
POLICY

Page: 1 of 3

Number: DECM.12.POL.601

Title: CLOSED-CIRCUIT TELEVISION
INSPECTION

Approved: 
Resource Stewardship Director

Related: None

Approved: 
Drainage Manual Administrator

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Control Manual / TCC 15.05

DECM.12.POL.601 CLOSED-CIRCUIT TELEVISION INSPECTION & AIR PRESSURE TEST

This policy applies to all development and redevelopment projects in Thurston County subject to the Drainage Design and Erosion Control Manual.

Purpose:

The purpose of this policy is to clarify Closed-Circuit Television Inspection (CCTV) and Air Pressure Test (APT) requirements when storm drainage systems are designed and constructed in accordance with the Thurston County Drainage Design and Erosion Control Manual (DDECM).

The DDECM does not stipulate how and when CCTV or APT will be required for projects that include storm drain pipes 8" and larger. Therefore, this policy defines how and when CCTV and APT will be required before final acceptance.

Policy:

All new storm drain pipelines shall be Closed-circuit television (CCTV) inspected and Air Pressure Tested (APT) by the developer, contractor or applicant prior to paving when practical. **Required Pre-Notification:** The Contractor shall notify the County Storm and Surface Water Utility at 360-867-2099 at least 3 Working Days in advance of the first television inspection. The DVD and inspection summary of the inspection and testing shall become the property of the County. The County will review the CCTV inspection and APT results and will notify the Contractor if the review revealed deficiencies. The following deficiencies in storm drain installations that are identified by the Inspector or by television inspection or pressure testing shall be corrected by the Contractor at no cost to the County:

1. When the low pressure air test (following criteria set in the most current version of WSDOT Standard Specifications) discloses leakage greater than that allowed.
2. Joint deflection greater than the manufacturer's recommended maximum or county standards if applicable.
3. Cracked or damaged pipe, including liner pipe.
4. Debris in the line.
5. Identifiable sags or high points in the line greater than 1 inch in pipes 8" and larger.

All other criteria as set by the County Standard Specification and/or special conditions shall apply for storm drain pipes. The Contractor will be notified in writing of any deficiencies revealed by the television

POLICY

inspection that will require repair. The Contractor may request a review of the video or test results with the County. Upon completion of the required corrective actions, the storm drain will be re-televised and pressure tested in accordance with this Section. This process shall be repeated until the review of the inspections reveals a satisfactory installation.

Required Pre-Notification: The Contractor shall notify the County Storm and Surface Water Utility at 360-867-2099 at least 3 Working Days in advance of the first television inspection.

The television inspection requirements shall include the provisions of:

1. **Personnel Qualifications:** Personnel performing television inspection shall have completed the Pipeline Assessment and Certification Program (PACP). Contractor shall submit said certification to the County at the time of required pre-notification.
2. A dye solution to be introduced in sufficient quantity to travel from the structure that is the highest point of inspection to the downstream terminus of the inspection limits. Red or purple dye shall be used for PVC or PE pipe and green dye for ductile iron and concrete pipe.
3. A one-inch reference ball to be mounted to the camera in order to drag along the bottom of the pipe during the entire inspection procedure.
4. **Camera Equipment:** The camera shall be a 360-degree radial view color television camera (also known as "pan and tilt") with a mechanical footage counter calibrated to indicate video footage consistent with distance traveled in the pipe. Footage shall be zeroed at centerline of the structure (maintenance hole, vault, etc.) where the video begins and footage shall increase as it travels forward, and decrease when backward camera movement is required. Footage shall be displayed on the video recording and be mentioned on the audio portion (see "audio commentary on recording"). Correct adjustment of the recording apparatus and monitor shall be demonstrated by use of the test video or other device approved by the County. Satisfactory performance of the camera shall be demonstrated by the recording of the appropriate test device at the commencement of each day for a minimum period of 30 seconds [over a minimum of fifteen feet].
5. **Light Source:** The camera shall have a light source providing adequate illumination to clearly identify invert, crown, joints, sides, connections, and infiltration/exfiltration. Illumination shall be capable of providing adequate illumination to at least 15 feet in front of the camera.
6. **Camera travel in the pipe:** All mainline inspections shall be from the downstream MH (DSMH) to the upstream MH (USMH). The camera shall be positioned to reduce the risk of picture distortion. In circular pipes the camera lens head shall be positioned centrally within the pipe. The camera shall travel along pipe invert to provide the best view of the crown, invert, connections and sides of the pipe, and shall travel at a speed no faster than 25 feet per minute.
7. **Audio commentary on recording:** Commentary shall be objective and shall be based on PACP defined assessment conditions. Audio shall be intelligible and shall be as free from interference and background noise as can reasonably be done. Subjective comments (such as "the fault of", "caused by", and opinion, etc.) shall not be used. Comment shall include the footage location of the comment, each connection, the starting and ending structure, indicated flaws, areas of infiltration/exfiltration, open joints, outfall, and other features as may be necessary.
8. **Required Labeling on recording and in audio commentary:** Each recording shall have audio accompaniment and shall address a single run of pipe between two (2) structures (manhole, vaults, catch basin, tee, or ending in an outfall, etc.) on a single DVD-R disc. The recording shall contain a legible label that clearly states the following, and the audio commentary shall begin with the following:
 - a. Date and time of day television inspection performed;
 - b. Names of television inspection crew members;
 - c. Project or development name, project number listed on Drawings, and Drawing sheet number;

POLICY

- d. Location with structure labels (for example – catchbasin 25, vault 2, outfall, etc.), camera travel direction, size of pipe, pipe material (such as “Broad Street, 5th Ave west to midblock, maintenance holes 24 to 25, going upstream, 24 inch reinforced concrete pipe”); and
 - e. a unique identification number, with these numbers being in consecutive sequence on all DVD-R discs of Project pipe.
9. Recording quality and characteristics: Television inspections shall be submitted on DVD-R discs. All inspections should be done in a PACP format.
- a. At the start of each pipe length being surveyed or inspected and each reverse set-up, the length of pipeline from zero footage, the entrance to the pipe, up to the cable calibration point shall be recorded and reported in order to obtain a full record of the pipe length. Only one survey shall be indicated in the final report. All reverse set-ups, blind maintenances, and buried manholes shall be logged on a separate log.
 - b. The footage reading entered on to the data display at the cable calibration point shall allow for the distance from the start of the survey/inspection to the cable calibration point such that the footage at the start of the survey is zero.
 - c. At the start of each pipe, a data generator shall electronically generate and clearly display on the viewing monitor and subsequently on the DVD-R recording a record of data in alphanumeric form containing all fields required by the PACP information standard including MH depths.
 - d. The size and position of the data display shall be such as not to interfere with the main subject of the picture and centered on the viewing screen with white lettering against a black background.
 - e. Once the survey of the pipe is under way, the following minimum information shall be continually displayed:
 - i. Automatic update of the camera’s footage position in the pipe line from adjusted zero.
 - ii. Pipe dimensions in inches
 - iii. MH-to-MH reference numbers.
 - iv. Direction of survey, i.e., downstream (D) or upstream (U).
 - v. Date
 - f. Footage and corresponding time elapsed video read out shall be given throughout survey/inspection for all relevant defects and construction features encountered unless otherwise agreed. All continuous defects shall incorporate a start and finish abbreviation in the log report.
 - g. Recording of a single segment of pipe shall not extend over more than one DVD-R disc. A completed inspection shall be continuous between MH’s. An inspection from different directions and overlapping shall not be acceptable.
 - h. Reinspection: Should television inspection reveal defective work, the Contractor shall, upon written notice from the Engineer, correct said defects. An additional television inspection (“reinspection”) shall then be taken of the corrected pipe run to verify the corrected pipe meets Specifications. The audio portion on this recording shall indicate the same information as specified in “Required Labeling on recording and in audio commentary” also stating “this is an additional television inspection to verify corrections at footage location”.

The following television inspection information shall be provided to the County:

- 1. A clear color DVD which encompasses the limits of the project area and including all reference data as described herein.
- 2. A written report shall be provided corresponding to the recorded inspection and including all reference data as described herein. The report shall consist of a written narrative of all distinctive pipe conditions including ponding areas in excess of 1/2 inch.