

City of Duncan Supplementary Specifications CCTV Requirements for Sewer Inspection

Document History

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Contents

Introduction	1
Preparing of Sewers for CCTV	1
Equipment.....	2
1. Camera Specifications.....	2
2. Lighting Specifications	2
3. Recording Equipment	3
Inspection Procedure	3
CCTV Inspection Format and Submission	4
Report Format.....	4
Data Labelling.....	4
File Naming	5

Introduction

The City of Duncan (the City) has adopted Master Municipal Contract Documents (MMCD) Platinum Edition (2009) for construction, operations, and maintenance of public infrastructure. This supplementary specification should be read together with MMCD Platinum for the purposes of work associated with:

- Section 33 01 30.1 - CCTV Inspection of Pipelines and Cleaning of Sewers; and
- Section 33 01 30.2 – Cleaning of Sewers

This supplemental information is intended to identify City’s specific requirements into a reference document and is a requirement for all CCTV videos submitted to the City for inspection of gravity sewers associated with Development Servicing, Capital Projects, Public Works review, and other work in City right-of-ways.

Preparing of Sewers for CCTV

Sewers shall be flushed prior to inspection. In the event that videos are submitted and sewers are not clean enough for appropriate review, the inspection will not be accepted.

For new sewer, the line should be loaded with water at 100% water level and then drained prior to camera work. A use of a dye strip is preferred.

If sewer flow is greater than 30% capacity, draining and dewatering the line may be required. The contractor shall notify the City Project Manager or its authorized representative. In the opinion of the City Project Manager or its authorized representative one of the following shall take place:

- Request contractor reschedule work for off peak flow times;
- Allow CCTV inspection regardless of depth of flow;
- Allow Contractor to temporary bypass pump the flow using pumping equipment. Bypass pump plugs to be flow through with hoses and pump of sufficient capacity to handle the peak flow. Hoses and couplings to be leak free. Flow to be pumped to downstream maintenance hole on same effluent network or run as inspection is to take place. Payment will be made on a per occurrence basis based on unit rates of the contract. If there is no contract, lump sum cost estimate will be provided by the contractor to the City Project Manager or authorized representative;
- Allow Contractor plug designed to impede flow (“flow through” plug) to the approximate 1/3 of pipe diameter;
- Direct plugging or blocking of the all sewer flow by City forces to permit CCTV inspection.

Access to manholes and other access points are the contractor’s responsibilities. All brushing, jack hammering, excavating, trespass and communication with the home owner, etc., should be provided at the time of the cost estimate.

Dump site for the vacuum truck is the contractor’s responsibility. Obtaining all work-related permitting will be the contractor’s responsibility. This is subject to but not limited to Highways Permitting, Environmental Permitting, City permitting, and Work Safe permitting. The City may request the location of the dump site and/or work-related permitting.

After the deficiencies are fixed, at the discretion of the City or its authorized representative, a post CCTV may be required confirming the work.

Equipment

1. Camera Specifications

- a) The camera used for the inspection shall be a self-leveling, colour CCTV camera specifically designed and constructed for such inspection. The CCTV camera shall operate in 100% humidity or submerged conditions.
- b) Camera equipment shall consist of a self-contained, closed-circuit colour television camera (high resolution, minimum 350 TV line (TVL) image and a monitoring unit connected by a co-axial cable.
- c) The co-axial cable shall be of a single length. Joining cables will not be permitted. The camera unit shall be capable of passing through a 75 mm diameter pipe.
- d) The camera’s picture resolution shall, at the discretion of the municipality, be confirmed using a RS resolution chart (retina type) or other method.

2. Lighting Specifications

- a) Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe.
- b) The unit shall have a self-contained lighting system capable of providing a clear monitor picture and lighting the periphery of the pipe of a minimum illumination level of 100-foot candles over a minimum distance of 2 meters.

3. Recording Equipment

Recording equipment shall allow direct capture of the inspection video image in digital form to an accompanying computer. File format shall be MPEG/MP4 as referenced in *Section CCTV Inspection Format and Submission* below.

- a) Linear measure in metric through private sewer connections must be accurate to $\pm 5\%$.
- b) While video recording is in progress, information on private sewer connection conditions, diameter changes, and material changes, shall be collected and recorded in the digital format specified herein.

Inspection Procedure

1. The video shall be of quality that all minor defects (hairline cracks, etc) are clearly visible, and the colour of the private sewer connection inspected is true to the actual conditions.
2. The applicant shall be required to re-submit the video(s), if the video(s) does not meet the quality requirements as determined by the City or its authorized representative.
3. The video shall record a maximum of one (1) civic address per CCTV file submittal and clearly identify the private sewer connection as sanitary, combined or storm.
4. A title page for the video image is to be provided identifying the date, the civic address of the private sewer connection inspected and the RPPP file number.
5. Each individual inspection recording must be a continuous recording.
6. The camera lens shall be kept clean at all times. No video inspection shall proceed while the camera lens is dirty.
7. Under the circumstances that a camera lens has to be fully submerged and lens is no longer visible, or CCTV has to be terminated; the operator shall make all efforts to camera from the opposite direction of the main or lateral reaching to the point of previous termination.
8. All video inspection work for service laterals shall proceed from the stack, where possible, to the main sewer. The recording shall include removal of the camera from the private sewer connection or move as closely as possible into the downstream manhole or sewer main.
9. The inspection video shall have a continuous chainage in meters indicated on the screen. For service laterals, the chainage indicator shall be adjusted to indicate the chainage from the stack to the main sewer.
10. All changes in sewer connection diameter and material will be recorded.
11. If water levels in the line(s) do not permit a full view of the sewer connection due to sumps or dips, the report will indicate the start and end of each sump.
12. The inside wall of the City's sanitary, combined or storm sewer main(s) shall be clearly visible at the end of the inspection recording.
13. Should the CCTV become immovable in the sewer line, the City is to be notified immediately.
14. The City will accept push camera footage for catchbasin leads or for mains less than 75mm (3"). Documentation and labelling methods must be submitted to an approved equivalent to NASSCO standard.
15. The City will accept push camera footage when notified as a last resort to obstructions or constraints encountered within the pipe survey that would otherwise force termination of the inspection.

CCTV Inspection Format and Submission

- All CCTV data shall be collected using National Association of Sewer Service Companies (NASSCO) – Pipe Assessment and Certification (PACP) Version 8.0 methodology.
- All Inspection Records shall be submitted in a digital format (i.e. database and report). PDF copies of datasets shall be in addition to a database or spreadsheet.
- Video files shall be submitted in MP4 format, MPEG format, or other standard formats, provided that the file can be used in the City’s network.
- Photo files shall be submitted in JPG or other standard formats, provided that the file can be used in the City’s network.
- Digital information (e.g. datasets, reports, images, videos) can be submitted on USB flash drive or via a secure fileshare site.
- All coding of observations shall be completed as per the PACP standard.
- All units shall be in metric.
- Inspections are not required to be submitted in binders as hard copies.

Report Format

The report shall have a similar template to NASSCO and shall include:

- Municipal address.
- Date of inspection.
- RPPP number.
- Continuous chainage in meters.
- A record of all locations where the sewer connection changes material and/or material.
- For Service Laterals, a record of the main stack location including its diameter, the distance from the stack to the foundation facing the street, and if its accessible.
- The City shall be notified when all unidentified infrastructure and backflow devices are encountered during the survey to provide further direction.
- Using current NASSCO coding/description, a record of all findings such as damage, roots, grease, obstruction etc., description must include:
 - Type of finding(s).
 - “Pasted” image of the starting and ending manhole/cleanout location at original ground facing north of CCTV. N/A if termination ended early.
 - “Pasted” still images of the finding(s) in the report.
 - Distance from the stack to the finding(s).
- A record of the total distance of private/public sewer connection inspected.

Data Labelling

All assets shall be named as per the City’s GIS naming convention where possible:

DMH: Storm Sewer Manholes

SMH: Sanitary Sewer Manholes

File Naming

All video files shall be from a manhole to a manhole, cleanout or termination of the pipe. In the cases where there is no manhole or cleanout, the City has applied administrative nodes in our system to describe unique asset conditions between manholes. These will be provided at the time of the project by the City.

All videos shall be named in the following way:

For mains

YYYY.MM.DD_Main ID_UpstreamMH ID_to_DownstreamMH ID_Street/Ave _ Project Number

For laterals

YYYY.MM.DD _Lateral ID_Main ID_House # Street/Ave _ Project Number

All main segments shall have a minimum of one still photo. This photo should capture a typical section of pipe free of defects, that indicates a high-water level mark. These files shall be named as follows:

UpstreamMH ID_DownstreamMH ID TYPICAL YYYYMMDD

Still photos shall be provided for any defects or operating issues that are severity 3.0 or worse. These files shall be named:

For mains

YYYY.MM.DD_UpstreamMH ID_to_DownstreamMH ID_OBS1_DIST

YYYY.MM.DD_UpstreamMH ID_to_DownstreamMH ID_OBS2_DIST

YYYY.MM.DD_UpstreamMH ID_to_DownstreamMH ID_OBS3_DIST

or

For laterals

YYYY.MM.DD Lateral ID_OBS1_DIST