



## 2024 Sewer CCTV Inspection Requirements

1. The District will provide asset ID's for all manhole and pipes to be used during the CCTV work, as well as a pdf map of the development.
2. All sewer main line pipes, laterals and manholes must be video inspected and recorded.
  - Laterals do not need to be recorded only if the end cap is visible from the main line.
3. All pipes shall be cleaned and flushed, and manholes channeled, prior to CCTV inspection. Use contrasting dye when adding water before recording.
4. Start videoing from the downstream manhole to upstream manhole.
5. The **center** of the downstream manhole will start at **zero** and the uphill manhole footage will be finished at the **center** of the upstream manhole. Verbalize the sewer lateral with a station such as 1+64 along with writing on the screen to document on the video log.
6. Control the lighting power to best visualize the system including sewer laterals.
7. Focus on any deficiencies, and **verbalize** on the recording anything documented on the log.
8. Stop and video all fittings including the bell and spigot connections and lateral connections. **Inverts of the sewer laterals are vital.** Visualize any joints that appear to not be normal such as wide gaps which require video around the connection point to see if any gasket is showing. Verbalize and document on the video the fittings or any abnormalities.
9. Document ponding verbally as well as typing onto the screen which will then be on the video log. Document the start of the pond to the end of the pond along with depth of the pond using a 1" indicator.
10. Make sure the selected camera is appropriate to the pipe material and diameter to create the best video record. The camera needs to be stabilized. The lack of traction from the camera creating a jumping video is not acceptable.
11. When videoing the inside of a manhole focus on the joints along with the risers for the ring and cover. Turn the camera lights up when looking inside the manhole.
12. Camera tractor needs to be kept at a consistent pace and not too fast.
13. When documenting on the video and video log use stations for the tees from the **center** of the downstream manhole.

14. When documenting a tee for a sewer lateral use Tee Left or Tee Right along with the stationing from the **center** of the downstream manhole.
15. Use National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) compliant software.
16. CCTV videos shall be coded using NASSCO PACP, in MPEG4 file format and encoded using MPEG4 compression with a minimum resolution of 640 pixels by 480 pixels and a maximum of 1920 pixels by 1080 pixels. The minimum frame rate shall be 24 frames per second. The bitrate shall be a minimum of 2000kb/s and a maximum of 3000kb/s.
  - Each pipe inspection from manhole to manhole shall be an individual video file.
  - Each individual video shall be named with the District's GIS Facility ID and inspection date. The District will provide GIS Facility IDs.
    - <facilityid>-<year>-<month>-<day> <hour>-<minute>-<second>.<fileextension>
    - Example: SM2886-2021-03-23 14-35-53.mpg
  - Submittal of pipe inspection data shall include a NASSCO PACP compliant Microsoft (MS) Access database. In addition to the standard PACP require fields, the following fields shall also be included and completed in the database: GIS Facility ID, Upstream MH, Downstream MH, Inspection Date, Inspection Time, Survey Direction, Vendor Name, Inspector's Name, Inspector's Certificate #, Street, City, Project Name (provided by District), Pre-Cleaning, Survey Reason, Weather, Pipe Shape, Pipe Material, Pipe Diameter, Pipe Use, Survey Length.
  - Weekly submittals of still photos of each observed deficiency shall be provided. Photos shall be named with the District's GIS Facility ID, the observation code, and distance. (SM2711-MMS at 0.0 ft.JPG). Images will be in a JPG file format with a minimum resolution of 640 pixels by 480 pixels and a maximum of 1920 pixels by 1080 pixels.
  - Provide a separate PDF file format of a PACP inspection report for each video.
    - Each inspection report shall be named the District's GIS Facility ID and inspection date. The PDF file name shall match the video file name:
      - <facilityid>-<year>-<month>-<day> <hour>-<minute>-<second>.pdf
      - Example: SP2993-2022-03-23 08-02-08.pdf
17. Do not provide CCTV inspection data on a USB drive. The District will provide a link to upload the video and associated data.