

SECTION 33 01 30.16 – CLOSED CIRCUIT TELEVISION

PART 1 - GENERAL

1.1 SCOPE

- A. The intent of this specification is to define machinery used, responsibilities, and results of closed circuit television inspection of the designated pipeline.
- B. The CONTRACTOR shall have previously cleaned the line to be inspected.

1.2 SUBMITTALS FOR INFORMATION

- A. Submit documentation that equipment planned for use on the project conforms to the requirements listed in these specifications.
- B. Prepare and submit a detailed progress schedule in graphic form showing proposed dates of starting and completing each major division of work, monthly completion percentages, and anticipated monthly payment requests. The schedule shall be consistent with the sequence requirements of the specifications. Submit three copies to the engineer within 10 days after notice to proceed. Submit a revised schedule with each pay request.
- C. The Contractor shall submit preconstruction photos, either still or video, of the area within a 20-foot radius of any work area and shall submit them to the engineer prior to the start of construction in any work area. Photo documentation shall not be performed more than 7 days prior to the start of construction at any individual work site.

1.3 PROJECT/SITE CONDITIONS

- A. Notify Owner and Engineer no less than 72 hours prior to starting work.
- B. Verify site conditions prior to start of work. Starting work constitutes acceptance of existing conditions.

1.4 CONTRACTOR RESPONSIBILITIES

- A. Inspection of the pipeline shall be performed by experienced personnel trained in locating breaks and obstacles by closed-circuit television or man entry. The interior of the pipeline should be carefully inspected to determine the location of any conditions that may prevent proper installation of pipeline rehabilitation materials such as protruding, collapsed or crushed pipe, and reductions in the pipe diameter of more than ten (10) percent. These conditions should be noted so that they can be corrected in a future contract.
- B. The CONTRACTOR shall be responsible for any damage to public or private property resulting from his work and shall repair to a condition equivalent to or better than that existing prior to this work or otherwise make whole such damage at no cost to OWNER subject to the ENGINEER'S approval.
- C. The CONTRACTOR shall be solely responsible for safety during the performance of all Work and shall perform all work in accordance with the latest OSHA confined space entry regulations. CONTRACTOR shall coordinate his work with local fire, police and emergency rescue units.
- D. The CONTRACTOR shall obtain municipal and other governmental licenses and permits, approvals or consent from utilities or carriers, such as, the telephone companies or other

persons or organizations upon whose performance of work under the contract might impinge. The CONTRACTOR shall request written release from responsibility for the performance of work under the contract, if and to the extent such work is precluded by the inability to obtain such approvals or consent.

- E. The CONTRACTOR shall review all available information pertinent to the site of the project including reports prepared under previous accomplished studies or surveys and any other data relating to the design of the project, including maps, drawings, construction specifications, pipeline system records, etc., as provided by OWNER.
- F. The CONTRACTOR shall provide all necessary access points for CCTV and pipe cleaning.
- G. The CONTRACTOR shall notify third parties (such as public utilities and the telephone company) of the Contractor's intent to perform work in an area where such parties may have rights to underground property or facilities and request for maps or other descriptive information as to the nature and location of such underground facilities or property and assurance of the Contractor's ability to enter upon any public or private lands to which access is required for performance of the work under the contract.
- H. The CONTRACTOR shall obtain a secure storage area of a size adequate to accommodate the required equipment, vehicles, and materials for the period of performance of the agreement.
- I. The CONTRACTOR shall arrange traffic control when the safety of work or the public requires such protection or as may be otherwise specified.
- J. The CONTRACTOR shall have the ability to communicate with all crews and the ENGINEER at all times. The CONTRACTOR shall have a cellular telephone and a pager at which the superintendent can be reached at any time while the work is under way.
- K. The CONTRACTOR shall provide daily notification of work locations to the OWNER and the ENGINEER. CONTRACTOR shall also notify the OWNER and ENGINEER in the event that a point repair is to be made or if equipment becomes lodged.
- L. The CONTRACTOR shall maintain a log of incidents and customer complaints. The log shall include date and time of call or incident, nature of complaint and resolution, if any. Logs shall be made available to OWNER or ENGINEER upon request. All pipe cleaning and CCTV inspections shall be documented on forms approved by the ENGINEER.
- M. The CONTRACTOR shall route all requests for Owner action through the ENGINEER.
- N. The CONTRACTOR shall obtain written permission to cross private property for access to the pipeline segment where easements are inadequate.
- O. Cost for excavation to retrieve inspection equipment shall be the responsibility of the Contractor. The Owner shall not be liable for any costs relative to retrieving inspection equipment from the pipeline.

1.5 OWNER'S RESPONSIBILITIES

- A. The OWNER shall provide any available records for all areas of the project.
- B. The OWNER shall provide authorization to perform work that must be performed during nighttime hours or weekends or on holidays.

- C. The OWNER shall review and respond to all submittals and written requests submitted by the CONTRACTOR.

PART 2 - PRODUCTS

2.1 TELEVISION EQUIPMENT

- A. Television inspection equipment shall have an accurate footage counter that displays on a remote monitor the exact distance of the camera from a set starting point that is to be determined in the field.
- B. The camera shall be capable of operation in 100% humidity conditions.
- C. The camera shall be remotely operated with pan and tilt capabilities. The rotating camera and lighthouse configuration shall provide 360 degrees of pan and tilt angle measuring centerline to centerline and 70 degree lens viewing angle.
- D. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe acceptable to the Engineer.
- E. The camera shall broadcast color signals and shall provide a minimum of 600 lines of horizontal resolution.
- F. The color camera shall be equipped with the necessary circuitry to allow for the remote adjustment of the optical focus and iris from the power control unit at the viewing station.

2.2 RECORDING EQUIPMENT

- A. Recording equipment shall be equipped with data recorder showing the following:
 - 1. Date and time
 - 2. Footage
 - 3. Project name, Contract number, and name of Contractor
 - 4. Access location
 - 5. Line Segment Number
- B. The image pick-up device shall contain no less than 379,000 picture elements (pixels). Geometrical distortion of the image shall not exceed one percent.
- C. The entire length of the inspected pipe shall be recorded on DVD and shall become the property of the OWNER.

PART 3 - EXECUTION

3.1 PREPARATION

- A. The CONTRACTOR shall make all provisions for access of inspection equipment to the individual inspection access point locations. The number of and the location of the inspection access points shall be as agreed upon between the OWNER, ENGINEER, and CONTRACTOR.
- B. Access points at each end of the inspected pipeline segment shall be constructed as necessary. On completion of the television inspection of each pipe segment and after site restoration, the Contractor shall install an 8-foot steel fence post at the finish ground surface on the center point of each access point. An aluminum sign, 3 inches by 6 inches, shall be bolted to the fence post

not less than 4 feet above the finish ground. The sign shall be painted white, with 2 inch black lettering that denotes the access point in a sequential number acceptable to the Engineer.

- C. The access points, except as agreed to by ENGINEER, shall be configured as shown on the attached Exhibit "A."

3.2 INSPECTION

- A. The maximum allowable water level for inspection by use of CCTV shall be no more than 33% of the pipe diameter.
- B. Inspection of the pipeline shall be performed by experienced personnel trained in locating breaks and obstacles by closed-circuit television, or man entry. The interior of the pipeline should be carefully inspected to determine the location of any conditions that may prevent proper installation of pipeline rehabilitation materials such as protruding, collapsed or crushed pipe, and reductions in the pipe diameter of more than ten (10) percent. These conditions should be noted so that they can be corrected in a future pipeline rehabilitation contract.
- C. The camera shall be moved through the line in either direction at a uniformly slow rate, stopping at all defects to allow adequate evaluation by the Engineer.
- D. Inspection of the pipeline shall be performed by CCTV except where conditions warrant alternative means.
- E. If water is encountered, such as in low areas of the pipe profile, the inspection shall be accomplished by an alternative approved method.
- F. If passage of the camera is blocked or excessive roots are encountered, the pipeline shall again be cleaned using approved equipment.

3.3 VIEWING

- A. The closed system inspection contractor shall provide facilities for the purpose of viewing the monitor while the inspection is in progress.
- B. The Engineer shall witness the television inspection

3.4 RECORD LOGS

- A. The video tape or DVD of each pipeline segment shall note on the recording the project name and number, the beginning access location, the ending access location, the time and date of inspection and other information in accordance with Section 2.3.A. Footage for camera location in the line shall be displayed continuously during the inspections.
- B. The original unaltered cassette video tapes will be reviewed by the ENGINEER for focus, lighting, clarity of view, and technical quality. The inspection company shall maintain sharp focus, proper lighting, and clear, distortion-free viewing during the camera operations. Failure to maintain these conditions can result in rejection of the video tape by the ENGINEER. Any line whose video tape is not acceptable to the ENGINEER shall be re-televised at no expense to the OWNER or the ENGINEER.
- C. Defects shall be described and quantified on the video tapes by the company doing the inspection. Measurement for location of defects in the lines shall be at the ground level by means of a metering device. Measurement meters shall be accurate to 2 percent.

Measurements shall be referenced from the center of the access point and displayed on the video tape. At least two offset hubs shall be placed for future reference and location.

- D. Upon completion of the work, the CONTRACTOR shall submit to the Engineer two copies of a typewritten Final Report summarizing the results of the pipeline inspection. The report shall include:
1. written summary of the inspection which lists and describes location, type, and extent of pipe and joint defects or openings;
 2. photographs supporting the description of pipe and joint defects;
 3. daily inspection logs;
 4. maps showing locations of the pipeline, reference points, and access points; and
 5. video tapes and DVDs, including the original tape.

3.5 FINAL ACCEPTANCE

- A. The CONTRACTOR shall submit the complete Final Report to the ENGINEER within two weeks after completion of inspection.
- B. The CONTRACTOR shall secure access points as shown in the attached Exhibit "A."
- C. The CONTRACTOR shall restore damages to all public or private property to a condition equivalent to or better than that existing before commencement of this project.

- END OF SECTION -