

October 11, 2019

File: 2018-3149.010.E.05.00

Jim Fedyk
CAO
Town of Sedgewick
Box 129
Sedgewick, AB T0B 4C0

Re: 2018 SANITARY SEWER CCTV INSPECTION RESULTS & RECOMMENDED ACTIONS

Dear Mr. Fedyk:






1 BACKGROUND INFORMATION

Cam-Trac Inspection Services Ltd. (Cam-Trac) was retained by the Town of Sedgewick (the Town) to undertake CCTV inspections of the sanitary sewers in downtown Sedgewick in Spring 2018. We performed a preliminary review of the results for the mainlines and laterals, as described in the letter sent to you on July 6, 2018.

The inspections of 20% of the mainlines were not completed due to ice and/or debris build-up. In our letter dated July 6, 2018, we recommended that the Town retain Cam-Trac to flush the mainlines and complete the inspections of these sewers. Cam-Trac returned to complete these inspections in September 2018. We reviewed the results of the September 2018 inspections, coupled with the Spring 2018 inspections, to determine recommended actions for the Town.

2 ANALYSIS OF RESULTS

Cam-Trac used the Pipeline Assessment Certification Program (PACP) developed by the National Association of Sewer Service Companies to rate the mainline sewers based on structural and operations and maintenance (O&M) criteria. Each pipeline segment was assigned a structural condition rating and O&M rating between 1 and 5. Both ratings, structural and O&M, are based on the following definitions:

	5	Pipe has failed or will fail in the immediate future.
	4 to < 5	Significant defects noted. Pipe is near the end of service life.
	3 to < 4	Moderate defects noted. Pipe is at the middle of service life.
	2 to < 3	Minor to moderate defects noted.
	< 2	Minor defects noted. Pipe is at the beginning of service life and is in new or near new condition.

October 11, 2019
Jim Fedyk
Town of Sedgewick
- 2 -

Figure 1 (enclosed) illustrates which pipes were inspected in 2018.

The PACP program uses many different descriptors for identifying defects. For illustrative purposes, the types of defects were grouped into 6 categories:

- Broken Pipe / Structural Defect;
- Cracking;
- Sag;
- Joint Offset / Separation;
- Intrusion / Obstacle; and
- Deposits

Our analysis considered the PACP ratings provided by Cam-Trac in addition to the frequency and severity of each defect. Consideration was also made to group areas of rehabilitation, whenever possible.

3 2018 CCTV RESULTS

We imported the defect data provided by Cam-Trac into ArcGIS and mapped the results, as shown on **Figure 2A** (enclosed). **Figure 2B** (enclosed) illustrates the two most severe types of defects: broken pipe and cracking. The mainlines inspected are predominantly clay tile pipe; the areas with PVC mainlines were not inspected in 2018.

The PACP rating for each pipe, used in our analysis, was chosen as the maximum of the structural PACP rating and the O&M PACP rating. The PACP ratings are depicted on **Figure 3** (enclosed).

Sedgewick was incorporated as a Town in 1966; assuming that the clay tile sanitary sewer pipes were installed around this time, they are approximately 53 years old. Clay tile pipe has a service life of between 50 and 60 years. Therefore, the clay tile sanitary sewer pipes are reaching the end of their service life, as supported by the CCTV inspection results.

4 RECOMMENDATIONS

The following recommended actions are proposed based on the CCTV results categories presented on **Figure 2A**:

- | | |
|---|----------------------|
| • Broken Pipe / Structural Defect, Cracking | Remove and Replace |
| • Sag, Joint Offset / Separation | Ongoing Monitoring |
| • Intrusion / Obstacle, Deposits | Maintenance |
| • Minimal / minor defects noted | Reinspect in 5 Years |

The recommended actions are presented on **Figure 4**.

October 11, 2019
Jim Fedyk
Town of Sedgewick
- 3 -

Removals and Replacements

- The pipes with structural defects are recommended to be removed and replaced.
- Based on an annual budget of \$300,000 for sanitary sewer rehabilitation and accounting for engineering fees (assumed to be 10% of the construction cost), a 25% contingency, and a unit rate of \$1,800 per metre of sewer rehabilitation, approximately 50 m of sanitary sewer can be rehabilitated per year.
 - This is a relatively small area of rehabilitation, as it is approximately one-third of a block.
 - The Town could consider undertaking rehabilitation every other year, to increase the length of rehabilitation that can be constructed.
 - 50 Street has been excluded from the prioritized list of removals and replacements as it will require coordination with Alberta Transportation. The Town could approach Alberta Transportation to determine if 50 Street is scheduled to be repaved in the near future; if so, this may present the opportunity for cost-sharing between the Town (sewer costs) and Alberta Transportation (surface restoration costs).
- Due to the clay tile sanitary sewer pipes nearing the end of their service life, an extensive rehabilitation program may not be feasible. Excluding 50 Street and blocks requiring only spot repairs, it is estimated that approximately 750 m of sanitary sewer requires removal and replacement. At 50 m per year, this would result in a 15-year rehabilitation program.
 - We recommend that the Town continue to seek and apply for municipal / infrastructure grants as many of the mains would benefit from an accelerated rehabilitation program. The Town could also consider implementing a Local Improvements Tax to help offset the costs of rehabilitating aging infrastructure.

Ongoing Monitoring

- The pipes with sags and joint offsets / separations are recommended to be monitored closely to determine if their condition is worsening and require removal and replacement.

Maintenance

- We recommend that Public Works perform maintenance on pipes with intrusions / obstacles and deposits.
- While Cam-Trac was using a root-cutter to clear one of the pipes to be inspected, a section of the pipe collapsed, requiring an emergency repair. It is recommended to exercise caution while performing maintenance on the aging clay tile pipes to minimize the risk of further pipe collapse.

Reinspect in 5 Years

- It is recommended that pipes with minimal / minor defects noted be reinspected in 5 years to identify any further deterioration.



Associated
Engineering

GLOBAL PERSPECTIVE.
LOCAL FOCUS.

October 11, 2019
Jim Fedyk
Town of Sedgewick
- 4 -

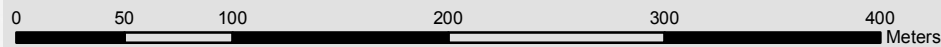
Thank you for the opportunity to work with you on this project. For further discussion, please contact the undersigned (munroek@ae.ca or dossantosn@ae.ca; 780.451.7666).

Yours truly,

Kaitlin Munroe, P.Eng.
Project Engineer

Nelson Dos Santos, P.Eng.
Project Manager

(Encl.)



Legend:

- Manhole
- CCTV Inspection 2018
- Not Inspected



FIGURE No. 1

SEDGEWICK
SANITARY SYSTEM



2018 CCTV SCOPE

AE PROJECT No.	2018-3149.010
SCALE	1:3,500
COORD. SYSTEM	NAD 1983 UTM ZONE 12N
DATE	2019 OCTOBER
REV	
DESCRIPTION	ISSUED FOR REVIEW

Note:
Manhole asset numbers
outside 2018 CCTV inspection
scope omitted for clarity.



Legend:

-  Manhole
 Sanitary Pipe

CCTV Results

- Broken Pipe / Structural Defect
- Cracking
- Sag
- Joint Offset / Separation
- Intrusion / Obstacle
- Deposits

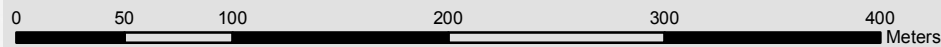


FIGURE No. 2A

SEDGEWICK
SANITARY SYSTEM

2018 CCTV RESULTS

AE PROJECT No.	2018-3149.010
SCALE	1:3,500
COORD. SYSTEM	NAD 1983 UTM ZONE 12N
DATE	2019 OCTOBER
REV	
DESCRIPTION	ISSUED FOR REVIEW



- Legend:
- Manhole
 - Sanitary Pipe
- CCTV Results**
- Broken Pipe / Structural Defect
 - Cracking

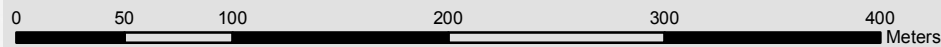


FIGURE No. 2B

SEDGEWICK
SANITARY SYSTEM

2018 CCTV RESULTS

AE PROJECT No.	2018-3149.010
SCALE	1:3,500
COORD. SYSTEM	NAD 1983 UTM ZONE 12N
DATE	2019 OCTOBER
REV	
DESCRIPTION	ISSUED FOR REVIEW



Legend:

- Manhole
- Sanitary Pipe
- PACP Rating**
 - 5
 - 4 to < 5
 - 3 to < 4
 - 2 to < 3
 - < 2

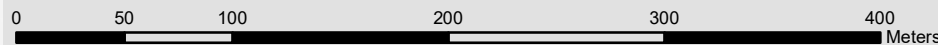


FIGURE No. 3

SEDGEWICK
SANITARY SYSTEM

2018 CCTV RESULTS
CLASSIFIED BY PACP RATING

AE PROJECT No.	2018-3149.010
SCALE	1:3,500
COORD. SYSTEM	NAD 1983 UTM ZONE 12N
DATE	2019 OCTOBER
REV	
DESCRIPTION	ISSUED FOR REVIEW



Legend:

- Manhole
- Sanitary Pipe
- Recommended Actions**
- No Action (Replaced in 2019)
- Maintenance
- Ongoing Monitoring
- Remove and Replace
- Requires Coordination with Alberta Transportation
- Reinspect in 5 years
- Spot Repair

Note:

1 through 8 are not years, they represent a prioritized list of sections requiring removal and replacement.



FIGURE No. 4

SEDGEWICK
SANITARY SYSTEM

2018 CCTV RESULTS
RECOMMENDED ACTIONS

AE PROJECT No.	2018-3149.010
SCALE	1:3,500
COORD. SYSTEM	NAD 1983 UTM ZONE 12N
DATE	2019 OCTOBER
REV	
DESCRIPTION	ISSUED FOR REVIEW