

2022

City of Brainerd 5-Year Street and Sewer
Capital Improvement Plan



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A. Introduction

The City of Brainerd was incorporated in 1881 and is governed by a Home Rule Charter. Brainerd is the County Seat of Crow Wing County and is in central Minnesota approximately 125 miles north of the Minneapolis/St. Paul Metropolitan area. The City is approximately 12.64 square miles and serves an estimated population of 13,590 (2010 census).

The City of Brainerd's 5-year Capital Improvements Plan (CIP) is a 5-year investment guide for the construction and/or improvement of City streets, sanitary sewers, and storm sewers. City staff have prepared the plan to assist the City Council in long range planning of capital infrastructure upgrades and to give a big picture perspective on the continuing need to fund a transportation and utility system that serves the constituents of Brainerd and uses their tax dollars in the most efficient and cost-effective manner.

It is important to note that 5-year CIP is a fluid document, and therefore amendments thereto will be presented to the City Council on an annual basis when changes or amendments to the document are made. Changes to the document or priorities established in the plan should be expected and can be caused in reductions to funding levels, project delays due to price fluctuations, opportunities for grants or other aides, delays in obtaining construction permits or necessary approvals, emergency needs, or simply changes in community preferences.

B. Purpose of the 5-year Capital Improvements Program

A capital improvement is simply a major expenditure of City funds for the acquisition or construction of public lands. A CIP is a document designed to anticipate capital improvement expenditures and schedule them over a five-year period so that they may be financed in the most efficient and cost-effective method possible. A CIP allows the matching of expenditures with anticipated income. As potential expenditures are reviewed, the City considers the benefits, costs, alternatives, and impact on operating expenditures.

The City of Brainerd believes that the CIP process is an important element of responsible fiscal management. Major capital expenditures can be anticipated and coordinated to minimize potentially adverse financial impacts caused by the timing and magnitude of capital outlays. This coordination of capital expenditures is important to the City in achieving its goals of adequate physical assets and sound fiscal management. In these financially difficult times, good planning is essential for the wise use of limited financial resources.

As stated above, the purpose of the 5-year CIP is to guide staff and the City Council down the path of financial feasibility and sustainability, while maintaining the essential services that the City provides. More importantly, the 5-year CIP:

- 1) Sets forth an estimated schedule, timing, and details of specific capital improvements.
- 2) Identifies estimated costs associated with the specific capital improvements.
- 3) Outlines the need for the improvements; and

- 4) The sources or revenues needed to pay for the improvements.

C. Street System Overview

The City of Brainerd maintains approximately 80.20 miles of streets of which 19.87 miles are covered under State Aid rules and eligible for State Aid funding. The City also maintains 16.26 miles of alleys, 2.73 of which are paved and 16.26 which are un-paved. The City uses a comprehensive pavement management system and database that rates and scores pavements based upon calculations of condition ratings based upon a 0-4 scale (0 being pavement that has completely failed and 4 being pavement that was just constructed). During this pavement rating process, City Staff use multiple different measurements on a street to measure certain types of cracking and distresses within the pavement that are turned into a pavement score using a linear regression equation. During this process, staff also use judgement to rate the curb condition on each street. These pavement ratings are used to identify and group projects into larger projects, thereby driving project costs down. There are other circumstances in which a street may need to be reconstructed or resurfaced, those being underlying utilities in critical or undersized conditions or the need for expansion or safety improvements. Generally, improvements to storm sewer systems fall in line with street resurfacing and reconstructions.

The City rates their pavements on 3-year cycles. The last comprehensive pavement rating was performed in 2018. At that time, the aggregate average pavement score in the City was 3.354 Average Rating per Linear Foot. The average age of a City street in 2018 was 21.31 years old. This pavement score is a direct reflection of how the City has performed in keeping up and maintaining the pavement system and gives a big picture perspective on what City staff can do differently to improve street conditions. The City also uses many types of pavement management techniques such as seal coating, crack sealing, and large patching to extend the life of the streets. There have been numerous research projects performed by local and state agencies that have proven that pavement management techniques such as the ones listed generally extend the life of pavements.

Miles of Road by Surface Rating										
Surface Rating	2005		2012		2015		2018		2021	
	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
0.00-0.25	0.03	0.04%	-	0.00%	0.04	0.05%	0.02	0.03%	-	0.00%
0.26-0.50	-	0.00%	-	0.00%	-	0.00%	-	0.00%	-	0.00%
0.51-0.75	-	0.00%	0.51	0.63%	0.07	0.09%	-	0.00%	0.14	0.17%
0.76-1.00	0.62	0.80%	0.25	0.31%	0.33	0.41%	-	0.00%	0.17	0.21%
1.01-1.25	0.14	0.18%	0.36	0.44%	0.70	0.87%	0.21	0.27%	-	0.00%
1.26-1.50	2.29	2.93%	1.11	1.39%	1.05	1.31%	0.30	0.37%	0.33	0.42%
1.51-1.75	1.99	2.55%	1.08	1.35%	2.02	2.51%	0.82	1.02%	0.65	0.81%
1.76-2.00	4.63	5.92%	1.59	1.99%	3.12	3.89%	2.99	3.72%	3.25	4.05%
2.01-2.25	2.16	2.77%	6.54	8.16%	3.45	4.31%	2.81	3.50%	2.48	3.09%
2.26-2.50	3.18	4.07%	3.50	4.37%	3.46	4.31%	4.17	5.20%	3.37	4.20%
2.51-2.75	4.25	5.44%	3.85	4.80%	5.62	7.00%	3.03	3.77%	4.31	5.37%
2.76-3.00	10.47	13.40%	3.51	4.38%	5.40	6.74%	3.43	4.28%	4.09	5.10%
3.01-3.25	3.39	4.33%	6.82	8.50%	8.54	10.65%	8.08	10.07%	9.71	12.11%
3.26-3.50	6.47	8.27%	10.78	13.44%	9.88	12.32%	14.05	17.52%	7.81	9.73%
3.51-3.75	10.19	13.04%	11.40	14.22%	9.60	11.97%	12.75	15.90%	7.56	9.43%
3.76-4.00	28.32	36.25%	28.89	36.02%	26.92	33.57%	27.55	34.35%	36.34	45.31%
Totals	78.13	100.00%	80.21	100.00%	80.20	100.00%	80.20	100.00%	80.20	100.00%

Table 1 - Miles of Road by Surface Rating

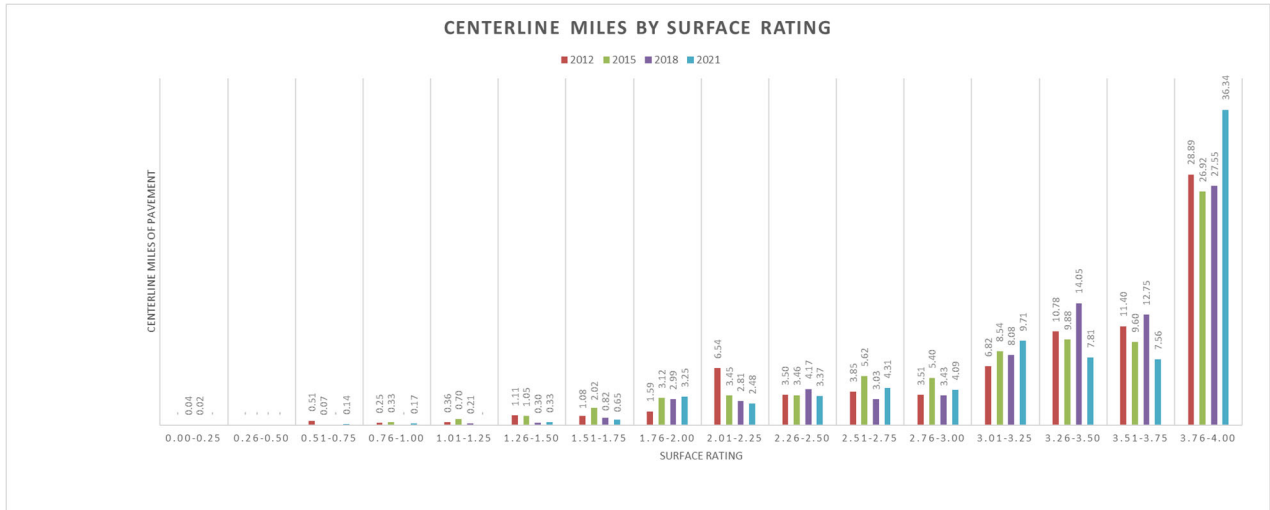


Figure 1 - Centerline Miles by Surface Rating

Pavement Age	2005		2012		2015		2018		2021	
	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
0-5	15.68	20.07%	11.79	14.70%	13.71	17.09%	12.86	16.03%	10.30	12.84%
6-10	10.35	13.25%	13.57	16.92%	6.96	8.68%	10.55	13.15%	9.28	11.58%
11-15	9.07	11.61%	10.83	13.50%	12.31	15.35%	10.61	13.22%	8.54	10.65%
16-20	11.72	15.00%	7.63	9.51%	9.76	12.17%	6.89	8.59%	11.40	14.21%
21-25	6.51	8.33%	11.82	14.74%	8.57	10.68%	10.13	12.62%	9.41	11.73%
26-30	3.87	4.95%	4.89	6.09%	10.57	13.18%	12.47	15.55%	8.32	10.38%
31-35	10.21	13.06%	3.21	4.00%	4.61	5.74%	2.50	3.11%	8.03	10.02%
36-40	5.98	7.66%	7.01	8.75%	2.25	2.80%	2.69	3.35%	3.21	4.01%
41-45	2.05	2.63%	6.11	7.61%	6.95	8.66%	5.83	7.27%	1.92	2.39%
46-50	2.03	2.60%	1.83	2.28%	2.36	2.95%	3.51	4.37%	6.00	7.48%
51-55	0.21	0.27%	0.98	1.22%	0.81	1.01%	0.54	0.68%	2.13	2.66%
56-60	0.17	0.21%	0.36	0.44%	1.13	1.41%	1.25	1.55%	0.56	0.70%
61-65	0.14	0.18%	0.05	0.06%	0.07	0.09%	0.26	0.32%	0.88	1.09%
66-70	-	0.00%	-	0.00%	-	0.00%	-	0.00%	0.07	0.09%
71-75	-	0.00%	0.14	0.17%	0.14	0.17%	-	0.00%	-	0.00%
76+	0.14	0.18%	-	0.00%	0	0.00%	0.14	0.17%	0.14	0.17%
Totals	78.13	100.00%	80.21	100.00%	80.20	100.00%	80.20	100.00%	80.20	100.00%

Table 2 - Miles of Road by Age

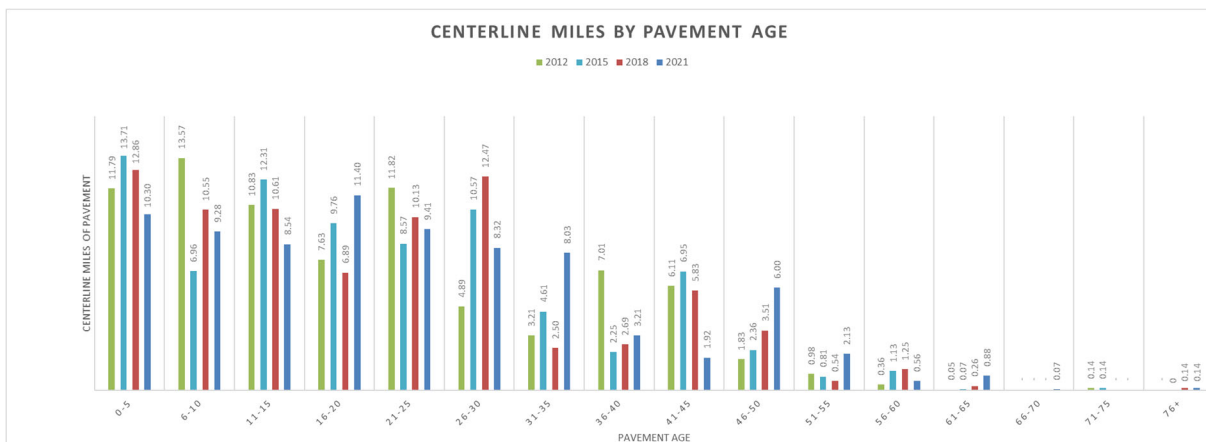


Figure 2 - Miles of Road by Age

Pavement Management Summary					
	2005	2012	2015	2018	2021
Average Pavement Rating	3.246	3.273	3.216	3.354	3.400
Average Age of Street	18.92	20.48	21.01	20.94	22.92

Table 3 - Pavement Management Summary

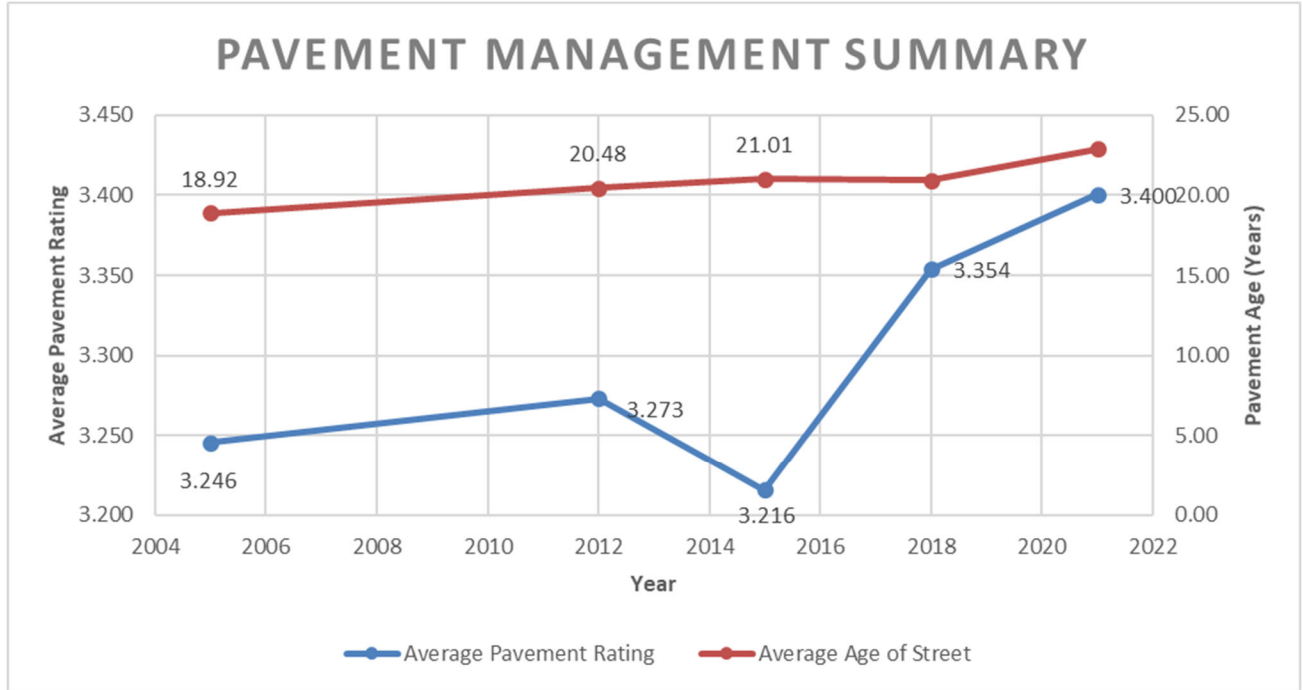


Figure 3 - Pavement Management Summary

D. Sanitary Sewer System Overview

The City of Brainerd operates and maintains approximately 77.44 miles of sanitary sewer, of which 49.7% is vitrified clay, 39.9% is poly-vinyl chloride, 5.9% is reinforced concrete, 0.1% is steel, and 1.8% is high-density polyethylene, and 2.7% is cured in place pipe. This equates to 203,089 linear feet (LF) of vitrified clay, 162,961 LF of poly-vinyl chloride, 24,250 LF of reinforced concrete, 470 LF of steel, and 7,218 LF of high-density polyethylene, and 10,887 LF of cured in place pipe. All the pipes range in size with the smallest pipes in the system being 6 inches and the largest being 27 inches. The current average age of the City's sewer system is about 50.1 years old. The current oldest sewer in the system was constructed in 1904, and the newest sewer in the system was constructed in 2018.

The City uses closed captioned television equipment to video the pipe and performs annual maintenance with flushing, root cutting, and rodding to the system every year. To properly maintain the sewer system, and to meet League of Minnesota Cities insurance requirements, the City adopted the League of Minnesota Cities Sewer Maintenance Policy, which states that major problem lines should be maintained 2-3 times/year, problem lines a time/year, clay lines every 2-5 years, PVC and CIPP pipe every 6-10 years, and interceptors every 11-20 years. This, on average, means the City needs to maintain approximately 97,872 LF of pipe/year.

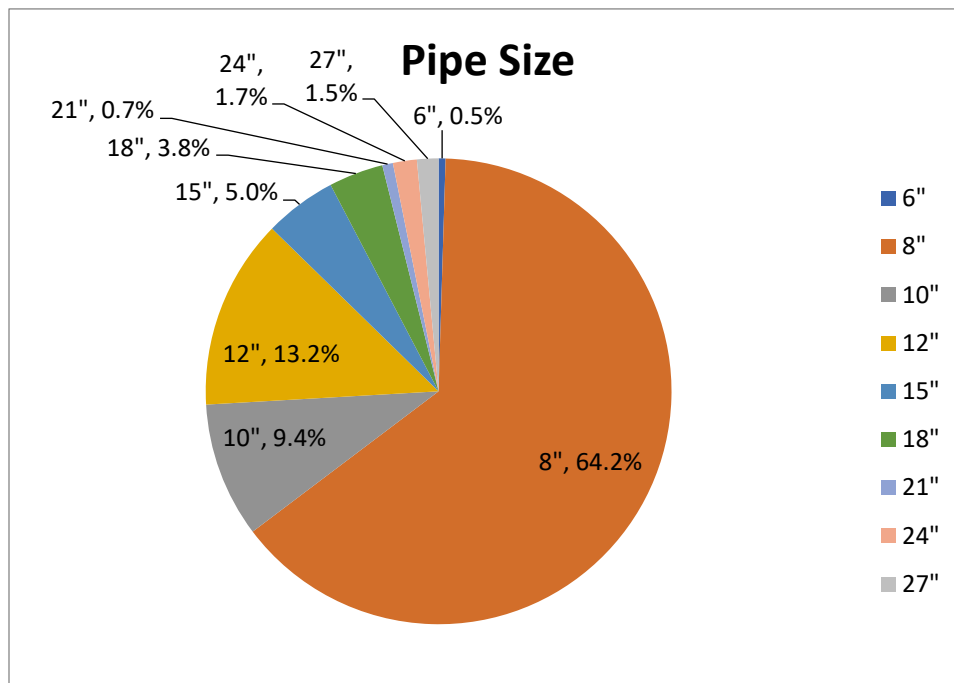


Figure 4 - Pipe Size

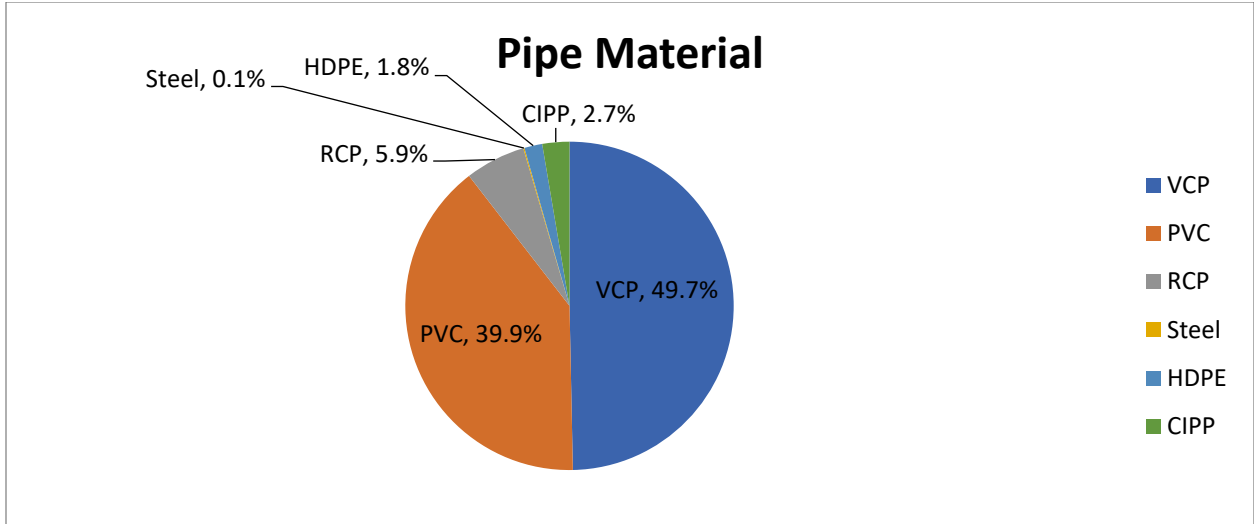


Figure 5 - Pipe Material

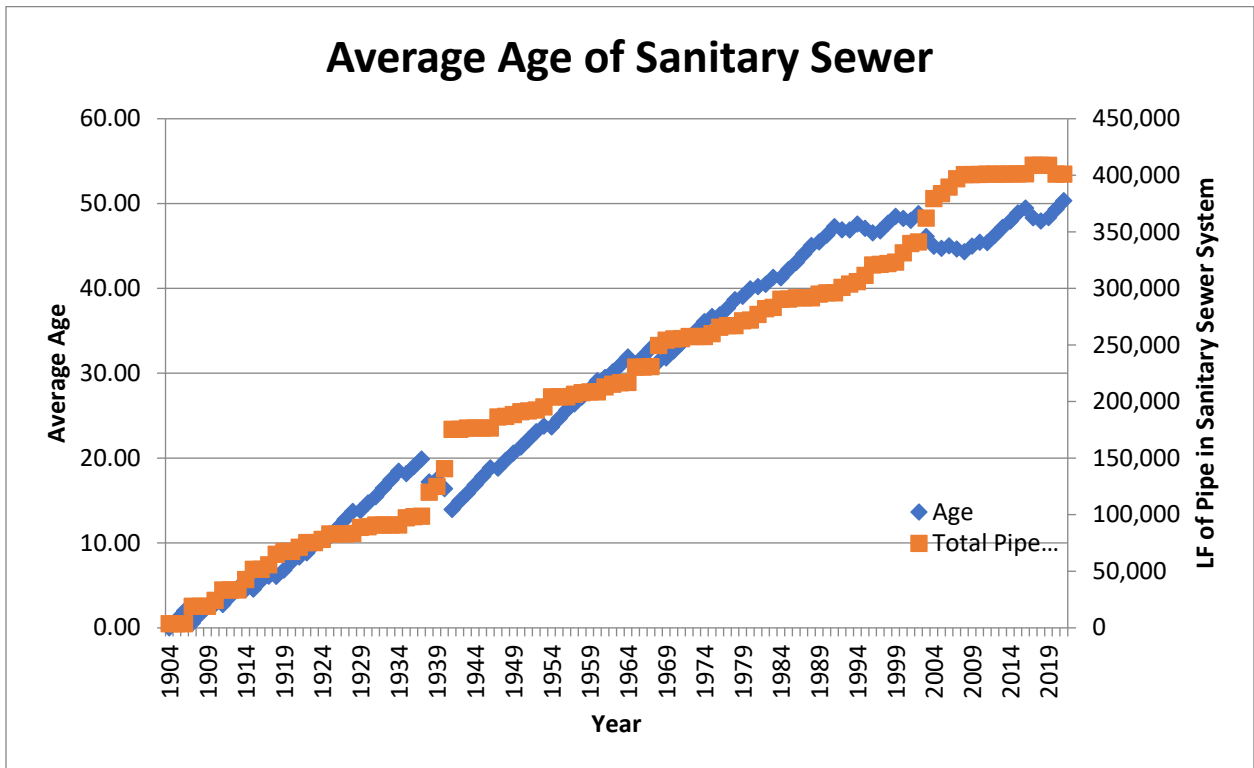


Figure 6 - Decade Sewer Built/Replaced

E. Funding Options for a 5-year Capital Plan

There are numerous ways to fund capital replacement and rehabilitation projects, both at a local level and laid out by Minnesota Statute. The most the most financially stable and viable solution to funding a 5-year CIP is through levying money through local taxes. The City has numerous funds in which they pay for capital improvement projects from, and include the Construction Fund 401, Sanitary Sewer Fund 237, Storm Sewer Fund 238. Currently, the City levies approximately \$360,000 into the construction fund 401. The City generates revenues into Sanitary Sewer Fund 237 and 238 through rates paid for by the users of each respective system. The current sanitary sewer rate is \$1.40 per 1,000 gallons plus a flat fee based upon water meter size serving the home or business. The current storm sewer rate is based upon a single-family residential fee of \$4.00/household. Commercial stormwater equivalent residential unit is based upon the single-family residential rate and get charged the single-family rate for every 1/12 acre of impervious area on the site. The sanitary sewer rate generates approximately \$571,000 of revenues into Sanitary Sewer Fund 237 every year while the storm sewer rate generates approximately \$379,000 of revenues into the Storm Sewer Fund 238 every year.

Other sources of financing the 5-year CIP are through assessing a portion of the improvement costs to the benefitting properties typically adjacent to the street or utility improvement. The City typically does not assess for replacement or rehabilitation of the storm sewer utility, as it is very difficult for the City to prove cost benefit of a replaced utility if the utility was functioning before the replacement. Minnesota Statute 429 lays out a very detailed process for assessing properties benefitted from a public improvement. The main objective when assessing properties for a portion of the cost of an improvement project is that the assessment bears a direct relationship to the value of the benefits (typically the fair market value) that the assessed property receives. The City of Brainerd's assessment policy assesses every property the same, whether it is on a busy collector street or a local side street, as such the City does not assess for anything over a typical residential street construction consisting of a 7-ton road design at the standard City street width of 35-foot curb-to-curb. This promotes fairness and equality to all constituents and businesses in the City so that residents or businesses are not being assessed for extra width or structure that may exist on some streets, but not others. The City assesses for 50% of what a typical residential street costs to reconstruct or resurface. This is, in most cases, approximately \$35.00/front foot for a resurfacing project, \$75.00/front foot for a reconstruction project, and approximately \$175.00/front foot for new construction (storm sewer included, but no sanitary or water utilities). Typically, the City assesses the entire cost of sanitary sewer and water utilities to the adjacent property owner, as these utilities are a direct benefit to the property, they serve within the corporate City limits.

A last source of financing improvement projects is through the issuance of general obligation utility bonds or statute 429 bonds. State statute lays out specific guidelines and processes to issue bonds for capital infrastructure replacement, specifically in sections 429 and 475 of Minnesota Statute.

F. Determining an Appropriate Funding Level for a 5-year Capital Plan

The City has used its available resources to fit a 5-year plan to current funding levels and opportunities, while also recognizing the need to keep infrastructure within the City at an acceptable level to protect the health and safety of its constituents.

G. Project Selections and Benefits in Combining Projects

When compiling the data for the 5-year CIP, the City also considered location of projects as seeing the benefit in grouping similar projects near each other and thereby driving down project costs. As you can see from the upcoming listed projects, 2021 has a major focus in southeast Brainerd, 2022 has focus on north Brainerd, 2023 has focus in southeast Brainerd, and 2024 in south Brainerd, and 2025's primary focus will be the reconstruction of Highway 210 through Brainerd, in which the City will have a large role in assisting MnDOT with. Much of the infrastructure in northwest and southwest Brainerd is newer, thus the focus in centralized areas of southeast, northeast, south, and north Brainerd.

Appendix



Appendix A
2021-2025 Capital Improvement Plan
All Projects



Appendix B

2021-2025 Capital Improvement Plan Map

