *(Fill in New % of MBE/WBE Participation requested for Contractor Utilization Plan)*

- c. Attach 00450.01 Letter of Intent to Subcontract letter for each new MBE/WBE to be added.
- d. Attach a copy of the most recent 00485.01 or on-line M/WBE Monthly Utilization Report

3. Bidder/Contractor/Proposer states that a substitution or modification is necessary because: (check applicable reason(s))



___The MBE/WBE listed on the Contractor Utilization Plan is non-responsive or cannot perform.

___The MBE/WBE listed on the Contractor Utilization Plan has increased its previously quoted price without a corresponding change in the scope of work.

___The MBE/WBE listed on the Contractor Utilization Plan has committed a material default or breach of its contract.

___Requirements of the scope of work of the contract have changed and make subcontracting not feasible or not feasible at the levels required by the goals established for the contract.

___The MBE/WBE listed on the Contractor Utilization Plan is unacceptable to the City contracting department.

___Bidder/Contractor/Proposer has not attempted intentionally to evade the requirements of the Act and it is in the best interests of the City to allow a modification or substitution.

4. The following is a narrative summary of the Bidder's/Contractor's/Proposer's good faith efforts exhausted in attempts to substitute the MBE/WBE firm named above which is currently listed on the Contractor Utilization Plan with other qualified, certified MBE/WBE firms for the listed scope of work or any other scope of work in the project:

5. Bidder/Proposer/Contractor will present documentation when requested by the City to evidence its good faith efforts.

Dated: _____

(Bidder/Proposer/Contractor)

By: _____
(Authorized Representative)





LETTER OF INTENT TO SUBCONTRACT

Check one:	
Original LOI:	<input type="checkbox"/>
Updated LOI:	<input type="checkbox"/>

Project Name/Title _____
 Project Location/Number _____

PART I: Prime Contractor _____ agrees to enter into a contractual agreement with M/W/DBE Subcontractor _____ who will provide the following goods/services in connection with the above-reference contract: [Insert a brief narrative describing goods/services to be provided. Broad Categorizations (e.g., "electrical," "plumbing," etc.) or the listing of NAICS Codes in which M/W/DBE Subcontractor is certified are insufficient and may result in denial of this Letter of Intent to Subcontract.]

for an estimated amount of \$ _____ (or _____ % of the total estimated contract value.)

- M/WBE Vendor type:
- Subcontractor/manufacturer (counts as 100% of contract value towards goals)
 - Supplier (counts as 60% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)
 - Broker (counts as 10% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)

M/W/DBE Subcontractor is, to the best of Prime Contractor's knowledge, currently certified with the City of Kansas City's Civil Rights & Equal Opportunity Department to perform in the capacities indicated herein. Prime Contractor agrees to utilize M/W/DBE Subcontractor in the capacities indicated herein, and M/W/DBE Subcontractor agrees to work on the above-referenced contract in the capacities indicated herein, contingent upon award of the contract to Prime Contractor.

PART 2: This section is to be completed by the M/W/DBE subcontractor listed above. Please attach additional sheets as needed for more than one intended sub-tier contract. **IMPORTANT: Falsification of this document will result in denial and other remedies available under City Code.**

- Select one:
- The M/W/DBE Subcontractor listed above **IS NOT** subcontracting any portions of the above-stated scope of work(s). (Continue to Part 3.)
 - The M/W/DBE Subcontractor listed above **IS** subcontracting certain portions of the above stated scope of work(s) to:

(1) Company name: _____

Full address: _____
Street number and name City, State and Zip Code

Primary contact: _____
Name Phone

a) This subcontractor is (select one): MBE WBE DBE N/A

- i: If this subcontractor is an M/W/DBE certified with the City of Kansas City, Missouri, a separate Letter of Intent must be attached to this document.
- ii. If this subcontractor is NOT a certified M/W/DBE certified with the City of Kansas City, Missouri, the firm must still be listed for reporting purposes but a Letter of Intent is not required.

b) Scope of work to be performed: _____

c) The dollar value of this agreement is: _____



List additional subcontractors, if any, on a similar form and attach to the bid.

Supplier** Final Amount: _____

*Reference to specification sections or bid item number.

- (✓) ___ Met or exceeded the Contract utilization goals; or
- (✓) ___ Failed to meet the Contract utilization goals (attach waiver, substitution or modification); or
- (✓) ___ No goals applied to this Project.

5. CONTRACTOR certifies that each Subcontractor has received full payment for its respective work in connection with the Contract.

6. If applicable, I hereby certify that (1) at project completion and pursuant to contractor's final request for payment, contractor achieved, company-wide, at least ten percent (10%) minority workforce participation and two percent (2%) women workforce participation and (2) a true and accurate copy of my final project workforce monthly report is attached. **NOTE: This paragraph is only applicable if you completed a construction contract that was estimated by the City, prior to solicitation, as requiring more than 800 construction labor hours and costing in excess of \$300,000.00. If applicable you MUST attach copies of your final monthly workforce reports.**

7. This affidavit is made in behalf of the CONTRACTOR for the purpose of securing from Kansas City, Missouri, the certification of completion of the Project and receiving payment therefore.

8. If the Contract amount exceeded \$150,000, CONTRACTOR has submitted proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue and has on file proof of tax compliance from all Subcontractors. If the Contract term exceeded one (1) year, CONTRACTOR has provided proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue prior to receiving final payment and has on file proof of tax compliance from all Subcontractors prior to the Subcontractor receiving final payment from CONTRACTOR.

CONTRACTOR _____

By _____
(Authorized Signature)

Title _____

On this _____ day of _____, _____, before me appeared _____, to me personally known to be the _____ of the _____,

and who executed the foregoing instrument and acknowledged that (s)he executed the same on behalf of _____ as its free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year first above written.

My commission expires:

Notary Public



SUBCONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF MISSOURI)

) ss:

COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated below (hereinafter Subcontractor) and I make this affidavit on behalf of Subcontractor in accordance with the requirements set forth in Section 290.290, RSMo. Subcontractor has completed all of the Work required under the terms and conditions of a subcontract as follows:

Subcontract with: _____, Contractor

Work Performed: _____

Total Dollar Amount of Subcontract and all Change Orders: \$ _____

City Certified MBE WBE DBE NA

List certifications: _____

2. Subcontractor fully complied with the provisions and requirements of the Missouri Prevailing Wage Law set forth in Sections 290.210, RSMo through 290.340, RSMo.

Business Entity Type:

- Missouri Corporation
- Foreign Corporation
- Fictitious Name Corporation
- Sole Proprietor
- Limited Liability Company
- Partnership
- Joint Venture
- Other (Specify)

Subcontractor's Legal Name and Address

 Phone No. _____
 Fax: _____
 E:mail: _____
 Federal ID No. _____

I hereby certify that I have the authority to execute this affidavit on behalf of Subcontractor.

By: _____
(Signature)

(Print Name)

(Title)

(Date)

NOTARY

Subscribed and sworn to before me this ____ day of _____, 20____.

My Commission Expires: _____ By _____

Print Name

Title

Attachment D

CITY OF FOUNTAINS
HEART OF THE NATION



KANSAS CITY
MISSOURI

PERFORMANCE BOND

Project Number _____

Project Title _____

KNOW ALL MEN BY THESE PRESENTS: That _____, as PRINCIPAL (CONTRACTOR), and _____, (SURETY), licensed to do business as such in the State of Missouri, hereby bind themselves and their respective heirs, executors, administrators, successors, and assigns unto Kansas City, Missouri, a constitutionally chartered municipal corporation, (OWNER), as obligee, in the penal sum of _____ Dollars (\$ _____) for the payment whereof CONTRACTOR and SURETY bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into a Contract with OWNER for _____ which Contract, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly and faithfully perform said Contract including all duly authorized changes thereto, according to all the terms thereof, including those under which CONTRACTOR agrees to pay legally required wage rates including the prevailing hourly rate of wages in the locality, as determined by the Department of Labor and Industrial Relations or by final judicial determination, for each craft or type of workman required to execute the Contract and, further, shall defend, indemnify, and hold harmless OWNER from all damages, including but not limited to liquidated damages, loss and expense occasioned by any failure whatsoever of said CONTRACTOR and SURETY to fully comply with and carry out each and every requirement of the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect.

WAIVER. That SURETY, for value received, hereby expressly agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder, shall in any way affect the obligations of this Bond; and it does hereby waive notice of any such change, extension of time, or alteration or addition to the terms of the Contract or the Work to be performed thereunder.

IN WITNESS WHEREOF, the above parties have executed this instrument the ____ day of _____, 20_____.

CONTRACTOR

Name, address and facsimile number of Contractor

I hereby certify that I have authority to execute this document on behalf of Contractor.

By: _____
Title: _____

(Attach corporate seal if applicable)

SURETY

Name, address and facsimile number of Surety:

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A- or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By: _____
Title: _____
Date: _____

(Attach seal and Power of Attorney)

Attachment E

EMPLOYEE ELIGIBILITY VERIFICATION AFFIDAVIT

(Required for any contract with the City of Kansas City, Missouri in excess of \$5,000.00)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20____, before me
appeared _____, personally known by
me or otherwise proven to be the person whose name is subscribed on this affidavit and
who, being duly sworn, stated as follows:

I am of sound mind, capable of making this affidavit, and personally swear or
affirm that the statements made herein are truthful to the best of my knowledge. I am the
_____ (title) of _____
(business entity) and I am duly authorized, directed or empowered to act with full
authority on behalf of the business entity in making this affidavit.

I hereby swear or affirm that the business entity does not knowingly employ any
person in connection with the contracted services who does not have the legal right or
authorization under federal law to work in the United States as defined in 8 U.S.C. §
1324a(h)(3).

I hereby additionally swear or affirm that the business entity is enrolled in an
electronic verification of work program operated by the United States Department of
Homeland Security (E-Verify) or an equivalent federal work authorization program
operated by the United States Department of Homeland Security to verify information of
newly hired employees, under the Immigration Reform and Control Act of 1986, and that
the business entity will participate in said program with respect to any person hired by
the business entity to perform any work in connection with the contracted services. I
have attached hereto documentation sufficient to establish the business entity's
enrollment and participation in the required electronic verification of work program.

I am aware and recognize that unless certain contractual requirements are satisfied
and affidavits obtained as provided in Section 285.530, RSMo, the business entity may
face liability for violations committed by its subcontractors, notwithstanding the fact that
the business entity may itself be compliant.

I acknowledge that I am signing this affidavit as the free act and deed of the business entity and that I am not doing so under duress.

Affiant's signature

Subscribed and sworn to before me this _____ day of _____, 20_____.

Notary Public

My Commission expires:

ATTACHMENT F

Non-Construction Subcontractors Listing

Contractor shall submit Subcontractor information on this form prior to Subcontractor beginning Work. Contractor shall update this listing and keep it current for the life of the Contract.

	Company Name Contact Name and Email	Address Phone No. and Fax No.
1.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
2.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
3.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
4.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
5.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
6.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
7.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
8.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
9.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____
10.	Name: _____ Email: _____	Address: _____ Phone: _____ Fax: _____

Contractor – Company Name: _____
 Submitted By: _____
 Title: _____
 Telephone No.: _____
 Fax No.: _____
 E-mail: _____
 Date: _____

Sewer Pipe Inspection Protocol



**City of Kansas City, Missouri
Water Services Department**

Smart Sewer Program

October 2022

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1.0 INTRODUCTION

All underground utilities will deteriorate over time. The City of Kansas City, Missouri (CITY) Water Services Department (KC Water) conducts periodic asset inspections to better understand rehabilitation and replacement needs of their sewer assets. These asset inspections identify problems in the sewer systems that may require repairs or replacement and help prevent catastrophic conditions. Inspections of sewer pipes:

- Determine condition of the pipe;
- Identify inflow/infiltration (I/I) sources; and
- Locate buried access points.

KC Water standardizes sewer pipe inspection procedures, defect coding, and condition grading based upon the National Association of Sewer Services Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) system. Therefore, all sewer pipe inspections will include the use of closed-circuit television (CCTV) to identify and classify defect observations based on NASSCO PACP.

However, pipe inspections may also use other technologies that provide different information regarding the condition of the asset. The data collected using these technologies may be continuous or periodic, giving snapshots of the pipe condition. Pipe inspections, covered under this protocol may include one or a combination of the following technologies:

- Closed-Circuit Television (CCTV) – Continuous video recording to identify pipe defects visually
- Sound Navigation and Ranging (SONAR) – Continuous identification of obstructions and loss of pipe material below the water level
- Light Amplification by Stimulated Emission of Radiation (LASER) or Light Detection and Ranging (LIDAR) – Continuous identification of pipe loss and corrosion (usually due to hydrogen sulfide gas in sanitary sewers) above the water level
- Sewer Walk – Manual investigation of asset, where a person enters the sewer and walks the alignment
- Rebound Hammer Test – Periodic measurement of the elastic properties or strength of concrete, mainly surface hardness and penetration resistance
- Pipe Penetrating Radar (PPR) – Periodic application of electromagnetic waves to identify voids behind the pipe wall

During inspections, characteristics of the sewer system may be observed that were not viewable from the surface. It is important to update the City's Geographic Information System (GIS), the system of record for access point and pipe asset data, to reflect these observations. These GIS mapping updates of assets are integral to facilitating system maintenance, providing information for design projects, and accounting for recent infrastructure improvements.

This document provides the protocols related to sewer pipe inspections as part of the KC Water's Smart Sewer Program (SSP).

2.0 GENERAL

2.1 Inspection Conditions

To the extent practical, pipe inspections should be conducted during:

- A. Low flow conditions, to observe pipe condition; and
- B. High groundwater conditions, to identify sources of infiltration.

2.2 Inspectors

2.2.1 Definition

The term “*Inspector*” shall be used to describe the person completing the sewer inspection (regardless of the technology utilized) and/or operating the inspection equipment, as well as any person making edits to PACP database field values.

2.2.2 Certification

Any person making edits to PACP database field values, either collecting the field data or making changes to the data in-office, shall be NASSCO PACP-certified with a valid NASSCO PACP certification.

2.3 Prompt Attention Notification

Inspector shall immediately notify via email the SSP Project Manager and KC Water Utility Superintendent (contact information provided by SSP), regarding field observations requiring prompt attention, including but not limited to:

- A. Asset failure that may pose an immediate danger to the general public (e.g. missing/broken lids, collapsed connecting pipes, sink holes)
- B. Asset failure allowing significant I/I into the sanitary sewer system (e.g. such as an asset failure adjacent to a stream, allowing stream flow to enter the sewer system)
- C. Information regarding backups and overflows, such as a backup or overflow occurring at the time of system characterization or inspection
- D. Assets containing a flush valve (direct connection to potable water supply)

2.4 Public Notification

Most pipe inspections can be performed within in the public right-of-way. However, some pipe inspections may require access to private property or easements outside of the public right-of-way.

Therefore, notification of occupants and/or property owners is required only for those pipe inspections that require access to private property and/or easements.

2.4.1 Public Notification Procedure

- A. *Inspector* shall notify the occupant and/or property owner in-person when possible, such as a door knock and face-to-face conversation. *Inspector* shall answer any questions about the work.
- B. If occupant and/or property owner assistance is needed for access to complete the pipe inspection, the *Inspector* shall leave a “Manhole Access Required Door Hanger” at the residence or business.

2.4.2 Public Notification Materials

- A. *Inspector* shall utilize the following Notification Materials provided on the Smart Sewer Printing Portal to facilitate Public Notification:
 - i. Manhole Access Required Door Hanger
- B. *Inspector* shall access Notification Materials from the Smart Sewer Printing Portal using the following instructions:
 - i. Go to: kcmo.gov/printingportal
 - ii. Click “Log In” at the bottom of the Welcome page.
 - iii. Select “Register Now” and fill in your information.
 - iv. Once the system administrator has processed your request you will be notified via email. This may take up to two (2) business days.
 - v. Once approved, you will receive an email notification and can return to kcmo.gov/printingportal to log in. You will be redirected to the printing portal, or you can click the “Smart Sewer Collateral” hyperlink.

2.4.3 Public Notification Log

- A. The *Inspector* shall maintain a Public Notification Log with a list of all occupants and property owners notified during the work.
- B. The Public Notification Log shall include, at a minimum:
 - i. Occupant or property owner’s name and address;
 - ii. Date notified;
 - iii. Type of notification materials provided or left; and
 - iv. Denied access or concerns raised by the occupant or property owner.
- C. If an occupant or property owner denies access, the *Inspector* shall immediately report the situation to the SSP Project Manager via email.

- D. The Public Notification Log shall be a running log, documenting subsequent conversations and/or Notification Materials left at the residence or property.
- E. The Public Notification Log shall be updated daily and may be requested and reviewed by City at any time.
- F. The Public Notification Log shall be included in the final data submittal.

2.5 Safety Plan

All field personnel must follow proper safety procedures including, but not limited to, the following guidelines:

- A. A comprehensive safety plan must be in place before work begins, including a designated safety coordinator with a description of their job duties.
- B. All National Institute for Occupational Safety and Health (NIOSH) - Occupational safety and Health Administration (OSHA) safety standards are applicable, and compliance is mandatory.
- C. Traffic control – When working in street or highway rights-of-way, the traffic-controlled area shall direct vehicular traffic away from the work site following local and state traffic control requirements and the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD).
- D. The work area shall be properly barricaded to direct pedestrians safely around the work area.
- E. Work on major streets should be scheduled to avoid *rush hour* traffic when possible. (*Rush hour* is assumed to be from 7:00 AM – 9:00 AM and from 4:00 PM – 6:00 PM.)
- F. All workers shall wear safety apparel, including but not limited to, reflective safety vests/shirts, over the ankle foot protection, toe-reinforced protection, long pants, and other necessary personal protective equipment while working within the road right-of-way.
- G. Entrance into any asset shall be considered Confined Space Entry and shall require proper permitting following 29 CFR 1910.146. *Inspector* is advised that active sewer and manhole environment may be oxygen deficient, may contain toxic and/or explosive gas vapors and liquids, or may be a source of additional health hazards associated with contact with raw wastewater. No manhole shall be entered without trained personnel, proper safety equipment, testing the atmosphere, continuous monitoring of the atmosphere, and documentation for the confined space permit for the carbon dioxide (CO₂), hydrogen sulfide (H₂S) and oxygen (O₂) gas levels. Ventilation may be required to eliminate the hazard. Failure of any parameter shall preclude entry.
- H. Work Stop Authority – Failure to meet safety standards will result in immediate shutdown of the field crew. If there is an unsafe situation, the field personnel can stop the task to evaluate the situation, call for help, or reschedule the task.

3.0 PIPE INSPECTION REQUIREMENTS

3.1 General

These requirements are written to promote data collection and reporting consistency and are not intended as step-by-step instructions. *Inspectors* shall use personal experience and best professional judgement during all phases of sewer pipe inspection.

3.2 Technology Platforms and Industry Standards

3.2.1 Technology Platforms

Inspector shall provide the SSP Project Manager access to an online geospatial web application that clearly displays and labels:

- A. Pipes with Segment IDs
- B. Access Points with UNITIDs
- C. Inspection Completion Status
- D. Recommended Inspection Type
- E. Inspection Type Used

3.2.2 Industry Standards

Pipe inspections shall comply with latest version of NASSCO PACP.

3.3 Planning

Appropriate planning measures shall be taken prior to start of work. Planning items include, but are not limited to the following:

3.3.1 PACP Certification Credentials

Inspector names, NASSCO PACP certification numbers, and NASSCO PACP certificate expiration dates shall be provided to the SSP Project Manager at least five (5) calendar days prior to the start of work. Names provided should be those making edits to PACP database field values, either collecting the field data or making changes to the data in-office.

3.3.2 Online Geospatial Web Application Login Information

Inspector shall provide the SSP Project Manager login information for the Technology Platform at least five (5) calendar days prior to the start of work.

3.3.3 City GIS

City will provide GIS files that indicate pipe segments to be inspected and/or access points to be located, including unique identifiers for upstream and downstream access points (e.g., manholes, inlets).

3.3.4 CNO, CNL, and CNA Lists

SSP will provide lists of access points that could not be opened (CNO), could not be located (CNL), and/or could not be accessed (CNA) during system characterization and/or access point inspections to *Inspector*, if applicable.

3.3.5 Supplemental Information

SSP may provide supplemental information to *Inspector*. *Inspector* shall use supplemental information (if provided) to aid system characterization and/or access point inspections. Supplemental information may include:

- A. Map(s) in portable digital format (PDF) of pipe segments to be inspected, based on the City GIS files provided
- B. Sewer Record Books
- C. Other documents, as applicable.

3.3.6 Flow Control/Bypass Pumping

Inspector should schedule inspections during periods of low flow to maximize the viewing area and the extent of the inspection; flow levels during inspections should be no greater than 15% of the pipe diameter (or height if non-circular pipe shape).

- A. If assistance is required to aid in the control of flow within a pipe, then *Inspector* shall notify the SSP Project Manager at least seventy-two (72) hours in advance of the scheduled inspection.
- B. If flow levels cannot be adequately lowered, the *Inspector* shall coordinate through the SSP Project Manager the use of other methods of flow control such as plugging or bypass pumping.
- C. *Inspector* may request permission for nighttime work where flows cannot be adequately controlled. *Inspector* shall submit requests for nighttime work to the SSP Project Manager at least seventy-two (72) hours in advance of the scheduled inspection.

3.4 Equipment

Equipment used when performing pipe inspections and access point location services, shall meet the following specifications:

3.4.1 Two-Way Communication

All *Inspectors* and crew members shall carry a cellular phone or other form of two-way communication.

3.4.2 Manned-Entry

- A. If confined space entry is necessary, the *Inspector* shall provide all equipment necessary for a safe working condition and entry in conformance with Section 2.5 Safety Plan.
- B. Entry into access points (i.e. manholes, inlets) shall not rely on use of existing steps within the access point.

3.4.3 Sonde Equipment

- A. In-line sewer inspections provide information about the sewer system that may not be visible from surface and/or access point inspections such as bends and buried access points. Therefore, all sewer inspections shall be performed with accompanying sonde equipment for locating these alignment changes and/or buried access points.
- B. Sonde equipment shall have the capability of being located to a depth of at least 20 feet.

3.4.4 GPS Equipment

- A. Equipment used must be capable of providing global positioning system (GPS) coordinates for horizontal location (X & Y coordinates) and elevation (Z coordinate).
- B. All GPS equipment shall be in calibration/adjustment and verified against a known baseline or existing control with similar relative accuracy prior to start of work.
- C. Equipment utilized for surveying shall be of the same make and model per project for consistency of data collection and accuracy.
- D. MACP “Survey Level” GPS equipment should be used when possible.
- E. If GPS coordinates with “Survey Level” accuracy cannot be obtained, MACP “Sub-Meter” accuracy equipment may be used.
- F. If GPS coordinates with “Sub-Meter” accuracy cannot be obtained, then GPS equipment with MACP “Nearest Meter” accuracy may be used.
- G. GPS coordinates of an access point may be obtained by location offset from the access point using traditional survey techniques via triangulation or distance/bearing references. The GPS Type shall be classified based on the GPS accuracy (Survey Level, Sub-Meter, Nearest Meter) of the reference location and the techniques used to calculate the horizontal location and elevation of the asset.
- H. If no GPS coordinates can be obtained, including via offset, due to site specific constraints, then the access point location may be updated based on aerial photography.

3.4.5 CCTV Equipment

The CCTV equipment shall have the following minimum features and capabilities:

- A. The equipment shall be a pushing cable, tractor, or float unit.
(Exception: CCTV equipment may be mounted to *Inspector* for Sewer Walks ONLY).
- B. The camera shall be designed specifically for pipe inspections.
- C. The equipment shall be fog-resistant, capable of operating in 90% humidity.
- D. The equipment shall include a cable footage counter so that the location of defects and service laterals relative to the starting access point location can be reported.
 - i. The cable footage counter shall be able to reach a minimum of 1,000 feet.
 - ii. The footage counter shall be accurate to 0.5 feet per 100 feet (0.5%) and shall be calibrated daily.
 - iii. Calibration may be performed by checking the cable footage counter against a pre-measured length of 50 to 300 feet.
- E. The equipment shall have either manual or digital pan, tilt, and/or zoom capabilities to facilitate defect viewing.
- F. The equipment shall have a minimum of 640 lines of resolution, with a minimum of 1280 lines of resolution for High-Definition CCTV (HDCCTV).
- G. The equipment shall record full color video.
- H. The equipment shall have automatic and/or remote focus and iris control.
- I. The equipment shall be capable of producing MP4 video recordings of each segment inspected.
- J. The equipment shall include a lamp capable of lighting the entire periphery of the pipe.
- K. If sewer service laterals are to be inspected, the equipment shall include a “side-shot” camera tool provided specifically for lateral inspections.
- L. The equipment shall be able to fit through a minimum opening width of 20.625 inches.
- M. The equipment shall be capable of recording defects in accordance with the NASSCO PACP defect coding system.
- N. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.6 SONAR Equipment

The SONAR equipment shall have the following minimum features and capabilities:

- A. The equipment shall be specifically designed for pipe inspections.
- B. The equipment shall be capable of being mounted on a float or tractor.
- C. The equipment shall have integrated pitch and roll sensing.
- D. The equipment shall be capable of recording data to be related to pipe circumferential position and relative location as measured from the access point.
- E. The equipment shall be capable collecting and recording data for up to 3 hours.
- F. The equipment shall be capable of producing a summary of cross-sectional imagery showing pipe restrictions, voids/defects and estimated quantity of debris.
- G. The equipment shall be capable of transmitting continuous, digital data for topside viewing.
- H. The equipment shall have a frequency greater than or equal to 2 MHz.
- I. The equipment shall have an acoustic beam width less than or equal to 1.8-degrees conical.
- J. The equipment shall be able to fit through a minimum opening width of 20.625 inches.
- K. The equipment shall be capable of recording defects in accordance with the NASSCO PACP defect coding system.
- L. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.7 LASER Equipment

The LASER equipment shall have the following minimum features and capabilities:

- A. The equipment shall be specifically designed for pipe inspections.
- B. The equipment shall be capable of being mounted on a float or tractor.
- C. The equipment shall be fog-resistant, capable of operating in 90% humidity.
- D. The equipment shall be capable collecting and recording data for up to 3 hours.
- E. The equipment shall be capable of transmitting continuous, digital data for topside viewing.
- F. The equipment shall have a minimum frame rate of 10 frames per second.
- G. The equipment shall have an angular resolution of 0.25-degrees or better.
- H. The equipment accuracy shall be a minimum of 0.3% at 30 feet.
- I. The equipment shall be able to fit through a minimum opening with of 20.625 inches.
- J. The equipment shall be capable of recording defects in accordance with the NASSCO PACP defect coding system.
- K. The equipment shall produce deliverables of quality acceptable to the City.

- i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
- ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.8 LIDAR Equipment

The LIDAR equipment shall have the following minimum features and capabilities:

- A. The equipment shall be specifically designed for pipe inspections.
- B. The equipment shall be capable of being mounted on a float or tractor.
- C. The equipment shall be fog-resistant, capable of operating in 90% humidity.
- D. The equipment shall be capable collecting and recording data for up to 3 hours.
- E. The equipment shall be capable of transmitting continuous, digital data for topside viewing.
- F. The equipment shall have an angular resolution of 0.25-degrees or better.
- G. The equipment accuracy shall be a minimum of 0.3% at 30 feet.
- H. The equipment shall be able to fit through a minimum opening with of 20.625 inches.
- I. The equipment shall be capable of recording defects in accordance with the NASSCO PACP defect coding system.
- J. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.9 Sewer Walk Equipment

- A. Sewer walks shall be conducted using all equipment necessary for a safe working condition (see Section 2.5 Safety Plan).
- B. All sewer walks shall be performed with CCTV equipment (see Section 3.4.5 CCTV Equipment) and additional testing equipment (see Section 3.4.10 PPR Equipment and/or Section 3.4.11 Rebound Hammer Test Equipment) as applicable.
- C. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.10 PPR Equipment

The PPR equipment shall have the following minimum features and capabilities:

- A. PPR shall have a penetration depth of five (5) feet in cohesive soils.
- B. The equipment shall be able to fit through the frame of a circular manhole with a diameter of 20.625-inches.
- C. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.4.11 Rebound Hammer Test Equipment

The Rebound Hammer Test (also referred to as the Swiss/Schmidt Hammer Test) measures the relative compressive strength of rigid pipe materials, most often concrete. The equipment shall have the following minimum features and capabilities:

- A. The Rebound Hammer shall be calibrated per manufacturer requirements.
- B. The Rebound Hammer shall be designed for use on the pipe material being tested and shall not be operated in such a way that damages the assets being tested.
- C. The equipment shall produce deliverables of quality acceptable to the City.
 - i. Equipment that does not produce deliverables of quality acceptable to the City shall be replaced, at no additional cost to the City.
 - ii. For deliverables that are not accepted by the City, the inspection shall be re-conducted at no additional cost to the City.

3.5 Access Point Location

3.5.1 Assets Designated Could Not Open (CNO) during System Characterization

- A. If applicable, City will provide *Inspector* with a list of assets that were designated as Could Not Open (CNO) during system characterization and/or access point inspections, the CNO List.
- B. The *Inspector* shall attempt to open the assets on the CNO List.
- C. *Inspector* shall update status designations in the CNO List (Attachment 1) per Section 3.6 Status Designations.
- D. *Inspector* shall update relevant fields in the CNO List.

- E. *Inspector* shall provide an Area Photo for each access point on the CNO List.
- F. If the access point cover is broken or damaged during attempt to open the structure, *Inspector* shall notify the City and SSP Project Manager immediately and remain on-site until the City arrives with a replacement cover.

3.5.2 Assets Designated Could Not Locate (CNL) during System Characterization

- A. If applicable, City will provide *Inspector* with a list of assets that were designated as Could Not Locate (CNL) during system characterization and/or access point inspections, the CNL List.
- B. The *Inspector* shall attempt to locate and open the assets on the CNL List.
- C. *Inspector* shall update status designations in the CNL List (Attachment 2) per Section 3.6 Status Designations.
- D. *Inspector* shall update relevant fields in the CNL List.
- E. *Inspector* shall provide an Area Photo for each access point on the CNL List.
- F. If the access point cover is broken or damaged during attempt to open the structure, *Inspector* shall notify the City and SSP Project Manager immediately and remain on-site until the City arrives with a replacement cover.

3.5.3 Assets Designated Could Not Access (CNA) during System Characterization

- A. If applicable, City will provide *Inspector* with a list of assets that were designated as Could Not Access (CNA) during system characterization and/or access point inspections, the CNA List.
- B. The *Inspector* shall attempt to access, locate, and open the assets on the CNA List.
- C. *Inspector* shall update status designations in the CNA List (Attachment 3) per Section 3.6 Status Designations.
- D. *Inspector* shall update relevant fields in the CNA List.
- E. *Inspector* shall provide an Area Photo for each access point on the CNA List.
- F. If the access point cover is broken or damaged during attempt to open the structure, *Inspector* shall notify the City and SSP Project Manager immediately and remain on-site until the City arrives with a replacement cover.

3.6 Status Designations

- A. **Opened** – *Inspector* was able to open the access point.
 - i. *Inspector* shall update the COORD_X and COORD_Y of the access point in the CNO List (if applicable).
- B. **Located & Opened** – *Inspector* was able to locate and open the access point.

- i. *Inspector* shall update the COORD_X and COORD_Y of the access point in the CNL or CNA List (if applicable).
- C. **Could Not Open (CNO) - Seized** – *Inspector* was unable to open the access point because the frame and/or cover was corroded, damaged.
- i. *Inspector* shall update the COORD_X and COORD_Y of the access point in the CNO, CNL, or CNA List (if applicable).
 - ii. If the access point cannot be opened due because the frame and/or cover was corroded, damaged, *Inspector* shall update the CNO, CNL, or CNA List (if applicable), describing what attempts were made to open the access point.
 - iii. For assets not in the CNO, CNL, or CNA List (if applicable), *Inspector* shall:
 - a. Update the Project Summary Report (see Section 5.9 Project Summary Report), including in the significant issue description field the status designation and what attempts were made to open the access point.
 - b. Include the issue in the Project Status Report (see Section 5.3 Project Status Reports).
- D. **Could Not Open (CNO) - Buried** – *Inspector* was able to locate the access point and obtain or attempt to obtain GPS coordinates, but was not able to open the access point because it was buried under pavement or under debris/earthen materials 6 inches or greater.
- i. If the access point is buried under debris/earthen materials less than 6 inches, then *Inspector* shall remove the soil, grass, or rocks. Access points that are uncovered shall not be assigned the status designation “Could Not Open (CNO) - Buried”.
 - ii. If the access point cannot be opened due to burial, *Inspector* shall update the CNO, CNL, or CNA List (if applicable), describing what the access point is Buried Under and the Buried Depth for access points buried under debris/earthen materials (e.g., under pavement, under debris/earthen materials, 6 inches).
 - iii. For assets not in the CNO, CNL, or CNA List (if applicable), *Inspector* shall:
 - a. Update the Project Summary Report (see Section 5.9 Project Summary Report), including in the significant issue description field the status designation and what the access point is Buried Under and the Buried Depth for access points buried under debris/earthen materials (e.g., under pavement, under debris/earthen materials, 6 inches).
 - b. Include the issue in the Project Status Report (see Section 5.3 Project Status Reports).
- E. **Could Not Access (CNA) - Temporary** – *Inspector* was unable to access the access point with reasonable effort due to a temporary access issue (e.g., resident was not home to obtain permission for entry onto private property, car parked over asset, dog in backyard, asset was inside a locked gate, locked public facility, etc.).

- i. *Inspector* shall update the CNO, CNL, or CNA List (if applicable), describing in the comments field why the asset could not be accessed (e.g., parked car, locked gate, dog in yard, etc.).
 - ii. For assets not in the CNO, CNL, or CNA List (if applicable), *Inspector* shall:
 - a. Update the Project Summary Report (see Section 5.9 Project Summary Report), including in the significant issue description field the status designation and why the asset could not be accessed (e.g., parked car, locked gate, dog in yard, etc.).
 - b. Include the issue in the Project Status Report (see Section 5.3 Project Status Reports).
- F. **Could Not Access (CNA) - Permanent** – *Inspector* was unable to access the access point due to a permanent access issue (e.g. permanent structure built on top of the asset, such as a deck, fence, building, playground equipment, access point raised 8 feet in the air,).
- i. *Inspector* shall update the CNO, CNL, or CNA List (if applicable), describing in the comments field why the asset could not be accessed (e.g. deck, raised 8 feet in the air, etc.).
 - ii. For assets not in the CNO, CNL, or CNA List (if applicable), *Inspector* shall:
 - a. Update the Project Summary Report (see Section 5.9 Project Summary Report), including in the significant issue description field the status designation and why the asset could not be accessed (e.g., deck, raised 8 feet in the air, etc.).
 - b. Include the issue in the Project Status Report (see Section 5.3 Project Status Reports).
- G. **Could Not Locate (CNL)** – *Inspector* was unable to locate the access point from surface investigations (see Section 3.6.4 Surface Investigations) but was able to confirm that the access point exists during inspection of sewer pipe (see Section 3.6.3 Subsurface Investigations).
- i. *Inspector* shall update the CNO or CNA List (if applicable), describing in the comments field what efforts were made to locate the access point (e.g., field search, metal detector, sonde, etc.).
 - ii. For assets not in the CNO or CNA List (if applicable), *Inspector* shall:
 - a. Update the Project Summary Report (see Section 5.9 Project Summary Report), including in the significant issue description field the status designation and what efforts were made to locate the access point (e.g., field search, metal detector, sonde, etc.).
 - b. Include the issue in the Project Status Report (see Section 5.3 Project Status Reports).
- H. **Does Not Exist (DNE)** – *Inspector* was unable to locate the access point during inspection of the sewer pipe (see Section 3.6.3 Subsurface Investigations) or surface investigations (see Section 3.6.4 Surface Investigations).

- i. *Inspector* shall update the CNO, CNL, or CNA List (if applicable), describing in the comments field what efforts were made to locate the access point (e.g., field search, metal detector, sonde, etc.).
- ii. *Inspector* shall add DNE access points that are displayed in the City GIS, to the Map Change Form “DNE” (see Section 5.14 Map Change Forms).
 - a. *Inspector* shall provide the UNITID of the access point that Does Not Exist (DNE) and any relevant comments such as field what efforts were made to locate the access point (e.g., field search, metal detector, sonde, etc.).
 - b. *Inspector* shall maintain a running log of all DNE access points using the Map Change Form “DNE” (see Section 5.14 Map Change Forms).

3.6.2 Field Investigations

3.6.3 Subsurface Investigations

Inspector shall attempt to locate the missing access point from the subsurface (while conducting sewer inspection) utilizing specialty equipment such as a CCTV camera sonde transmitter.

3.6.4 Surface Investigations

- A. *Inspector* shall attempt to locate the missing access points from the surface.
- B. These surface investigations shall be performed for approximately 20 minutes and shall include:
 - i. *Inspector* shall make all reasonable effort to conduct a field search to locate the access point. Access points may be in difficult areas such as overgrown easements or in congested areas (e.g., intersections), where several access points may be present and some buried or paved over.
 - ii. *Inspector* shall conduct a comparison of field conditions against the City GIS, aerial imagery, and supplemental information (if provided by City) to locate the access point.
 - iii. *Inspector* shall utilize specialty equipment such as metal detectors to attempt to locate the access point.

3.7 Area Photo

- A. In addition to Area Photos required for Section 3.5 Access Point Location, *Inspector* shall provide an Area Photo of each access point that the *Inspector* Could Not Open (CNO) and Could Not Locate (CNL) that were not included on the CNO, CNL, and CNA Lists (see Section 3.5 Access Point Location).
- B. The Area Photo shall document the manhole location and surrounding area.

- C. The photograph shall be taken at a vantage point that allows the marking paint to be visible and at least one identifiable fixed landmark visible in the background or side ground.
- D. The photograph shall include a plaque bearing the asset unique identifier and the camera cardinal direction; or should have the asset unique identifier and the camera cardinal direction digitally overlain on the photograph such that it will not interfere with the image of the asset opening.
- E. See Figure 3.1 for an example.



Figure 3.1: Example Area Photo

3.8 Asset Identification

3.8.1 Unique Identifier Naming Convention for Point Feature Assets

Point feature assets are assigned a unique identifiers in the City GIS UNITID attribute field by the following four-part naming convention:

- A. Part 1 – South “S” or North “N” designator based on location relative to the Missouri River
- B. Part 2 – Three-digit sewer atlas number
- C. Part 3 – Operator or alphabetical character:
 - i. Manhole to Inspect (wwManhole): Hyphen “-”
 - ii. Inlet to Inspection (swInletPoint): “I”
 - iii. Fitting (wwFitting): “F”
- D. Part 4 – Three-digit or four-digit asset number within the sewer atlas, determined by asset type:

- i. Manhole (wwManhole): Three-digit
 - ii. Inlet (swInletPoint): Four-digit
 - iii. Fitting (wwFitting): Four-digit
- E. Examples:
- i. Manhole (wwManhole)
 - a. Description: Manhole asset number 200 on sewer atlas 24, south of the Missouri River
 - b. UNITID: S024-200.
 - ii. Inlet (swInletPoint)
 - a. Description: Inlet asset number 200 on sewer atlas 24, south of the Missouri River
 - b. UNITID: S024I0200.
 - iii. Fitting (wwFitting)
 - a. Description: Fitting asset number 200 on sewer atlas 24, south of the Missouri River
 - b. UNITID: S024F0200

3.8.2 Identifying and Naming New Structures

- A. Access points and fittings are sometimes not yet identified in the City’s GIS or are newly constructed.
- B. *Inspector* shall temporarily name the newly discovered structure by assigning the UNITID of the nearest upstream access point and sequentially adding the suffix “a”, “b”, “c”, etc. See example in Figure 3.2.

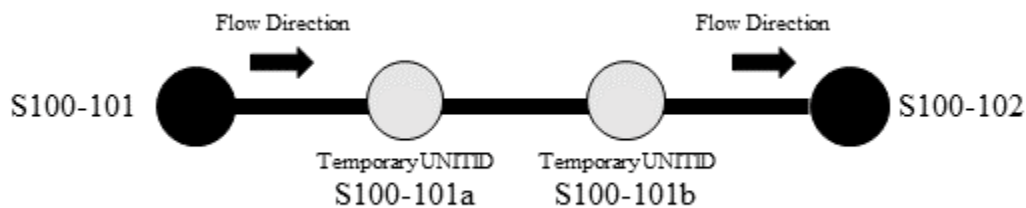


Figure 3.2: Temporary UNITID for Newly Identified Manholes

- C. *Inspector* shall add access points discovered in the field, which are not displayed in the City GIS, to the Map Change Form “New Structure” (see Section 5.14 Map Change Forms).
 - i. *Inspector* shall periodically request permanent UNITIDs from the SSP Project Manager and replace all temporary UNITIDs in the deliverables prior to deliverable submittal.
 - ii. *Inspector* shall provide the structure type (e.g., manhole, inlet, or other), X-coordinate, and Y-coordinate (coordinates in State Plane Coordinate System Missouri West 2403, feet),

original pipe segment reference, and revised upstream and downstream pipe segment references for the assets that need a UNITID.

- iii. *Inspector* shall maintain a running log of all permanent UNITIDs requested from the SSP Project Manager using the Map Change Form “New Structure” (see Section 5.14 Map Change Forms).

3.8.3 Changing Structure Types

- A. If an access point or fitting asset is on the incorrect feature layer, *Inspector* shall add a the structure to the Map Change Form “Structure Type” (see Section 5.14 Map Change Forms).
 - i. Examples:
 - a. Access point is incorrectly identified as an “Inlet” when it should be a “Manhole”
 - b. Access point is incorrectly identified as a “Manhole” when it should be an “Inlet”
 - c. Asset is incorrectly identified as a “Fitting” when it should be a “Manhole”
 - d. Asset is incorrectly identified as a “Fitting” when it should be an “Inlet”
 - e. Asset is incorrectly identified as a “Manhole” when it should be a “Fitting”
 - f. Asset is incorrectly identified as a “Inlet” when it should be an “Fitting”
- B. *Inspector* shall periodically request permanent UNITIDs from the SSP Project Manager for those assets which need a change in structure type and replace all original UNITIDs of the wrong structure type in the deliverables prior to deliverable submittal.
- C. *Inspector* shall provide the original UNITID, original structure type (e.g., manhole, inlet, or other), and revised structure type for the assets that need a new UNITID.
- D. *Inspector* shall maintain a running log of all permanent UNITIDs requested from the SSP Project Manager using the Map Change Form “Structure Type” (see Section 5.14 Map Change Forms).

3.9 Inspection and Data Collection

3.9.1 General

- A. The overall effectiveness of sewer inspections is directly related to the completeness and accuracy of the data collected.
- B. At a minimum, all sewer inspections shall include CCTV.
- C. The recommended inspection type will be provided by the City. Recommended inspection type includes but is not limited to the following:
 - i. CCTV
 - ii. CCTV + SONAR + LASER/LIDAR
 - iii. CCTV Sewer Walk

- D. The Inspector shall use best judgement when performing inspections based on these recommendations or determining if SONAR and/or LASER/LIDAR data should be processed.
- E. *Inspector* shall perform sewer pipe inspections from access point to access point unless a pipe converges into another pipe alignment at a fitting; then the inspection shall be performed from access point to fitting. See Figure 3.3.

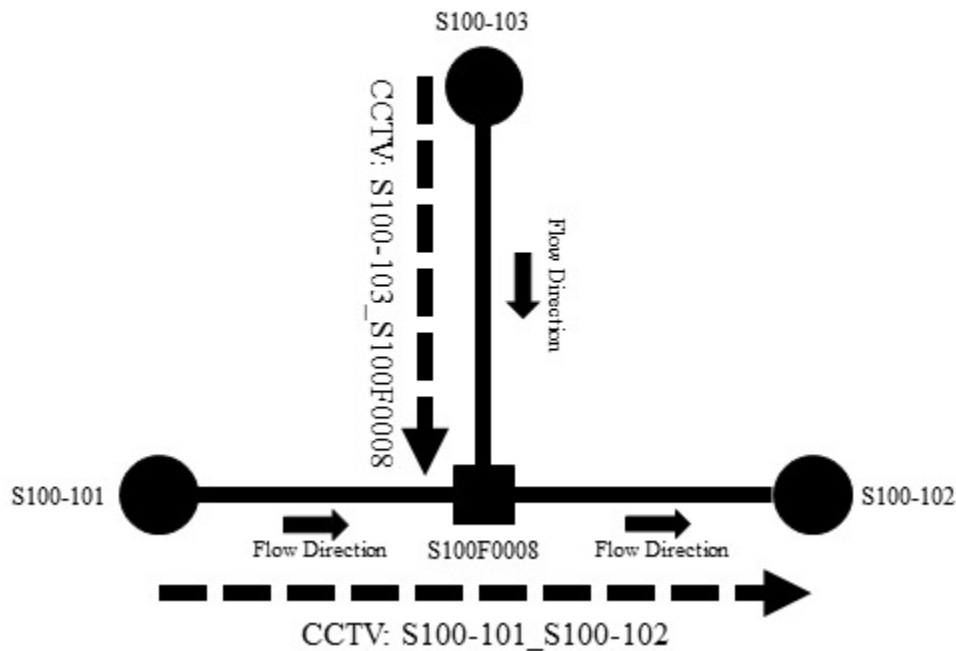


Figure 3.3: Performing Sewer Pipe Inspections

3.9.2 Alternative Inspection Technology Notification

- A. The *Inspector* shall notify the SSP Project Manager, via email, within 24 hours for sewer inspections where the recommended inspection type is:
- i. Insufficient to obtain a wholistic condition assessment of the sewer asset based on field observations; or
 - ii. Unsafe to perform (as determined by the *Inspector*) due to encountered field conditions.
- B. The *Inspector* shall recommend an alternate inspection technology based on the field conditions and limitations of the equipment. The *Inspector* may proceed with alternate technology upon receipt of written approval by the SSP Project Manager.

3.9.3 Sewer Line Cleaning

- A. *Inspector* shall perform sewer line cleaning work in an upstream to downstream approach.

- B. The use of various sewer line cleaning methods (Light Cleaning, Heavy Cleaning, and Mechanical Cleaning) shall be as required per the Contract Documents.
- C. If light cleaning equipment fails to traverse the entire pipe section or *Inspector* believes that the amount of debris present in a pipe segment cannot be removed by light cleaning, *Inspector* shall notify the SSP Project Manager via email including photographic documentation of the debris, the proposed cleaning method (Heavy Cleaning or Mechanical Cleaning), and an estimate of the time to remove the debris. If the debris cannot be removed or if the time to remove the debris exceeds 25% of the original estimate for time to remove the debris, *Inspector* shall notify the SSP Project Manager via email within 24 hours.
 - i. Light Cleaning shall be defined as up to three (3) slow passes with high-velocity jet-cleaning equipment (per Specification 02676 Sewer Line Cleaning) and/or up to one (1) pass with root-cutting equipment if roots are present.
 - ii. Heavy Cleaning shall be defined as more than three (3) passes with high-velocity jet-cleaning equipment (per Specification 02676 Sewer Line Cleaning) and/or more than one (1) pass with root-cutting equipment if roots are present.
 - iii. Mechanical Cleaning shall be defined as the use of any mechanically-powered equipment (per Specification 02676 Sewer Line Cleaning) that is not included in Light Cleaning or Heavy Cleaning.
- D. If sewer line cleaning fails to remove the obstruction, the *Inspector* shall attempt to complete the inspection using a reverse set-up.

3.9.4 CCTV

Inspector shall perform CCTV inspections in accordance with the following guidelines:

- A. CCTV equipment shall meet the requirements of Section 3.4.5 CCTV Equipment.
- B. High-Definition (HDCCTV) shall be used for all sewer lines greater than or equal to 48-inches in diameter (or when height and/or width of non-circular pipe is greater than or equal to 48 inches).
- C. Lighting during the inspection shall adequately, but not excessively, illuminate the periphery of the pipe.
- D. To limit distortion the camera should be centered in the middle of the pipe to the extent that is practically possible by use of specialized CCTV equipment designed for large diameter sewers.
- E. The camera shall move at a steady pace not to exceed 30 feet per minute.
- F. The camera should stop to view defects and provide still photos in JPEG format.
- G. The camera should stop to view all construction features (including but not limited to service connections and storm/sanitary main connections) and provide still photos in JPEG format.

- H. The camera shall capture the general condition of the access points and other incoming and/or outgoing pipes in the starting access point (launch manhole) and ending access point.
- I. If an unidentified access point is encountered during the inspection, the inspection shall stop, and a temporary UNITID shall be assigned to the previously unidentified asset per Section 3.8.2 Identifying and Naming New Structures.
 - i. Inspector shall submit a Map Change Form (see Section 5.14 Map Change Forms) to the SSP Project Manager to request a permanent UNITID for the newly identified asset prior to deliverable submittal.
 - ii. The inspection documentation and video display shall be renamed to reflect the permanent UNITID, not the temporary UNITID assigned by the *Inspector*.
 - iii. This change shall also be submitted on the Project Summary Report (see Section 5.9 Project Summary Report).
- J. If an abandoned or removed access point is encountered during the inspection, the inspection documentation and video display shall be renamed to reflect the nomenclature of upstream access point to downstream access point for the inspected pipe segment. This change shall also be submitted via Map Change Form (see Section 5.14 Map Change Forms) and on the Project Summary Report.
- K. If the flow direction of the pipe segment is different than displayed in the City GIS, the inspection documentation and video display shall be renamed to reflect the nomenclature of upstream access point to downstream access point for the inspected pipe segment. This change shall also be submitted via Map Change Form (see Section 5.14 Map Change Forms).

3.9.5 SONAR

Sound Navigating and Ranging (SONAR) technology may be used to supplement CCTV inspection of sewer lines. SONAR is primarily used to quantify the amount of debris in the pipe to educate operations and maintenance decisions. SONAR may also be used to identify defects in the sewer line below the flow level. SONAR, when used in conjunction with CCTV, can provide a simultaneous image of the sewer asset both above and below the flow level.

- A. *Inspector* shall use SONAR to supplement CCTV inspections when the pipe diameter is greater than or equal to 48 inches (or when height and/or width of non-circular pipe is greater than or equal to 48 inches) and the condition of the bottom of the pipe cannot be determined by CCTV inspection alone due to flow conditions.
- B. SONAR equipment shall meet the requirements of Section 3.4.6 SONAR Equipment.

- C. *Inspector* shall not process SONAR data unless requested by CITY or if insufficient flow depth was present. *Inspector* shall store unprocessed SONAR data in a format that can be readily processed upon request by the CITY for a minimum of three (3) years after project closeout.
- D. If SONAR processing is requested, *Inspector* shall spatially align SONAR inspection data to CCTV inspection data and append the information collected by SONAR technology to the PACP database deliverable.
 - i. *Inspector* shall code SONAR-observed debris/blockages as Deposit Settled Other (DSZ) and input the percentage per PACP standards.
- E. SONAR inspection data shall include graphic simulations illustrating conditions below the flow line and cross-sectional imagery identifying pipe restrictions, corrosion, and debris, if present.

3.9.6 LASER or LIDAR

LASER or LIDAR (LASER/LIDAR) technology may be used to supplement CCTV inspection of sewer assets. LASER/LIDAR technology may be used to measure the interior pipe wall and identify deformations of the pipe above the flow level. This technology is typically used in concrete pipe to identify H₂S corrosion and pipe loss. LASER/LIDAR inspections can be conducted to document pipe construction, observe flow conditions, and determine depth of debris and structural integrity above the flow line. Graphs of corrosion and buildup can be used to quantify loss or gain of pipe wall along the asset alignment. High-resolution scans showing the pipe cross sections can be used to determine the inside pipe diameter, ovality, and eccentricity of the asset.

- A. *Inspector* shall use LASER/ LIDAR to supplement CCTV inspections (and SONAR inspections, when applicable) when the pipe diameter is greater than or equal to 48 inches (or when height and/or width of a non-circular pipe is greater than or equal to 48 inches) and LASER/ LIDAR was the recommended inspection type provided by the City.
- B. LASER and/or LIDAR equipment shall meet the requirements of Section 3.4.7 LASER Equipment or Section 3.4.8 LIDAR Equipment, respectively, as applicable.
- C. *Inspector* shall not process LASER or LIDAR data unless requested by CITY. *Inspector* shall store unprocessed LASER and LIDAR data in a format that can be readily processed upon request by the CITY for a minimum of three (3) years after project closeout.
- D. If LASER or LIDAR processing is requested, *Inspector* shall spatially align LASER/LIDAR inspection data to CCTV inspection data (and SONAR inspection data, when applicable) and append the information collected by LASER/LIDAR technology to the PACP database deliverable.

- i. *Inspector* shall code LASER/LIDAR-observed pipe ovality greater than or equal to 5% based on the pipe material (rigid, flexible, or brick) and input the percentage per PACP standards. Most commonly used PACP defect codes for pipe ovality include Deformed Rigid (DR) Deformed Flexible Bulging Round (DFBR), and Deformed Brick Bulging Round (DTBR).
- ii. *Inspector* shall code LASER/LIDAR-observed pipe wall loss due to corrosion based on estimated wall loss expressed as a percentage as follows, assuming an initial wall thickness based on equivalent circular inside pipe diameter per Table 3.1 when as-built records are unavailable:
 - a. Surface Roughness Increased (SRI): 5% to less than 10% pipe wall lost
 - b. Surface Aggregate Visible (SRV): 10% to less than 20% pipe wall lost
 - c. Surface Aggregate Missing (SAM): 20% to less than 40% pipe wall lost
 - d. Surface Reinforcement Visible (SRV): 40% to less than 50% pipe wall lost
 - e. Surface Reinforcement Protruding (SRP): 50% to less than 100% pipe wall lost
 - f. Surface Missing Wall (SMW): 100% of pipe wall lost

Table 3.1: Assumed Pipe Wall Thickness Based on Inside Pipe Diameter

Inside Pipe Diameter (inches)	Wall Thickness (inches)
48	5.00
54	5.50
60	6.00
66	6.50
72	7.00
78	8.25
84	8.75
90	9.25
96	9.75
108	10.75
120	11.75

- iii. *Inspector* shall code LASER/LIDAR-observed debris/blockages as Deposit Settled Other (DSZ) and input the percentage per PACP standards.
- E. LASER/LIDAR inspection data shall include graphic simulations illustrating conditions below cross-sectional imagery identifying pipe restrictions, corrosion, ovality, and debris, if present.

3.9.7 Sewer Walk

Sewer walks, a manned-entry inspection technique, with the aid of video equipment allows the inspector, to assess and document the internal condition of sewer assets. Manned-entry inspections provide

flexibility for the inspector to use additional tests to assess the assets condition such as PPR and/or Rebound Hammer Test.

- A. Sewer Walks shall be conducted in accordance with Section 2.4 Safety Plan.
- B. *Inspector* shall perform Sewer Walks with CCTV inspections (per Section 3.3.3 CCTV) when the pipe diameter is greater than or equal to 72 inches (or when height of a non-circular pipe is greater than or equal to 72 inches), the observed flow depth is less than 12 inches and/or less than 2 feet per second, and the “CCTV Sewer Walk” was the recommended inspection type provided by the City.
- C. CCTV equipment shall meet the requirements of Section 3.3.3 CCTV.
- D. Inspector shall spatially align observed defects identified by visual inspection and additional test(s) to CCTV inspection data (when applicable) and append the ancillary information collected to the PACP database deliverable.

3.9.8 PPR

Pipe Penetrating Radar (PPR) is an electromagnetic technology that can detect voids within or behind brick or concrete sewer assets. The depth PPR can penetrate is dependent on pipe material and the soil conditions. PPR can also use these radar pulses to identify cracks, corrosion, and other deformations. Radar pulses in the pipe wall are reflected and refracted by sharp changes in material; the greater the difference in the material properties, the more energy that is reflected.

- A. *Inspector* may use PPR to supplement Sewer Walk inspections (See 3.5.7 Sewer Walk) when inspector suspects voids behind the pipe wall.
- B. *Inspector* shall input defect information collected by PPR technology to the PACP database deliverable.

3.9.9 Rebound Hammer Test

The Rebound Hammer Test may be used to assess material uniformity and determine the compressive strength of the pipe asset.

- A. Rebound Hammer Tests shall be performed as follows:
 - i. Per ASTM C805 (hardened concrete) or ASTM D5873 (rock) as applicable based on the observed pipe material.
 - ii. All rebound hammer tests shall be conducted in-situ. No core samples shall be collected without written authorization by the City.

- iii. Test areas shall be located every 50 linear feet and at the 3-, 9-, and 12 o'clock positions circumferentially within the pipe unless otherwise directed by the City.
- B. Inspector shall use caution when conducting Rebound Hammer Tests to not cause damage to the asset. Inspector shall not perform test if inspector is concerned that test will damage asset. For example, a Rebound Hammer calibrated for hardened concrete shall not be used on mortar in brick joints.
- C. Inspector shall input information collected to the PACP database deliverable in the notes field as clock position, followed by average test result at each clock position tested.

3.9.10 Inspection Completion Status

- A. **Full** – *Inspector* was able to complete the sewer pipe inspection from upstream access point to downstream access point.
- B. **Partial** – *Inspector* was unable to complete the sewer pipe inspection from upstream access point to downstream access point due to some issue encountered within the pipe; however, some of the pipe alignment was inspected. A reversal attempt should be made and coded as described in Section 5.4.2.J.
- C. **Unable to Complete (UTC)** – *Inspector* was unable to complete the sewer pipe inspection in any capacity.

4.0 QUALITY CONTROL

4.1 *Inspector's* Quality Control Procedure

- A. *Inspector* shall define the extent, nature, and implementation of their quality control/quality assurance (QA/QC) program prior to the start of work.
- B. The *Inspector's* QA/QC plan shall be submitted to the City prior to the start of work.
- C. At a minimum collected field data review shall conform to the requirements of the Section 4.2 NASSCO PACP Quality Control Procedure.
- D. QA/QC reviews of the videos and completed field entry forms, and database information shall be performed in preparation of final data deliverables.

4.2 NASSCO PACP Quality Control Procedure

Inspector shall follow the NASSCO PACP Quality Control (Attachment 5).

4.3 City's Quality Control Procedure

The following sections outline the City's minimum quality control procedures. The City reserves the right to adjust quality control reviews based on the performance of the *Inspector*.

4.3.1 Preinspection Verification of Deliverables

- A. Within fourteen (14) calendar days following the *Inspector's* Notice to Proceed, the *Inspector* shall submit an example deliverable in conformance with Section 5.0 Deliverables.
- B. The City will review and provide comments on the example deliverable's compliance with this protocol.
- C. Pending City review of the example deliverable, *Inspector* may be requested to resubmit a revised example deliverable, addressing City review comments.

4.3.2 Audits

The City reserves the right to audit, at will, the *Inspector's* quality control procedure.

4.3.3 Data Management QA/QC

4.3.3.1 Data Management Quality Review

The City will perform data management quality control reviews of each deliverable. The City's data management quality control review consists of reviews for completeness, accuracy and conformance to this protocol. At a minimum the City will review the following:

- A. The following deliverables were submitted with each package:
 - i. PACP Access Database
 - a. CCTV Video (linked to Access Database)
 - b. Feature/Defect Photographs (linked to Access Database)
 - ii. PACP Pipe Run, Scoring, and Feature/Defect Photograph Reports
 - iii. SONAR, LASER, LIDAR, Rebound Hammer Test, and/or PPR Data Files and Reports
 - iv. Project Summary Report
 - v. Could Not Open (CNO) List
 - vi. Could Not Locate (CNL) List
 - vii. Map Change Forms (tabular summary and schematics, as required)
- B. The following deliverables were submitted with each Project Status Report:
 - i. Could Not Open (CNO) List
 - ii. Could Not Locate (CNL) List
 - iii. Could Not Access (CNA) List and Clearing Request Maps
 - iv. Cable Footage Calibration Log
 - v. Schedule
- C. The above deliverables were completed in accordance with this protocol and any modifications or special requirements in the *Inspector's* Contract with the City.
- D. The PACP database will be checked by WinCan's PACP validator tool and any errors will be returned to the *Inspector* for correction.
- E. The *Inspector's* asset UNITIDs match the City's asset UNITIDs and meet nomenclature requirements of this protocol.
- F. The *Inspector's* Cable Footage Counter Calibration Log demonstrates that inspections were performed when the Cable Footage Counter was calibrated per the requirements of Section 3.4.5 CCTV Equipment. The City reserves the right to reject any work and pay application if inspection(s) were completed with a Cable Footage Counter that was not calibrated or that had an accuracy outside of compliance of Section 3.4.5 CCTV Equipment requirements.

4.3.3.2 Quality Review Form

- A. The City will develop a Quality Review Form (QRF) with comment outlining potential errors and return the QRF to the *Inspector*.
- B. The *Inspector* shall respond to all QRF comments explaining why the data is correct and/or resubmit the entire data deliverable within fourteen (14) calendar days of receiving the QRF.
- C. Partial resubmittals of the data deliverable will NOT be accepted.

5.0 DELIVERABLES

5.1 General

- A. Specific details regarding additional required deliverables and frequency of submittals for sewer inspections shall be included in the project's Contract Documents.
- B. *Inspector* shall maintain copies of all deliverables for the duration of the project and for a minimum of three (3) years after project closeout.

5.2 Final Deliverable

- A. City will provide WinCan Web access to the *Inspector*.
- B. *Inspector* shall upload the final PACP compliant database and associated videos/photos to a WinCan Web server.
- C. In addition to the WinCan web upload, *Inspector* shall deliver the following information in electronic format via a transportable hard drive:
 - i. PACP Access Database
 - a. CCTV Video (linked to Access Database)
 - b. Feature/Defect Photographs (linked to Access Database)
 - ii. PACP Pipe Run, Scoring, and Feature/Defect Photograph Reports
 - iii. Data Files and Reports for SONAR, LASER, LIDAR, Rebound Hammer Test, PPR
 - iv. Project Summary Report
 - v. Could Not Open (CNO) List
 - vi. Could Not Locate (CNL) List
 - vii. Map Change Forms (tabular summary and schematics, as required)

5.3 Project Status Reports

- A. The frequency for submittal of Project Status Reports shall be defined in the project Contract Documents.
- B. At a minimum the following information shall be included in Project Status Reports:
 - i. Could Not Open (CNO) List (if applicable)
 - ii. CNOs
 - iii. Could Not Locate (CNL) List (if applicable)
 - iv. CNLs
 - v. Could Not Access (CNA) List (if applicable)
 - vi. CNAs
 - vii. Clearing Request Map(s)

- viii. Cable Footage Counter Calibration Log
- ix. Rebound Hammer Calibration Log (if applicable)
- x. Schedule

5.4 PACP Access Database

5.4.1 Technical

The PACP Access Database shall be written in Version 7. The video and photo reference location/path shall be limited to one single folder named 'Video' and 'Picture', respectively.

5.4.2 Header

All header fields shall be completed using the PACP abbreviations and units as defined in NASSCO PACP Version 7. The PACP Access Database shall include, at a minimum, all the PACP mandatory header fields, all non-mandatory header fields that are applicable to the asset or work, and the following non-mandatory and/or City-specific changes to the PACP header fields:

- A. Field 1 – Name of the *Inspector's* Company in a format agreed upon with the City. (Note, this is different than the Field 1 requirement in NASSCO)
- B. Field 7 – P/O Number. Defined as the *Inspector's* contract number assigned by the City in four(4)-digit format.
- C. Field 8 – Work Order Number. Work order number or inspection number if assigned by the CITY.
- D. Field 14 – Weather
- E. Field 20 – Inspection Technology Used
- F. Field 25 – Pipe Segment Reference (Upstream Access Point UNITID_ Downstream Access Point UNITID)
- G. Field 35 – Lining Method, if applicable.
- H. Field 38 – Total Length (Anticipated Length from City GIS). Note, this field is only to be completed in the event of an MSA or partial survey.
- I. Field 39 – Length Surveyed
- J. Field 59 – Additional Information, if applicable. Record REVERSAL as necessary. REVERSAL designation shall be used when original PACP survey direction was abandoned and has a completion status of partial. The REVERSAL code shall be used to indicate an inspection was made from the other direction.

5.4.3 Inspection Form

The CCTV inspection form within the PACP access database shall be completed in accordance with NASSCO requirements and include the following additions:

- A. The ‘VCR Time’ or ‘Video Time’ shall be included at the appropriate time in the CCTV video that represents the defect or feature code.
- B. The remarks column shall be used identify Drop Connections, Diversion Structures, Lamp Holes, Grit Chambers, etc.

5.5 PACP Pipe Run, Scoring, and Feature/Defect Photograph Reports

Inspector shall provide a PACP Report for each pipe segment in PDF that contains:

- A. Pipe run information pursuant to Sections 5.4.2 Header and 5.4.3 Inspection Form
- B. Structural, Operation and Maintenance, and Overall Quick/Pipe/Index ratings and total ratings for each grade.
- C. Feature/defect photographs

5.6 CCTV Video

- A. One (1) electronic video, in MP4 file format, shall be submitted for each pipe segment inspected.
- B. The opening frame of each video shall display at a minimum the following information:
 - i. Inspection date
 - ii. Inspection time
 - iii. Weather, PACP Field 14 – Weather
 - iv. Pipe Segment Reference
 - v. Upstream Access Point UNIT ID
 - vi. Downstream Access Point UNITID
 - vii. Direction of inspection
 - a. “D” shall indicate “downstream” inspection direction. Downstream direction indicates that inspection was performed from upstream access point structure to downstream access point structure.
 - b. “U” shall indicate “upstream” inspection direction. Downstream direction indicates that inspection was performed from downstream access point structure to upstream access point structure.
 - viii. Pipe Height, PACP Field 31 – Height (Diameter for circular pipes)
 - ix. Pipe Width, PACP Field 32 – Width (leave blank for circular pipes)
 - x. Pipe Shape, PACP Field 33 – Shape

- xi. Pipe Material, PACP Field 34 – Material
- C. The following minimum information shall be continually displayed throughout the entirety of the video recording:
 - i. Inspection date
 - ii. Inspection time
 - iii. Running Footage - current inspection distance relative to the starting position
 - iv. Upstream Access Point UNITID
 - v. Downstream Access Point UNITID
 - vi. Direction of inspection
- D. Each video file shall be named using the upstream to downstream unique asset identifiers (UNITID), underscore date stamp, and underscore inspection direction.
 - i. UNITID for the upstream and downstream access points shall be per Section 3.8.1 Unique Identifier Naming Convention for Point Feature Assets.
 - ii. The date stamp shall be presented as four (4)-digit year, followed by two (2)-digit month, followed by two (2)- digit day: “YYYYMMDD”.
 - iii. “D” shall indicate “downstream” inspection direction.
 - iv. “U” shall indicate “upstream” inspection direction.
 - v. For example, the video file for the pipe segment from manhole S023-314 to manhole S023-317 inspected upstream to downstream would be named:
“S023-314_S023-317_YYYYMMDD_D”

5.7 Data Files and Reports for SONAR, LASER, LIDAR, Rebound Hammer Test, PPR

- A. If applicable, SONAR, LASER, LIDAR, Rebound Hammer Test, and/or PPR data files and reports shall be provided for each pipe segment inspected.
- B. Each file shall be named using the upstream to downstream unique asset identifiers, underscore date stamp, and underscore inspection direction.
 - i. Unique asset identifiers of the upstream and downstream access points shall be Section 3.8.1 Unique Identifier Naming Convention for Point Feature Assets.
 - ii. The date stamp shall be presented as four (4)-digit year, followed by two (2)-digit month, followed by two (2)- digit day: “YYYYMMDD”.
 - iii. “D” shall indicate “downstream” inspection direction.
 - iv. “U” shall indicate “upstream” inspection direction.

- v. For example, the video file for the pipe segment from manhole S023-314 to manhole S023-317 inspected from upstream to downstream would be named:
“S023-314_S023-317_YYYYMMDD_D”

5.8 Feature/Defect Photographs

Digital photographs shall be provided for each structural defect, operation and maintenance defect, I/I source, construction feature, and miscellaneous feature.

- A. Photographs shall be in JPEG file format.
 - i. The following minimum information shall be displayed on each photo:
 - a. Inspection date
 - b. Inspection time
 - c. Running Footage - current inspection distance relative to the starting position
 - d. Upstream Access Point UNITID
 - e. Downstream Access Point UNITID
 - f. Direction of inspection
 - g. Defect Code
- B. Each photograph file shall be named using the associated video file name, associated PACP defect code, and three (3)-digit linear footage at which the defect was observed in the pipe segment inspection.
 - i. For example, a photograph taken on March 25, 2015, of a Hole Soil Visible defect, 75 linear feet upstream against the direction of flow (reverse set-up), in a pipe segment located south of the Missouri River on atlas map 24 between manholes 500 (upstream manhole) and 498 (downstream manhole), then the photograph file would be named:
“S024-500_S024-498_20150325_U_HSV_075”

5.9 Project Summary Report

The Project Summary Report is a tabular summary of the project.

- A. The Project Summary Report shall be submitted in .xlsx or .csv file format.
- B. At a minimum the Project Summary Report shall include the following fields, organized by pipe segment inspected:
 - i. Inspection date
 - ii. Upstream Access Point (UNITID)
 - iii. Downstream Access Point (UNITID)

- iv. Work Order Number (if provided by CITY)
- v. Pipe Height, PACP Field 31 – Height (Diameter for circular pipes)
- vi. Pipe Width, PACP Field 32 – Width (leave blank for non-circular)
- vii. Pipe Shape, PACP Field 33 – Shape
- viii. Pipe Material, PACP Field 34 – Material
- ix. Total Length – Length of pipe segment as measured in GIS based on X & Y coordinates
- x. Length Surveyed – Total length inspected as measured by Cable Footage Counter
- xi. Inspection Completion Status – Full, Partial, or Unable to Complete. (Any “Partial” inspections or “Unable to Complete” require a reason documented in the “Significant Issue Description” Field.)
- xii. Structural Quick Rating (QSR)
- xiii. Operations & Maintenance Quick Rating (QMR)
- xiv. Overall Quick Rating (QOR)
- xv. Cleaning performed (i.e. Light Cleaning, Heavy Cleaning, Mechanical Cleaning)
- xvi. Volume of debris removed in cubic yards
- xvii. Time spent heavy cleaning in hours (or other units as defined in the Contract Documents)
- xviii. Time spent mechanical cleaning in hours (or other units as defined in the Contract Documents)
- xix. Significant Issue Description (Examples include: Reason for reverse set-up, Miscellaneous Survey Abandoned (MSA) and reason for not completing the pipe inspection, notations such as manhole is buried, requires clearing for access, private property could not be accessed, etc.)

5.10 Could Not Open (CNO) List

- A. If applicable, City will provide a list of access points that were unable to be opened (CNO List) during system characterization to the *Inspector*.
- B. From this CNO List, *Inspector* shall provide an updated tabular summary of access points in xlsx or csv file format, updating the Status Designation of the access point based on the circumstance observed by the *Inspector* at the time of pipe inspection.
- C. CNO List shall include the following fields:
 - i. Access Point UNITID
 - ii. Status Designation from System Characterization (if applicable)
 - iii. Opening Issue Description from System Characterization (if applicable)
 - iv. Status Designation assigned by *Inspector* (during CCTV)

- v. COORD_X (in State Plane Coordinate System Missouri West 2403, feet)
- vi. COORD_Y (in State Plane Coordinate System Missouri West 2403, feet)
- vii. What the access point is Buried Under (for CNO - Buried ONLY)
 - a. N/A (Not applicable, CNO - Seized)
 - b. Pavement
 - c. Debris/Earthen Materials
- viii. Buried Depth in inches (for Buried Under debris/earthen materials ONLY)
- ix. Comments (as necessary)

5.11 Could Not Locate (CNL) List

- A. If applicable, City will provide a list of access points that were unable to be located (CNL List) during system characterization to the *Inspector*.
- B. *Inspector* shall provide an updated tabular summary of access points in xlsx or csv file format, , updating the Status Designation of the access point based on the circumstance observed by the *Inspector* at the time of pipe inspection.
- C. CNL L shall include the following fields:
 - i. Access Point UNITID
 - ii. Status Designation assigned by *Inspector* (during CCTV)
 - iii. COORD_X (in State Plane Coordinate System Missouri West 2403, feet)
 - iv. COORD_Y (in State Plane Coordinate System Missouri West 2403, feet)
 - v. Comments (as necessary)

5.12 Could Not Access (CNA) List

- A. If applicable, City will provide a list of access points that were unable to be accessed (CNA List) during system characterization to the *Inspector*.
- B. From this CNA List, *Inspector* shall provide an updated tabular summary of access points in xlsx or csv file format, updating the Status Designation of the access point based on the circumstance observed by the *Inspector* at the time of pipe inspection.
- C. The CNA List shall include the following fields:
 - i. Access Point UNITID
 - ii. Status Designation from System Characterization (if applicable)
 - iii. Access Issue Description from System Characterization (if applicable)
 - iv. Status Designation assigned by *Inspector* (during CCTV)
 - v. Access Issue Description assigned by *Inspector* (during CCTV)
 - vi. Clearing Requested (Yes/No)

- vii. Clearing Request Map file name per Section 5.13 Clearing Request Map(s) (Note: If no clearing is requested, file name shall indicate “None”)

5.13 Clearing Request Map(s)

- A. *Inspector* shall submit a Clearing Request Map for each clearing request identified:
 - i. in the CNA List (see Section 5.12 Could Not Access (CNA) List).
 - ii. in Project Summary Report significant issue description (see Section 5.9 Project Summary Report)
- B. Each Clearing Request Map shall be submitted as an electronic PDF file with a sheet size of 8.5x11 inches.
- C. Each Clearing Request Map shall have a file name with UNITID, underscore, “ClearingRequest”. (For example, if manhole S024-411 could not be accessed due to clearing issues and clearing is requested, the Clearing Request Map file shall be named: “S024-411_ClearingRequest”).
- D. At a minimum, each Clearing Request Map shall include the following:
 - i. City GIS base file
 - ii. Aerial photography base file
 - iii. North Arrow
 - iv. Scale Bar
 - v. Legend
 - vi. Access points labeled with UNITID and symbology by access point type (Inlet, Manhole, or Other)
 - vii. CNA access point for which clearing is being requested clearly identified from other access points in viewport
 - viii. Proposed clearing extents and area in square feet

5.14 Map Change Forms

Map Change Forms shall be used to identify locations where field observations differ from the City GIS. The following types of map change forms should be utilized depending on the situation.

5.14.1 New Structure

Inspector shall provide a tabular summary (see Attachment 4) of access points not displayed in the City GIS in xlsx or csv file format that includes the following fields:

- A. Temporary UNITID assigned by the *Inspector* (during CCTV)

- B. COORD_X (in State Plane Coordinate System Missouri West 2403, feet)
- C. COORD_Y (in State Plane Coordinate System Missouri West 2403, feet)
- D. Structure Type
 - i. Manhole
 - ii. Inlet
 - iii. Other (Please clarify in “Comments” field)
- E. Original Pipe Segment Reference
- F. Revised Upstream Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
- G. Revised Downstream Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
- H. Permanent UNITID assigned by KC Water
- I. Comments (as necessary)

5.14.2 Change in Structure Type

Inspector shall provide a tabular summary (see Attachment 4) of access points that are displayed as with an incorrect structure type in the City GIS in xls or csv file format that includes the following fields:

- A. Original UNITID assigned in the City GIS
- B. Original Structure Type
 - i. Manhole
 - ii. Inlet
 - iii. Other (Please clarify in “Comments” field, e.g. fitting)
- C. Comments (as necessary)

5.14.3 Flow Direction Change

Inspector shall provide a tabular summary (see Attachment 4) of assets that are displayed with an incorrect flow direction in the City GIS in xls or csv file format that includes the following fields:

- A. Original Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
- B. Revised Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
- C. Comments (as necessary)

5.14.4 Does Not Exist (DNE)

Inspector shall provide a tabular summary (see Attachment 4) of assets that do not exist as confirmed by subsurface pipe inspection in xlsx or csv file format that includes the following fields:

- A. UNITID as assigned in the City GIS
- B. Comments (as necessary)

5.14.5 Miscellaneous

- A. *Inspector* shall provide a schematic in PDF with a sheet size of 8.5x11 inches for assets that are affected by field-observed connectivity issues and/or are not applicable for the other four (4) map change forms (Sections 5.14.1 New Structure, 5.14.2 Change in Structure Type, 5.14.3 Flow Direction Change, and 5.14.4 Does Not Exist (DNE) .
- B. Each Map Change Form schematic shall have a file name of the Revised Pipe Segment Reference.
- C. The schematic shall at a minimum include the following:
 - i. Original Pipe Segment Reference
 - ii. Revised Pipe Segment Reference
 - iii. Two (2) Viewports
 - a. Original GIS features
 - b. Revised GIS features
 - iv. Aerial photography
 - v. North Arrow
 - vi. Scale Bar
 - vii. Legend
 - viii. Pipe Flow Direction Arrows
- D. *Inspector* shall provide a tabular summary (see Attachment 4) of assets that are affected by field-observed connectivity issues and/or are not applicable for the other four (4) map change forms (Sections 5.14.1 New Structure, 5.14.2 Change in Structure Type, 5.14.3 Flow Direction Change, and 5.14.4 Does Not Exist (DNE) in xlsx or csv file format that includes the following fields:
 - i. Original Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
 - ii. Revised Pipe Segment Reference (format for pipe segment reference is UpstreamUNITID_DownstreamUNITID)
 - iii. Map Change Form Schematic File Name
 - iv. Comments

5.15 Cable Footage Counter Calibration Log

- A. Cable footage counter calibrations shall be performed in accordance with Section 3.4.5 CCTV Equipment.
- B. *Inspector* shall submit a Cable Footage Counter Calibration Log, which at a minimum, shall include the following:
 - i. Calibration Date
 - ii. Pre-Measured Length in feet
 - iii. Recorded Cable Footage Length in feet
 - iv. Difference between Recorded Cable Footage Length and Pre-Measured Length (Cable Footage Length minus Pre-Measured Length)
 - v. Percent Difference between Recorded Cable Footage Length and Pre-Measured Length (Difference between Recorded Cable Footage Length and Pre-Measured Length divided by Pre-Measured Length, expressed as percentage)

5.16 Rebound Hammer Calibration Log

- A. Rebound Hammer calibrations shall be performed in accordance with manufacturer requirements.
- B. *Inspector* shall submit a Rebound Hammer Calibration Log , which at a minimum shall include the following:
 - i. Calibration Date
 - ii. Manufacturer Calibration Requirements (i.e. specification, brochure, product literature, etc.)
 - iii. Certification of Calibration (if not performed by *Inspector*)

5.17 Schedule

Inspector shall provide a schedule of work complete and anticipated date of final deliverable in a format desirable to the City.

ATTACHMENT 1 - COULD NOT OPEN (CNO) LIST TEMPLATE

ATTACHMENT 2 – COULD NOT LOCATE (CNL) LIST TEMPLATE

ATTACHMENT 3 – COULD NOT ACCESS (CNA) LIST TEMPLATE

ATTACHMENT 4 - MAP CHANGE FORM TEMPLATES

ATTACHMENT 5 - NASSCO PACP QUALITY CONTROL

ATTACHMENT H
02676 SEWER LINE CLEANING SPECIFICATION

ATTACHMENT H

SECTION 02676 - SEWER LINE CLEANING

PART 1 - GENERAL

All sewer pipe and manholes along the section of sewer line indicated on the drawings shall be cleaned as described herein.

1.01 SCOPE.

This section covers sewer line cleaning. The Contractor shall provide all materials, labor, and equipment necessary to complete all sewer pipe cleaning and to remove all accumulated grease, sand, grit, solids, and debris from the sewer in accordance with the specifications and to the complete satisfaction of the Owner and the Engineer.

Contractor shall locate and make all existing manhole and diversion structure access points open and accessible for the work.

1.02 DESCRIPTION.

Cleaning shall be described as the removal of materials and debris from the sewer line, manholes, and diversion structures, and restoration of the sewer line to a minimum of 95 percent of the original carrying capacity. This does not include the removal of hard deposits such as minerals and cast iron scale.

1.03 RELATED SECTIONS

1.04 CODES AND STANDARDS. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

1.05 CONTRACTOR SUBMITTALS.

Complete details and specifications covering cleaning procedures, modifications, and equipment shall be submitted in accordance with the procedure set forth in the submittals section.

- A. Shop Drawings
- B. Product Data
- C. Test Reports
- D. Certificates

1.06 QUALITY ASSURANCE

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING.

PART 2 - PRODUCTS

2.01 EQUIPMENT.

The equipment selected for cleaning shall be capable of removing all dirt, grease, rock, brick, wood, sand, mud, and other deleterious materials and obstructions from the sewer line. Cleaning shall be performed using hydraulically-propelled, high-velocity and/or mechanically-powered sewer cleaning equipment and vacuum removal equipment.

Contractor shall employ only experienced personnel who are familiar with, and regularly engaged in, the type of work required; shall provide adequate supervision by a qualified supervisor at all times when cleaning is in progress; and shall have access to equipment or proper size and capacity to perform the work as specified herein.

2.02 HYDRAULICALLY-POWERED EQUIPMENT.

The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer or bypassing to waterways. The movable dam shall be equal in diameter to the pipe being cleaned and shall provide a flexible scraper around the outer periphery to ensure removal of grease. If sewer cleaning balls or other equipment which cannot be collapsed are used, special precautions shall be taken that are acceptable to the Owner, to prevent flooding or bypassing of sewers and public property.

2.03 HIGH-VELOCITY EQUIPMENT.

All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a minimum of 700 feet of one inch minimum diameter hose with working pressure ratings to match the rating of the water pressure. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 10 degrees to 45 degrees in all sizes of sewer lines included in this Contract using a minimum volume of 60 gallons of water per minute, at a minimum working pressure of 2,000 pounds per square inch.

Equipment shall also include a high-velocity gun for washing and scouring the manholes and diversion structure walls, channels, shelves, floors, and manhole covers and frames from grade level. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically-driven hose reel. Filler piping on the tank shall have an air gap to prevent backflow and contamination of the water supply system.

Multiple passes (one to three passes) with the water jet shall be made, as required, to flush the debris to the manhole in order to remove the debris. Sewers will be cleaned by introducing the water jet into the sewer line facing against the sewer flow and retrieving the water jet under pressure with the sewer flow. The nozzle shall not be stopped in the sewer line when under working pressure, but shall continue to move through the line at all times.

2.04 MECHANICALLY-POWERED EQUIPMENT.

Bucket machines shall be in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe will not be allowed. A power rodding machine shall be either a sectional or continuous rod type. To ensure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.

PART 3 - EXECUTION

It is the responsibility of the Contractor to properly apply for, secure, and provide for all water needed to perform the work described.

Precautions shall be taken to protect the sanitary sewer structures from damage that may result from improper use of the cleaning equipment.

Contractor is responsible for traffic control, as needed; in addition to Contractor's truck warning lights and traffic cones, as needed or required. Traffic control is subject to review and approval by the Owner.

If successful cleaning cannot be performed without risk of damage to the pipe, or if the equipment fails to traverse the entire line segment, cleaning efforts shall be temporarily

suspended, and the Owner shall be notified. The line segment shall then be evaluated in order to determine if the segment can be adequately cleaned. Any unusual conditions found during the cleaning operations shall be reported to the Owner as soon as possible.

3.01 MANHOLE MODIFICATIONS.

Any modifications to manholes to facilitate cleaning shall be the Contractor's responsibility and shall be subject to approval by Owner.

Contractor shall salvage and reuse all manhole covers and rings that are removed during sewer line and manhole rehabilitation, unless otherwise directed by Engineer.

3.02 ROOT REMOVAL.

All roots shall be removed. Special attention shall be given during the cleaning operation to assure complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners. Chemical root treatment may be used at the option of the Contractor.

When chemicals are used to aid in the removal of roots, the chemical shall be EPA registered and labeled for use in sewer lines and acceptable to all applicable State and City agencies. All material and mixing/application procedures for chemical root treatment shall be consistent with the latest standards, requirements, and recommendations of the manufacturer of the chemical root treatment material used.

3.03 DEBRIS REMOVAL.

All sludge, dirt, sand, grit, rocks, bricks, wood, mud, grease, and any other solid or semi-solid material resulting from the cleaning operation shall be removed using vacuum removal equipment or other methods to assure debris does not cause downstream obstruction. Vacuum equipment shall be suitable for removal of all debris at each manhole location for each line being cleaned. Vacuum system performance will be at least 4,000 CFM and 16" Hg vacuum pressure to ensure all debris can be efficiently removed from the sewer.

A device designed to minimize debris from escaping down the sewer line, the design and use of which is subject to approval by Owner, shall be used in all sewer line cleaning operations. When hydraulic cleaning equipment is used, a suitable sand trap, weir, basket, or dam shall be constructed in the downstream manhole in such a manner that the solids will be trapped while using a rake or sewer shovel to help collect solids.

Material or debris removed from the sewer shall be immediately placed in watertight containers. Containers may include valved drains to remove excess water from containers.

Drainage, including rainfall, shall be contained and returned to the sewer by means acceptable to the Owner.

3.04 DEBRIS DISPOSAL.

All debris removed from the sewer shall be legally disposed of by and at the expense of the Contractor. The disposal facility shall be a permitted landfill. The debris shall be dewatered and suitable for immediate disposal prior to weighing at the landfill. Contractor shall provide the Engineer with scale tickets to verify quantities of debris disposed of in an approved landfill.

Transportation of debris or other material by the Contractor shall be done in vehicles or equipment which contain the debris or other material in such a manner to minimize objectionable odor and avoid the possibility of dripping, spilling, scattering, leaking, or blowing. Should mishaps occur for any reason, the Contractor shall be responsible for cleaning up any debris or other material to the satisfaction of the Owner or other authorities having jurisdiction. All vehicles transporting debris or other material shall not exceed the maximum allowable load limits of any road being used.

3.05 CLEANING PRECAUTIONS.

During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools, which depend on water pressure to provide their cleaning force, or tools which retard flow in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not damage or cause flooding to public or private property being served by the sewer being cleaned or does not cause bypassing of flow to nearby waterways.

The flow of wastewater in the sewers shall be utilized to provide necessary pressures of hydraulic cleaning devices whenever possible. When additional water is required from other sources to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed in case of fire in the area served by the hydrant.

The Contractor shall be responsible for all damage to public and private property as a result of all cleaning operations. The cost of restoring any damaged area to conditions prior to cleaning shall be borne by the Contractor at no additional cost to the Owner.

3.06 PUMPING AND BYPASSING.

When pumping and bypassing is required, Contractor shall supply the pumps, piping, and other equipment necessary to divert the flow of wastewater around the sewer section being cleaned and back into the interceptor sewer. All existing wastewater flows, plus waters added to the flow due to cleaning, shall be contained within the existing sewer system. The bypass system shall have the necessary capacity to handle all the flow.

The Contractor shall be responsible for furnishing the labor and supervision necessary to set up and operate the pumping and bypass system. For pumping and bypassing

operations, a plan must be submitted in accordance with the procedures set forth in the submittals section.

In performing the work under this Contract, Contractor shall be thoroughly familiar with federal, state, and local statutes, ordinances, and directives with respect to excessive noise and pollution of air and water due to construction operations. If pumping and bypassing is required, engines shall be equipped in a manner to keep noise to a minimum.

3.07 ACCEPTANCE OF WORK.

Contractor shall televise the sewers, in accordance with the television inspection section, upon the completion of cleaning. Acceptance of sewer line cleaning shall be based upon the review of the inspection videos by the Owner or Owner's Representative.

If cleaning inspections show the cleaning to be unsatisfactory, the Contractor shall be required to reclean and reinspect the sewer line, at no additional cost to the Owner, until cleaning is shown to be satisfactory.

END OF SECTION

SECTION 02180 – CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 SUMMARY

- A. Clearing and grubbing, within the Site and as indicated in the Contract Documents, shall consist of the removal and disposal of all trees, stumps, roots, logs, shrubs, grass, weeds, fallen timber, trash (surface and buried), buildings, foundations, fences and all other material designated for removal and disposal.

1.02 SPECIFICATION MODIFICATIONS

- A. It is understood that throughout this section these Specifications may be modified by appropriate items in Section 01015 – Specific Project Requirements and as indicated in the Contract Documents.

1.03 RELATED SECTIONS

- A. Section 01015 – Specific Project Requirements.
- B. Section 02190 – Demolition.
- C. Section 02200 – Earthwork.
- D. Section 02575 – Restoration.
- E. Section 02949 – Tree Protection, Removal and Replacement.

1.04 CODES AND STANDARDS

- A. Note used.

1.05 DEFINITIONS

- A. Clearing – The removal and disposal of all materials such as trees, brush, fallen timber and other materials found on or above the surface of the site. It shall include, but is not limited to, the removal of the following: buildings (see also Section 02190 – Demolition), fences, lumber, trash and other waste. Salvaging and disposing of the materials shall be as specified in this section and in the Contract Documents.
- B. Scalping – The removal and disposal of material such as: sod, grass, weeds, agricultural crops, bushes, brush and all decayed vegetative matter from the surface of the ground without disturbing the earth more than is necessary.
- C. Grubbing – The removal and disposal of all material such as stumps, roots, buried debris, foundations and trash encountered below the surface of the ground that has not been included in the description of clearing.
- D. Trees – Woody growth having a diameter of 2 inches or greater as measured 4.5 feet above the ground.
- E. Brush – Dense vegetation consisting of shrubs, bushes and small trees less than 2 inches in diameter as measured 4.5 feet above the ground.

1.06 INFORMATION PROVIDED BY THE CITY

- A. As provided in the Contract Documents.

1.07 SUBMITTALS

- A. Submit as specified in Section 01300 – Submittals.
- B. Other Submittals:
 - 1. All permits required for the Work specified in this section.

2. Landfill Information. The Contractor shall submit for review and approval all proposed landfill sites to be used for the disposal of debris resulting from clearing and grubbing.

1.08 QUALITY ASSURANCE

- A. The Contractor is responsible for the quality assurance and quality control of the Work.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Salvaged materials shall be handled, stored and delivered as specified in Section 01015 – Specific Project Requirements.

1.10 LIMITS OF WORK

- A. The limits of clearing and grubbing shall extend to the construction limits unless otherwise shown on the Drawings. Clearing should only occur in those areas required for construction within a six-month period.
- B. Large projects shall be cleared and grubbed as construction progresses. Mass clearing and grubbing shall be avoided.
- C. An undisturbed strip of not less than 25 feet in width consisting of existing grass or other vegetation shall be kept in place around the perimeter of the construction site and protected from damage. The Contractor shall scalp only those areas necessary for the construction of the project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 PERIMETER EROSION AND SEDIMENT CONTROLS

- A. Perimeter erosion and sediment controls shall be installed prior to the start of clearing and grubbing the Site.
- B. When needed for the installation of perimeter controls, limited clearing and grubbing will be allowed to accommodate the Contractor's perimeter installation operation.

3.02 PRESERVATION OF TREES

- A. All work associated with trees shall be done in accordance with Section 02949 - Tree Protection, Removal and Replacement. No trees shall be removed outside the excavated area or outside filled areas, unless their removal is indicated on the Drawings or as authorized by the City in accordance with Section 02949.
- B. Trees left standing shall be protected from permanent damage by construction operations in accordance with Section 02949 - Tree Protection, Removal and Replacement.

3.03 NOTIFICATIONS

- A. The Contractor shall notify property owners at least one (1) week in advance of removing any special plantings (flowers, ornamental trees, bushes, plants, etc...) so that the property owner has a reasonable opportunity to transplant prior to the Contractor's work activities.

3.04 CLEARING

- A. Trees located within the permanent easement and temporary construction easement shall be removed as indicated on the Drawings and in accordance with Section 02949.

- B. Clearing shall consist of removing all materials such as trees, brush, downed timber, trash, waste and other objectionable materials found on or above the surface of the site.
- C. The Contractor shall tag or identify existing trees, shrubs and landscape materials to be removed; and obtain City approval prior to removal in accordance with Section 02949.

3.05 SCALPING

- A. Scalping shall include the removal and disposal of material such as: sod, grass, weeds, agricultural crops, bushes, brush and all decayed vegetative matter from the surface of the ground without disturbing the earth more than is necessary.

3.06 GRUBBING

- A. Grubbing shall consist of the removal and disposal of all material such as stumps, roots, buried debris, foundations and trash encountered below the surface of the ground that has not been included in the description of clearing.
- B. The vegetative matter shall be removed to the following depths:
 - 1. A minimum depth of 12 inches below ground line or subgrade, whichever is lower.
 - 2. A minimum depth of 18 inches below ground line or subgrade, whichever is lower, at water containment areas (berms, dams, levees, lagoons, ponds, dikes etc.).
- C. Remove and dispose of all stumps, roots and other vegetative matter larger than 2 inches in diameter.
- D. When materials encountered below grade that are detrimental to the proposed improvement, the material shall be removed to a depth necessary to provide adequate space for installation and support for the proposed improvement.

3.07 EMBANKMENT AREAS

- A. Unless otherwise noted on the plans, where undisturbed stumps and roots are encountered and the fill depth will exceed 3 feet, the stumps and roots may be left in place provided they do not extend above final grade.

3.08 BORROW AREAS

- A. All stumps, roots and other objectionable matter shall be removed from the borrow material used for embankment or fill. The borrow area shall be left in a well-drained and smooth condition and restored in accordance with Section 02575 – Restoration.

3.09 BACKFILL

- A. Backfill all holes, pits and depressions resulting from clearing and grubbing.
- B. Backfill with suitable material placed and compacted in conformance with Section 02200 – Earthwork and grade the area to drain.

3.10 DISPOSAL OF MATERIAL

- A. Dispose of all materials from the clearing and grubbing operations at a City approved location, as arranged for by Contractor, at no additional cost to City.
- B. Unless otherwise specified in Section 01015 – Specific Project Requirements or other portions of the Contract Documents, the Contractor may claim and salvage any material which the Contractor may consider of value but shall not delay any work associated with the Contract by the salvaging operations.
- C. Open burning of brush or debris on the Site is not allowed unless approved by the City. If approved by the City, the Contractor shall obtain all permits required for open burning.

END OF SECTION