



CITY OF BAYPORT

294 NORTH 3RD STREET
BAYPORT, MN 55003

CITY COUNCIL WORKSHOP
City Hall - Council Chambers
March 5, 2018

***** Please note: There will be no public comment taken at the workshop. *****

CALL TO ORDER (Workshop will immediately follow the regular 6:00 p.m. meeting)

BUSINESS

- Review city street sealcoat policy and procedures
- Discuss city infrastructure studies and planning

ADJOURN



CITY OF BAYPORT
294 NORTH THIRD STREET
BAYPORT, MINNESOTA 55003
PHONE 651-275-4404 FAX 651-275-4411

Date: February 20, 2018

To: Mayor and City Council
Adam Bell, City Administrator

From: Matt Kline, Public Works Director

RE: Review city street sealcoat policy and procedures

BACKGROUND

The city has consistently and effectively used seal coating as a maintenance tool for keeping the city streets in good condition. The city budgets \$70,000 annually to accomplish maintenance and it has been a successful practice, as shown by the latest pavement management report.

The traditional seal coating process that has worked effectively in years past will not be recommended for pavement that has been constructed within the last 15 years or from this point forward (unless certain factors change), due to delamination. Delamination occurs when part of the top layer of asphalt is peeled away along with the layer of chip seal coat. In Bayport, this phenomenon is occurring only on 6th Street North, north of 5th Avenue North, near the correctional facility. This is the only road that has been seal coated with traditional chip seal and reconstructed within the last 15 years. Delamination is occurring throughout the state, but the cause has yet to be identified by asphalt companies or MNDOT.

The good news is that there are alternatives to chip seal coating. The city applied a product called CRF in the Inspiration development and a couple of streets in "downtown" Bayport last year. This product is specifically formulated for slightly older pavement (4-10 years) that has never been seal coated. Instead of sealing the surface of the asphalt as chip sealing does, CRF penetrates into the asphalt and restores the binder within the asphalt. This seals the asphalt from within, rather than from the surface. CRF will not delaminate the asphalt. The City of Woodbury has been applying CRF for 3 years with good results and will be completing a large project with its counterpart, Reclamite, this year. This summer, I mentioned staff was unaware of CRF use in cold weather environments for an extended period of time. Further investigation has revealed that these products have been used in the Western states and Canada for a significant amount of time. This bodes well for its resiliency to the cold weather.

As a result of this research, staff and the city engineer will not be recommending the application of traditional seal coating practices on any city street repaved within the last 15 years. A CRF counterpart, called Reclamite, is a product used for new pavement that accomplishes much of the same results as CRF. Reclamite soaks into the new asphalt and creates a sealing layer that limits the elements from entering the asphalt. This seal keeps moisture and air out of the asphalt and subsequently creates a longer lasting product.

It should be noted that there are limitations to these products. The CRF product that was applied last year to the Inspiration development is only recommended to be applied twice at 5-10-year intervals. Reclamite can be also be applied twice at 5-year intervals. After the applications of CRF or Reclamite have been exhausted, a number of other products can be used over these applications i.e. microsurfacing, slurry mix, other types of seal coating. CRF and Reclamite do not hinder these products. Even with these limitations, staff feels that these products are useful maintenance applications for the city's asphalt roads.

FUTURE RECOMMENDATIONS

Later this year, staff anticipates applying Reclamite to the newly constructed asphalt from the 2017 infrastructure project and applying CRF to the Fire Hall Parking lot. City staff acknowledges that this is a new approach, but given the widespread delamination problem that is occurring throughout Minnesota, city staff has determined that this is the most viable option at this point. In researching these two products and conferring with other city staff in the Twin Cities area, it is staff's recommendation that these products be used as the preferred product for asphalt maintenance moving forward on all newly applied asphalt. Traditional chip sealing will continue to be used on all asphalt that has previously received this maintenance practice.



CITY OF BAYPORT
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PHONE 651-275-4404 FAX 651-275-4411

DATE: February 26, 2018
TO: Mayor and City Council
Adam Bell, City Administrator
FROM: Matt Kline, Public Works Director
RE: Discuss city infrastructure studies and planning

BACKGROUND

City staff and the City Engineer undertook the enormous task of assessing the city's infrastructure over a one-year period and have developed an overview on the status of that infrastructure. Infrastructure assessments have been accomplished and a 6-year capital improvement plan has been drafted. As a continuation of this effort, city staff will be moving forward with a number of initiatives to further investigate financial needs associated with completing recommendations provided within each system assessment. These tasks are discussed in more detail within this overview and include water, sewer, storm sewer and street systems.

Water

The city completed a Water Distribution Model in 2017. This model examined the current state of the system and provides the capability of examining future additions or improvements to the system, such as replacing undersized water mains or connecting additional developments.

Overall, the water system is in good working order. There are no major concerns that the water model indicated. However, there are a few recommendations that should be considered in the future.

1. Fire Flow Capabilities – Current fire flows in the city range from adequate to above average in different locations. The following are improvements that should be instituted in the future when funds and projects permit.
 - a. Undersized Water Mains – There are about 20 miles of water mains in the city water system. Of those 20 miles, roughly 3 miles of water main is composed of 4" line. Current standards recommend a minimum 8" water main to supply flow through a system that provides fire protection. Replacing the undersized lines with larger sizes would increase the fire flows in the locations where there is currently lower flow. This replacement is recommended during street projects when other infrastructure is being reconstructed or replaced and is not an immediate need.
 - b. Dead End Mains – Dead end water mains within a water system can be significant in three ways. 1) Dead ends tend to reduce fire flow because they are only receiving water flow from one direction. 2) If an interruption in service occurs anywhere along the main, there is no ability to back feed customers with water. 3) Dead end mains can lead to poor water quality due to water stagnation from decreased flow. For these reasons, a recommendation of looping dead end mains is made within the report. In the city water system, this practice will not always be feasible due to cost and location.

Water Production and Storage Infrastructure

This aspect makes up a significant portion of the cost associated with maintaining a water system. A separate CIP will eventually be developed specifically for this part of the water system due to the vast amount of infrastructure associated with it. A small sample is as follows: Well Pumps, High Speed Service Pumps, Booster Pumps, Water Tower Maintenance and Painting, Well House Rehabilitation, Air Stripper Rehabilitation/Replacement, VFD's, Generator Installation, SCADA Equipment, an Emergency Water Connection, etc.

The good news is that a majority of this equipment is fairly new and the older components have been maintained on a regular basis. However, a dedicated CIP for this infrastructure and a utility rate study have not been coordinated recently to verify that the water/sewer utility funds are adequate to maintain and replace this infrastructure. The utility funds will also need to fund any upcoming sewer and water main work that is required.

A water tank evaluation was completed for both water tanks in November 2017. Periodic evaluations are completed in order to assess the condition of these structures. This assessment is common due to the significant costs of having water tanks fall into disrepair (a complete interior and exterior coatings application for the Inspiration tank will likely exceed \$300,000). The evaluation from both city tanks came back positive. There are a few maintenance practices that were recommended with a total estimated cost of \$83,000, which will be completed by city staff or instituted into the water/sewer CIP in the coming years.

The following recommendations are being made by city staff. The first two recommendations are to better understand the required funds needed for water utility infrastructure maintenance, repair, and replacement and determine if these funds are being secured with current water rates:

1. Create a water production and storage infrastructure CIP to determine long term costs associated with the water utility system.
2. Conduct a utility rate study to determine viability of current utility rates when compared to the yearly operational budget and the long-term CIP financial requirements.
3. Continue preventative maintenance practices on all applicable equipment.

Sewer

The city sewer system has two areas of concern when it comes to infrastructure planning. The first area is the condition of the sewer mains in the "downtown" area. The second is associated with the inflow and infiltration (I/I) of clear water into the sewer system. I/I was a significant aspect of the wastewater section of this year's comprehensive plan, due to prioritization from the Metropolitan Council.

The city contracted with a sewer cleaning and televising company in the fall of 2017 to perform these services in the "downtown" area. The objective was to perform the annual cleaning of the sewer mains per city policy and to determine the condition of the sewer mains to assess future and/or immediate infrastructure needs. As with the water system, the sewer system is in good working order. There are a few areas that will require lining and spot replacement. However, at this time, there are no major concerns with the system. One area the televising did raise concerns with is the amount of root intrusion that was occurring in certain areas of the sewer mains. This was mainly occurring between joints and at lateral connections in specific sections of the city.

The following recommendations are being made by city staff/consultants in terms of maintenance and repair of the sewer system:

1. Lining, replacement, and/or repair of sewer mains that were identified as needing repair within a recommended timeframe. Identification of these repairs was made from visual inspection of the sewer televising and are placed in the CIP depending on their priority.
2. Increase sewer cleaning or other alternatives (root control) in the areas that experience the greatest amount of root intrusion.
3. Determine a frequency for sewer televising events; given the age and material of the city sewer mains, this practice should be undertaken on a 3-5 year basis.

4. Assess the need for additional sewer equipment i.e. camera system, combination jetter/vacuum truck, etc. versus outsourcing these services.

I/I will be a little more involved than the sewer cleaning and televising process. In 2005, the city received a penalty for exceeding peak flow I/I water that was entering the sewer system. That penalty was remediated by conducting studies and completing I/I projects that reduced the flow into the system. The I/I projects focused on city infrastructure in the southeast portion of the city and along 5th Street North just south of 5th Avenue North. The southeast area is affected by rising river levels during flooding which subsequently causes river water I/I and the 5th Street North I/I is caused by high groundwater levels. The city has not experienced a peak flow penalty since the remediation was completed in 2012. However, in reviewing sewer flow data and river level data, the city still experiences increased I/I flow into the sewer system during rising river levels. It is likely that the only reason the city has not had a peak flow event since 2012 is because there has not been a major flooding event since then. The priority for I/I reduction at this point will be to determine other possible sources within the southeast quadrant of the city that are sources of clear water intrusion. City staff is recommending the following alternatives that could be implemented in regard to I/I reduction:

1. The GIS mapping that is underway is recording the depths of all sewer manholes. From this information, we can calculate rough elevations for each sewer main. This will provide city staff with a more definitive area to focus on I/I because excessive inflow occurs when the river reaches a certain elevation. More investigation will be completed by city staff when the mapping is completed.
2. Continue the evaluation of further improvements to city sewer infrastructure within the southeast and 5th Street North quadrants of the city.
3. Coordinate an I/I flow study in the southeast quadrant that attempts to narrow the source areas. This would need to occur during a flood event.
4. Given the city infrastructure improvements in this area, a case could be made that the likely sources are private connections at this point. The city could focus on the following alternatives:
 - a. Conducting home inspections that focus on unlawful sewer connections, such as sump pumps connected to the sanitary sewer (inspections of this nature are allowed under city ordinance).
 - b. Televising private sewer laterals for clear water inflow or failing pipe laterals that would allow excessive inflow during flood events (city ordinance would require a failing sewer lateral to be fixed).
 - c. Require the private sewer connection of the Waterford/Bayport Marina/Mallards complex to have a sewer flow meter installed and read monthly or quarterly. This would document all sewer flow coming from this complex.
5. Set up an inspection schedule for possible infiltration sources such as manhole covers, manholes, etc.

Storm Water

The city storm water system is a mix of ditches, culverts, storm sewer, infiltration basins, and other miscellaneous drainage structures. This mix is labor intensive at times due to the undersized structures within the system and the general dilapidation that has occurred over time. Credit should be given to the city staff that has maintained this system and kept it working to this point.

The Bayport Infrastructure Planning- Drainage document was drafted in 2016 and identified 20 substantial drainage areas of concern throughout the city. Three areas within the report were remediated during the 2017 Infrastructure Improvement Project. These three projects were primarily stand-alone issues that were completed without having to reconstruct a significant amount of roadway associated with them. The remaining drainage concerns are primarily part of larger improvements that will require street improvements at the same time as the drainage improvements. The following recommendations are being made in terms of alleviating storm water issues throughout the city and could be implemented in the following ways:

1. Continue with required maintenance to keep the system working.
2. City staff and City Engineer will review the overall drainage system to determine the best course of action moving forward, i.e. keeping a combination of ditches, culverts, and storm drain system or moving towards a complete curb/gutter/storm drain system.
3. Determine the need for a comprehensive storm water/drainage plan.

4. Coordinate storm water system improvements to coincide with other utility improvements.

Streets

An engineering firm updated the city's Pavement Management Report in August 2017. This report indexed the pavement conditions throughout the city. Overall, the streets are in good condition, primarily due to an extensive seal coating program that has occurred on a consistent basis for the past number of years. According to the report, only about 3% of the streets are in fair to poor condition, with 5% in good condition, and the remaining 92% in very good to excellent condition.

A couple caveats to this report:

1. It is only a visual inspection on the condition of the streets. It did not investigate the condition of the street to any depth. City staff viewed some degraded asphalt below the seal coat layer on 2nd Ave. S. during the reconstruction this year, which raised some concerns about the asphalt layers on the remaining city streets. With that said, the street was still in good working condition even with the degraded asphalt (likely due to the seal coat maintenance program).
2. The report did not take into account a number of streets in the city that are severely crowned in the middle. This characteristic can make for hazardous driving conditions and difficult snow plowing conditions.

The following recommendations are being made in conjunction with the pavement management report:

1. Continue with street rehabilitation projects in the form of seal coating and crack sealing.
2. Research and recommend alternative seal coat techniques for newly installed asphalt.
3. Utilize the street ratings and city staff knowledge to recommend street reconstruction projects for the city CIP.

6 Year General CIP

Overall, the city is in respectable shape in terms of rating the current state of infrastructure. A majority of the infrastructure is nearing the end of its expected life span, but it still remains viable at this time. One of the difficult tasks in years 4, 5, and 6 of this CIP and beyond will be to coordinate the reconstruction of repairs to the four different systems.

The attached tables project the overall 6-year CIP for water, sewer, streets, and storm water. As indicated, years 4, 5, and 6 of this projection are only projections at this point. In essence, city staff considers these three projects as viable options for these years, but does not consider them as a critical requirement at this time. They provide a suitable outlook for future projects costs moving forward. These three projects are listed on the 6-Year CIP under the following project names:

Streets: 2nd St. N.: Storm Drain Rehabilitation (5th Ave. to 3rd Ave.)

Streets: 2nd St. N.: Repave Storm Drain Disturbance (15' wide)

Streets: Point Rd. (west half circle)

Streets: 6th St. N. to Pickett Ave.

Streets: 5th St. N., 6th Ave. N., 7th Ave. N.

Water/Sewer: 2nd St. Sewer Lining (in conjunction with storm water project)

Water/Sewer: 6th St. N. to Pickett Ave. (replace 4" water main and hydrant)

Water/Sewer: 5th St. N., 6th Ave. N., 7th Ave. N. (replace water main, hydrants, valves)

SUMMARY

In summary, the infrastructure within the city is generally in good working condition. With continued maintenance and replacement, the infrastructure should remain in good working order. Funding for the current 6-year CIP is available, but city staff still needs to evaluate the water/sewer fund in the form of a rate study in order to determine viability of this funding source. The street fund is in relatively stable condition given the small number of related projects over the next 6 years. City staff will plan another workshop in the future to further discuss the source funding for repair, maintenance, and replacement costs associated with all infrastructure.

Infrastructure CIP		2018	2019	2020	2021	2022	2023
Department	Project						
Water/Sewer	Pumphouse #2 Rehabilitation	35000					
Water/Sewer	Generator Installation: Air Stripper		100000				
Water/Sewer	Prison: Emergency Connection			75000			
Water/Sewer	Sewer Main Cleaning and Televising				85000		
Water/Sewer	Sewer Main: Excavation Repairs (4 Locations)	20000					
Water/Sewer	Sewer Main: Spot Repairs (4 Locations)	12000					
Water/Sewer	Sewer Main: Excavation Repairs (8 Locations)			40000			
Water/Sewer	Sewer Main: Spot Repairs (19 Locations)			57000			
Water/Sewer	Sewer Main: Full Length Lining (2117' @ \$40/ft)			85000			
Water/Sewer	Inspiration Tank: Recoat, Miscellaneous		60000				
Water/Sewer	MN DOT Project: Water Infrastructure			275000			
Water/Sewer	MN DOT Project: Sewer Lining (brittleness of clay tile)			127500			
Water/Sewer	Hydrant Replacement	20000					
Water/Sewer	Hydrant Painting		100000				
Water/Sewer	I/I Project (undetermined)		100000				
Water/Sewer	2nd St. Sewer Lining (in conjunction with storm water project)				41000		
Water/Sewer	6th St. N. to Pickett Ave. (replace 4" water main and hydrant)					60000	
Water/Sewer	5th St. N., 6th Ave. N., 7th Ave. N. (replace water main, hydrants, valves)						125000
	Beginning Year Balance	1260240	1313240	1093240	573740	587740	667740
	Yearly Transfer to Fund	140000	140000	140000	140000	140000	140000
	Yearly Project Costs	87000	360000	659500	126000	60000	125000
	Year End Balance	1313240	1093240	573740	587740	667740	682740