

**SSMP
ELEMENT 4 – O&M Program
APPENDIX 4.2**

CCTV Manual

CITY OF SAN MATEO
Department of Public Works

Closed-Circuit Television Inspection Manual

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SECTION 1 – INTRODUCTION

The City of San Mateo Department of Public Works (CITY) owns, operates and maintains the public sanitary sewer collection system and storm drainage facilities within the City of San Mateo. The CITY performs a thorough condition assessment of the public sewer mainlines and manholes on a five year schedule to adequately track the condition of these assets and plan for replacement prior to failure.

The information provided in this manual is intended to supplement any contractual requirements that bind a contractor performing this work for the CITY.

1.1 MANUAL CONTENTS

This manual includes the general procedures required to mobilize for, perform, and document conditions found while inspecting manhole and underground pipe utilities in the City of San Mateo utilizing closed circuit television inspection (CCTV). This manual is intended for use in conjunction with NASSCO Standards for sewer mainline, sewer lateral and sewer manhole condition assessment. Use of NASSCO instructions, methods of data capture and codes is required for CITY projects. Current NASSCO PACP and MACP certification of all CCTV operators is required for all contracted CCTV work. Nothing in this manual alters NASSCO standards or codes. This manual provides data collection and submittal procedural information specific to San Mateo.

1.2 IMPORTANCE OF TELEVISION INSPECTION

CITY has a primary responsibility to protect and maintain its facilities and to prevent sewage spills that could create public health hazards or damage to the environment. CCTV provides information about the condition of the pipes so they can be properly maintained, repaired, and/or replaced. CCTV information is used to schedule routine maintenance, identify critical repair/rehabilitation needs and prioritize these repairs, and establish budgets for rehabilitation, system improvements, spot repairs and large-scale projects. CCTV is also used to verify the quality of preventative maintenance cleanings, new pipe construction and pipeline rehabilitation.

Captured CCTV data will be used primarily for the following purposes:

- Develop a condition rating for each line.
- Provide follow-up maintenance and/or structural recommendations.
- Display results on a map.
- Establish benchmarks to compare with future inspections of the same pipe.

1.3 STANDARDIZED PROCEDURES AND CODES

It is important for all CCTV inspections to be completed to a uniform standard. The use of uniform codes to describe conditions and defects allows the reviewer to gain a good understanding of the condition of a pipe and be able to assess deterioration of a pipe from one inspection to the next. All CCTV performed by CCTV contractors must be performed by NASSCO certified operators using current NASSCO standards and coding system that can be found in current NASSCO documents. Video, still images and data shall be delivered to the City on a portable hard-drive for large scale projects or on digital video discs (DVDs) for small projects. The City shall specify the media storage type at the start of the contract. Database shall be an unmodified NASSCO-PACP Certified Database.

For large sewer basin CCTV contracts, upon completion of the first 1000 LF, contractor shall submit data and video logs for review and acceptance prior to continuing work. For smaller contracts, project manager may request a submittal of a portion of the initial data capture. Requests made by CITY staff to alter the data and video collection process shall be adhered to for the remainder of the contract.

1.4 CCTV REQUIREMENTS SPECIFIC TO SAN MATEO

- All CCTV contractors performing work for the City of San Mateo shall use NASSCO PACP Standards Version 6 or higher.
- In addition to televising pipes, all manholes shall be panned with the video camera and visually inspected.
- All contractors shall first upload the City of San Mateo sewer GIS layer information for use within CCTV software inside the CCTV vehicle prior to commencing work. Utilizing the GIS layer during CCTV operations will minimize data entry errors.
- If contractor confirms that information in the GIS data provided by CITY is inaccurate, such as pipe size, length, material or the flow direction inside the pipe (if PipeID has the upstream manhole and downstream manhole reversed), contractor shall make notations in the Additional Information Header field.
- Contractor shall refer to table 4.2-1 for data matching of GIS fields with CCTV Header fields.
- Contractor shall follow NASSCO Header guidelines. Tables 4.2-1, 4.2-2 and 4.2-3 give additional information specific to the City of San Mateo for completing the header section.
- CITY requires CCTV data submittal on a portable external hard drive for large projects. DVD's can be used for smaller projects as directed by the CITY.
- For CCTV contracts that cover a large sewer basin, pre-cleaning activities shall include use of hydro-cleaning as well as mechanical cleaning equipment where necessary to clear the pipe and allow video capture of the entire length of pipe.
- Contractors providing CCTV following a completed pipe rehabilitation project must submit CCTV information for the entire length of pipe and follow all requirements of this Manual and NASSCO PACP standards.
- Contractor shall follow CITY guidelines for buried manholes described in section 3.7.
- Contractor shall follow CITY guidelines for video Start and End points described in section 4.3.
- If contractor utilizes continuous defect coding, contractor shall ensure that the defect end code is entered at the appropriate footage and not at the end of the video run.

SECTION 2 – PRE-INSPECTION ACTIVITIES

This section includes basic information on pre-inspection activities including all activities required to assess the requirements for working at the job site, mobilize for the field and set up equipment before actually performing the CCTV.

2.1 SITE ASSESSMENT

It is important to be familiar with the CCTV project area; the location of sewer assets, direction of flow and access issues to sewers in public right-of-ways and in utility easements. Further, knowledge of historical sewer problems encountered in different areas of the City will help the contractor prepare for and mobilize appropriate hydraulic and/or mechanical equipment necessary to effectively clean sewer pipes for successful CCTV.

Blockage Removal - CITY contracts for cleaning and CCTV work anticipate shifting the burden of removing blockages within sewer pipes (aside from structural issues) to the CCTV contractor. CITY crews are not to be dispatched except under extenuating circumstances and as directed by the CITY

project manager. CCTV contractor shall utilize their own hydraulic and mechanical cleaning equipment to adequately clear and remove blockages if the traditional four passes with a hydraulic jet nozzle has failed to adequately clear and remove blockages.

Plugging or bypassing - Plugging or bypassing needs shall be determined by CITY project manager during project development unless otherwise specified in the contract. Where projects call for flow control, contractor shall provide plans describing methods that will be used for plugging and bypassing. During project work, Contractor shall obtain approval from the CITY project manager prior to initiating plugging or bypassing.

Large diameter pipes: Large diameter pipes often require special procedures for flow control, lighting, and camera travel or use of sonar equipment. Only CCTV crews with the appropriate equipment and training to perform large diameter pipe inspection should do so.

2.2 COUNTER CALIBRATION

The footage counter for the camera must be calibrated at least every two weeks during CCTV operations. The footage counter must be accurate to 0.5 feet per 100 feet. The calibration is performed by checking the cable counter against a measured length of 400 feet. The date of last calibration should be recorded for every CCTV report.

2.3 PUBLIC NOTIFICATION – ACCESS TO PRIVATE PROPERTY

Property owners must be notified if access to property is required. CCTV contractors must follow the CITY prescribed easement access procedures for the project being performed and provide no less than 72 hour notification to residents prior to entering onto private property. Sample notifications will be provided by the CITY project manager. Notifications must include on-site contractor and CITY direct emergency phone numbers should residents experience sewer problems during the project.

2.4 SAFETY

CCTV operators and field crew shall all be thoroughly knowledgeable about the following documents describing procedures for activities related to CCTV:

- Current GREENBOOK STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION sections including but not limited to the following sections:
 - Section 7-10 – Public Convenience and Safety
 - Section 500-1.1.4– Cleaning and Preliminary Inspection
 - Section 500-1.1.5– Television Inspection
- Current CALTRANS STANDARDS for traffic control procedures when required by the City or CALTRANS.
- Equipment owner’s manuals (for CCTV vehicle, Cleaning vehicle and cleaning tools and equipment operation, maintenance, and troubleshooting) .
- Software user’s manuals (for software operation, maintenance, and troubleshooting).

- For contracted work: Special Procedures (SP-) outlined in contract documents which refer to modifications or additions to sections in the Standard Specifications which have the same first numbers (e.g., 200-2).

Traffic Control and Safety - Traffic control is normally required to perform CCTV. GREENBOOK or CALTRANS STANDARD must be followed at all times. The City will determine whether the traffic control is adequate. Flashing lights must be used for all night work.

Atmospheric Testing - Atmospheric Testing must be performed even if entry into the manhole is not planned. This prevents personnel leaning over the manhole from being overcome by noxious gasses and allows emergency confined space entry if necessary. If the gas detector alarm sounds, contact a supervisor immediately.

NOTE: If the safety of field personnel or the public, or safe use of field equipment, is threatened at any time during the CCTV process, the field activities should be stopped and the site secured. If CITY field personnel are performing the CCTV, the supervisor should be notified immediately. If a CCTV contractor is performing the CCTV, the prime contractor and CITY'S project manager should be notified immediately.

SECTION 3 – DATA COLLECTION/PERFORMANCE STANDARDS

This section describes CCTV performance standards, including general information and definitions, quality standards, record keeping requirements, digital data formatting, appropriate screen text information and narration, and special CCTV procedures.

3.1 CCTV PERFORMANCE

CCTV performance includes the following:

- Consistent use of NASSCO standard forms and codes
- Uniform compliance with setup and inspection procedures
- Quality picture and audible records
- Suitable camera speed, lighting, and panning
- Accuracy when recording file names and electronic data

3.2 CCTV QUALITY STANDARDS

Camera Travel Speed: The speed of travel shall be slow enough to inspect each pipe joint, tee connection, structural deterioration, infiltration and inflow sources, and deposits. Camera speed should not, at any time, travel at a rate of more than 30 feet per minute. The camera speed should be steady or slower when recording features and defects.

Clarity: All video and still picture images must be clear and sharp. The camera operator should adjust focus, zoom, and lighting as needed to obtain a satisfactory image. The recorded image from the CCTV camera must be free of fog or haze in the pipe. If the camera lens becomes obscured with condensation, grease, scum, or debris, the camera should be removed from the pipe and cleaned.

Lighting: Lighting in the pipe should be such that the pipe is illuminated and there is a minimum amount of glare. Lighting should be adjusted as needed according to the size of the pipe to provide a clear picture of the entire periphery of the pipe for all conditions encountered.

Visibility: Where practical, CCTV inspections will be conducted in a manner that provides an unobstructed view of the entire pipe. Identifying structural defects is important as they influence the long-term integrity of the pipe. If debris or obstructions impede visibility, the pipe needs to be cleaned and camera inspection rescheduled. 85% to 100% of the inside of the pipe must be visible at all times for successful condition assessment. In some cases, nighttime work may be required in order to obtain appropriately low flow levels for CCTV. If maximum pipe wall visibility and sufficiently low flow levels cannot be obtained even at night, flow plugging and/or bypass pumping may be required. Plugging should only be performed under the direction and approval of the CITY. For new pipe construction acceptance inspection, nearly 100 percent of the circumference of the pipe wall circumference must be visible. A small amount of water will be introduced for purposes of sag identification.

Verification of Map Length: If a pipe's map length (as indicated by the written distance shown on sewer or storm drain maps, plan sheets, or contained in GIS Field=LENGTH) and the CCTV video counter length differ by more than 5 feet, the field length should be verified by measuring between the centerlines of the manholes using a measuring tape or wheel.

3.3 RECORD KEEPING

Sewer Pipe Segment Reference Number (Pipe ID): The CITY has developed a standardized system for assigning unique identification numbers for each sewer pipe segment. This convention joins the upstream MH# with the downstream MH# separated with an underscore and omitting the dashes used within each manhole ID.

For example, a pipe with an upstream manhole ID of 431-08X and a downstream manhole ID of 410-22X would be:

43108X_41022X.

Should two pipes travel from one manhole to the same downstream manhole, the overflow pipe would be distinguished from the original pipe by replacing both "X" with "O" for overflow.

In NO instance should the PipeID be altered so that downstream manhole ID is listed first and upstream manhole ID listed after the underscore.

Utilization of this pipe identifier is extremely important as it assists staff link external data to GIS sewer mainline layers to analyze and display information.

CCTV Field Log: A field log is to be used by the CCTV crew (and cleaning crew if contracted for both clean and CCTV) to track daily work. This log should be returned with the completed fieldwork at the end of the day (by CITY employees) or when data are delivered (by contractors). Logs shall specify the date, number of persons working, and shall list the specific pipe segments cleaned or CCTV'd (PipeID's), time spent per pipe segment and equipment used.

Portable External Hard Drive or DVD Submittal: Upon submittal, DVD's and external hard drives shall become the property of the CITY.

Portable External Hard Drive or DVD Labels: All DVDs/External Hard Drives must be properly identified with the project number and/or name (provided by project manager). DVD's must be labeled with the Pipe IDs of the inspections on the DVD.

3.4 DIGITAL DATA FORMAT & FILE NAMING

CCTV Software: Inspection software used by the contractor may be WinCam, POSM, or Granite XP. Any other proposed software format must be approved by CITY project manager prior to any work being

performed. CCTV contractors must provide the data in a format (unaltered PACP Version 6 or higher database) that will permit uploading to the CITY's computerized maintenance management system.

CCTV Video: The full CCTV video must be captured in MPEG format. Other formats may be accepted but contractor must obtain approval from CITY project manager prior to any work being performed. In addition to televising pipes, all manholes shall be panned with the video camera and visually inspected.

Video File Naming: Video files should be named in accordance with the following convention:

UpstreamNodeID-DownstreamNodeID-mmddyy-F/R.mpg

For Sanitary Sewer Pipe Segments:

- UpstreamNodeID = Upstream MH# (no dashes)
- DownstreamNodeID = Downstream MH# (no dashes)
- mmddyy is the date of the inspection
- F or R indicates whether the CCTV direction is upstream-to-downstream (F) or downstream-to-upstream (R)

For example, the file name of a sewer pipe inspection conducted on August 13, 2011, starting at upstream manhole 431-08X and extending to downstream manhole 410-22X would be:

43108X-41022X -081311-F.mpg

For Storm Sewer Pipe Segments:

- UpstreamNodeID = Upstream MH# or Catchbasin (CB)# (no dashes)
- DownstreamNodeID = Downstream MH# or CB# (no dashes)
- mmddyy is the date of the inspection
- F or R indicates whether the CCTV direction is upstream-to-downstream (F) or downstream-to-upstream (R)

For example, the file name of a storm pipe inspection conducted on August 13, 2011, starting at upstream storm catchbasin 12M-05 and extending to downstream storm manhole 12L-32 would be:

12M05-12L32-081311-F.mpg

If digital video files and data are to be copied onto a DVD, information shall be grouped in a logical manner (e.g., by area of inspection).

Still Picture Captures: Still images shall be captured similarly for all observed defects with a severe rating and/or as directed by CITY. In addition, additional still images should be captured every 100 feet to illustrate the typical condition of the pipe. Still images should be in jpeg format at least 640 x 480 resolution and should utilize the file naming convention as described below.

Picture File Naming: Still picture files should be named in accordance with the following convention where xxx is the footage location of the defect or observation (to the nearest foot).

UpstreamNodeID-DownstreamMH#-mmddyy-F/R-xxx.jpg

For example, the file name for a still image at footage 123.4 for the example inspection described above would be:

43108X-41022X-081311-F-123.jpg

If two or more images are captured at the same footage, add .a, b, etc. after the footage, e.g.:

43108X-41022X-081311-F-123a.jpg

43108X-41022X-081311-F-123b.jpg

Still image files are to be copied onto the same portable external hard drive or DVD as the corresponding video and data files for the pipe segment.

3.5 SCREEN TEXT

Start-up Screen Text: The following information shall be provided as text on the video recording at the start manhole prior to camera moving up the pipe. This text should be displayed for approximately 10 seconds or for the duration of the Start-up Narration, whichever is longer.

- Upstream and downstream node numbers – or PipeID (GIS Field=FACILITYID)
- Direction of camera travel
- Location (GIS Field=UPMHLOC)
- Date and time of day
- Weather conditions
- Pipe Diameter (GIS Field=DIAMETER)
- Total length of pipe (as stated on plan sheets; or GIS Field=LENGTH)
- Pipe material (at start of pipe)
- Depth of upstream and downstream manholes
- CCTV company (or City of San Mateo if taken by San Mateo crews)
- Operator's name (or CITY staff name if internal)

Running Screen Text: During CCTV, the running screen must include the following information. The display of this information must in no way obscure the central focus of the pipe being inspected.

- Running footage (distance traveled)
- Upstream and downstream node numbers – or PipeID

End Screen Text. The end point of the inspected pipe segment should be indicated with screen text for approximately 10 seconds. The ending screen text should indicate:

- Ending footage – footage from video counter
- Date and time of day
- Upstream and downstream node numbers – or PipeID

3.6 NARRATION

Language and Background Noise: The CCTV video recordings are part of CITY permanent records and should not contain inappropriate language, idle chatter, background noise, and discussions between the operator and other crew members.

Start-up Narration: A voice narration must be included in the video recording. This narration must include the following information at the beginning of each pipe segment:

- Upstream and downstream MH#'s
- Direction of camera travel
- Depth of flow

- Date and time of day
- Weather conditions
- Pipe size
- Pipe material (at start of pipe)

Running Narration: All observations, including lateral taps (service connections) along the length of the pipe shall be narrated. Narration shall include a description of the observation and clock position, if applicable.

End Narration: At the conclusion of the inspection of a pipe segment, the operator should state the final CCTV footage and indicate that the CCTV of the pipe segment is complete. . If the survey is abandoned before completion of the pipe segment, narration shall state the reason the survey was abandoned.

3.7 SPECIAL CCTV PROCEDURES: MANHOLE MARKING/UNCOVERING

Buried Manholes

If the CCTV crew encounters a buried manhole, they should notify CITY project manager immediately. Every effort should be made by contractor to locate and uncover, or locate and mark the location of the buried manhole. If unsuccessful in uncovering the manhole, CCTV may proceed through the buried manhole, however, a new file should be started, treating the CCTV inspection as a separate pipe segment from the initial pipe segment.

If it is not possible to CCTV through the manhole, and CCTV contractor has made every effort to uncover the manhole, contractor shall notify CITY that the manhole needs to be exposed in order to complete the inspection. After contractor has marked the location of the manhole, CITY project manager will identify whether contractor or CITY crews shall uncover the manhole.

SECTION 4 – STANDARDIZED CCTV CODES

This section covers the information and standard formats and codes required for completion of the CCTV. This manual is intended for use as a complement to NASSCO Standards for sewer mainline, sewer lateral and sewer manhole condition assessment. When in doubt, refer to most recent NASSCO PACP binder.

4.1 GENERAL GUIDELINES

The following guidelines must be followed when completing the header section of the CCTV form:

- If the CCTV extends through a manhole and spans more than one pipe segment, a new header form must be completed at the start of each subsequent pipe segment.
- If a reverse set-up is required because the CCTV in the downstream direction could not be completed, a new header form must be completed at the start of the reverse set-up CCTV. (In NO instance should the PipeID be altered so that downstream manhole ID is listed first and upstream manhole ID listed after the underscore).

4.2 REQUIRED HEADER INFORMATION

The header information contains pertinent data about the individual pipe being inspected. The header data entry is completed in the field to provide as much information as possible about the inspection work.

Table 4.2-1 lists required header information for each CCTV inspection and provides an explanation of appropriate responses to each item expected by the CITY.

Much of this information is stored in the CITY's GIS sewer layers. Upload of San Mateo's GIS layers

will pre-populate much of this information. Adjustments to fields may be requested by the CITY at the start of the project once the initial data has been reviewed.

Table 4.2-1

CCTV HEADER INFORMATION		
FIELD #	TITLE	ENTRY/COMMENTS
1	Surveyor's Name (CCTV Operator's Name)	First and Last Name
1a	Certificate Number	Surveyor's NASSCO Certificate #
2	System Owner	"CITY OF SAN MATEO" GIS Field = OWNER
3	Survey Customer	"Engineering" or "Sewer Maintenance" – based on which Division is requesting the CCTV
4	Drainage Area	The "Cleaning Area" as identified for each pipe Example: "A1a" GIS Field = CLEANA
5	Sheet Number	If using hardcopy sheets for hand-recording – OR – Plan Sheet number on which the pipe is located.
6	P.O. Number	Purchase Order # provided by project manager.
7	Pipe Segment Reference	PipeID Example: 43108X_41022X GIS Field = FACILITYID
8	Date of Survey	YYYYMMDD
9	Military Time – Beginning of Survey	i.e. 13:30
10	Street Name and Number of Upstream Manhole	GIS Field = UPMHLOC
10a	City Name	Most often "SAN MATEO"
11	Further Location Details	Landmarks near MH. Example: near fence
12	Upstream Manhole Number	Example 132-12X GIS Field = UPSMH
13	Upstream Rim to Invert	Measure in field. Feet + tenths of foot.
14	Upstream Grade to Invert	Measure in field. Feet + tenths of foot.
15	Upstream Rim to Grade	Measure in field. Feet + tenths of foot.
16	Downstream Manhole Number	Example 132-13X GIS Field = DWNMH
7	Downstream Rim to Invert	Measure in field. Feet + tenths of foot.
18	Downstream Grade to invert	Measure in field. Feet + tenths of foot.
19	Downstream Rim to Grade	Measure in field. Feet + tenths of foot.
20	Use of Sewer	Sewer=SS Forcemain=FM Storm=SW GIS Field = USE_
21	Direction of Survey	Upstream=U Downstream=D
22	Flow Control	Not Controlled=N Plugged=P Bypassed=B De-watered using Jet=D Lift Station=L

23	Size 1 (Diameter)	Diameter of pipe GIS Field = DIAMETER
24	Size 2 (Width)	Mandatory use if pipe is not circular
25	Shape	Most Often Circular=C GIS Field = SSML_SHAPE
28	Pipe Joint Length	Most common length of pipe segments in run
29	Total Length of Pipe	Length Stated on Plan Sheets or: GIS Field = LENGTH
30	Total Length Surveyed	Actual length of pipe from footage counter
31	Year Constructed	GIS Field = INSTALLDT YYYY
32	Year Renewed	If known
33	Tape/Media Number	If using multiple DVD's
34	Purpose of Survey	For CCTV contracts the cover an entire sewer basin, use "G" Capital Improvement Program Assessment. Otherwise, refer to Table 4.2-2 and ask project manager which code to use.
35	Sewer Category	This will become mandatory after CITY defines the criticality for each pipe and provides this in the GIS.
36	Pre-Cleaning	J=Jetting, H=Heavy/Mechanical Cleaning N=No Pre-cleaning, Z=Unknown For CCTV contracts the cover an entire sewer basin, this shall be J or H.
36a	Date Pre-Cleaned	Mandatory for CCTV Contracts that require pre-cleaning.
37	Weather	Mandatory to enter a PACP weather code for weather at time of inspection
38	Location Code	Please refer to Table 4.2-3 for description of CITY utilization of NASSCO codes.
39	Additional Information	Use as necessary. Mandatory to use if CCTV confirms inaccurate data in CITY GIS.
40	Work Order Number	Provided by project manager if applicable.
41	Project	Name of CCTV project – will be provided by project manager.
42	Pressure Value	Minimum testing pressure specified/used during joint or lateral testing.

Tables 4.2-2 describes the CITY utilization of the NASSCO “Purpose of Survey” code. Contractor shall ensure the proper Purpose of Survey code is utilized. Project manager shall identify this code at pre-construction meetings or prior to start work.

Table 4.2-2

PURPOSE OF SURVEY		
CODE	DESCRIPTION	CITY CODE DESCRIPTION
A	Maintenance Related	Use “A” when CCTV is performed to identify maintenance needs or evaluate effectiveness of maintenance.
B	Infiltration & Inflow (I&I) Investigation	Use “B” when CCTV is performed specifically to see where and how much I&I may be entering or affecting a pipe.
C	Post-Rehabilitation Survey	Use “C” after a repair has been performed. Most repair contracts require post-repair survey. Follow all requirements for CCTV of entire length of pipe.
D	Pre-Rehabilitation Survey	Use “D” when CCTV is performed prior to repair while confirming repair location and extent.
E	Pre-Acceptance of New Sewers	Use “E” when CCTV is performed on brand new sewers as part of CITY acceptance procedures.
F	Routine Assessment	Use “F” for CCTV is requested by CITY for storm assets or CCTV not involving a large sewer basin or any other more appropriate codes.
G	Capital Improvement Program (CIP) Assessment	Use “G” for large sewer basin CCTV projects. This CCTV is used specifically for developing the next years’ sewer CIP rehabilitation project.
H	Resurvey for Any Reason	Use “H” if directed by CITY to re-survey a line. Enter the original project name and reason for re-survey in the Additional Information Header field.
V	Reversal	This code should not be used unless directed to by project manager. Upstream and Downstream directional identifiers suffice.
Z	Not Known	This code should not be used unless directed to by project manager.

Tables 4.2-3 describes the CITY utilization of the NASSCO “Location” code. Contractor shall ensure the proper Location Code is utilized for each pipe.

Table 4.2-3

LOCATION CODE – Of sewer pipe being surveyed. (Not necessarily the same location as the start node)		
CODE	DESCRIPTION	CITY CODE DESCRIPTION
A	Main Highway - Urban	The main highways in San Mateo are Hwy 101 and Hwy92. If a pipe repair would impact use of either of these highways, then use “A”.
B	Main Highway - Suburban	For NASSCO, main suburban highways are those roads that heavy good vehicles. Refer to Table 4.2-3a, San Mateo’s Truck Routes. Use “B” for pipes underneath these roadways.
C	Light Highway	For NASSCO, light highway streets are residential streets. Use “C” for pipes underneath any San Mateo roadways outside of those listed above.
D	Easement / Right-of-Way	For CCTV projects, use “D” for pipes that have the majority of their length within a private property easement.
E	Woods	In San Mateo, the only pipes that would be assigned code “E” would be the sewer mainlines running through Laurelwood Park.
F	Sidewalk	Some sewer pipes run along and underneath a sidewalk. “F” can be used in those situations.
G	Parking Lot	If the majority of the sewer pipe resides underneath a parking lot, use “G”.
H	Alley	Use “H” for any pipes located in public or private alleyways in San Mateo.
I	Ditch	This code would be used in very rare situations. Confirm with project manager prior to use.
J	Building	Use “J” only in the rare instance that the majority of a pipe runs underneath a building.
K	Creek	If a pipe repair would affect a waterway, use location code “K.” for example, the sewer pipes that run alongside the 19 th Ave Channel east of Hwy 101 highways would have location code “K”.
L	Railway	Use “L” for the handful of sewer pipes in San Mateo that cross underneath the railway. Also use “L” for sewer pipes adjacent to the railway that are also on railway property (parcels between S El Camino and Pacific Blvd just north and south of the 42 nd Ave underpass).
M	Airport	There are no airports in San Mateo.
Y	Yard	San Mateo prefers the use of location code “D” for sewers in backyard easements. If no easement exists, “Y” may be used.
Z	Other	If “Z” is used, provide details in the Additional Comments field.

NOTE: For proper use of the Location Code “B”, please refer to this list of truck routes (next page) and/or obtain a Truck Routes Map from a project manager. Identifying sewers underneath heavily used roads will assist in determining the criticality for sewer repairs.

Table 4.2-3.a

CITY OF SAN MATEO TRUCK ROUTES
US 101 (Bayshore Freeway)
State Route 82 (El Camino Real)
State Route 92 (J. Arthur Younger Freeway)
2nd Avenue between South Humboldt Street and North Amphlett Boulevard
East 3rd Avenue (J. Hart Clinton) from the easterly city limits to US 101 (between the hours of eight-thirty a.m. to four-thirty p.m. eastbound)
East 3rd Avenue between US 101 and South Claremont Street
East 4th Avenue between US 101 and South Claremont Street
9th Avenue between El Camino Real and South Claremont Street
19th Avenue between South Delaware Street and Fashion Island Boulevard
East 25th Avenue between El Camino Real and South Delaware Street
28th Avenue between Edison Street and El Camino Real
37th Avenue between El Camino Real and Edison Street
Bridgepointe Parkway between Baker Way and Bridgepointe Circle
South Claremont Street between 3rd Avenue and 9th Avenue
Concar Drive between Westbound SR 92 Ramps and Grant Street
South Delaware Street between Garvey Way and 25th Avenue
Edison Street between 28th Avenue and the Hillsdale Shopping Center
Fashion Island Boulevard between 19th Avenue and Baker Way
Franklin Parkway between US 101 and Saratoga Drive
East Hillsdale Boulevard between El Camino Real and US 101
East Hillsdale Boulevard between US 101 and easterly city limit
South Humboldt Street between 2nd Avenue and 4th Avenue
Kehoe Avenue between Northbound US 101 Ramps and South Norfolk Street (between the hours of six a.m. to six p.m. Monday through Friday)
Mariner's Island Boulevard between Eastbound SR 92 Ramps and Fashion Island Boulevard
South Norfolk Street between East 3rd Avenue and Fashion Island Boulevard (between the hours of six a.m. to six p.m. Monday through Friday)
The southerly side of Peninsula Avenue, between Bayshore Freeway and El Camino Real
East Poplar Avenue between Southbound US 101 Ramps and Amphlett Boulevard Street
Saratoga Drive between Franklin Parkway and East Hillsdale Boulevard

4.3 CAMERA START AND END CODES

The location at which the camera footage counter is set to 0.00 should be at the start of the pipe at the manhole or access point wall. Two codes shall always be entered at the start point:

- 1) the access point code *along with the M ID# entered into the Remarks field*, and
- 2) the water level code with the appropriate percentage for height of water in Value 1 field (to nearest 5%).

The point where the camera footage counter is stopped is at the end of the pipe at the (typically downstream) manhole or access point wall. Two codes shall always be entered at the end point:

- 1) the access point code *along with the MH ID# entered into the Remarks field*, and

- 2) the water level code with the appropriate percentage for height of water in Value 1 field (to nearest 5%).

4.4 CONTINUOUS DEFECTS

Contractor will follow NASSCO guidelines for continuous defects. If the camera goes under water, it cannot be assumed that the defect continues. The defect must be closed out where the camera first goes into the water.

4.5 – CCTV OBSERVATION CODES

The City uses NASSCO Version 6 or higher standard pipe observation codes.