City of Powell Engineering Department

Capital Needs Subcommittee

3/16/2018

Storm Sewer Infrastructure Statistics

- 76.53 miles (404,078 feet) of storm sewer pipe are located in Powell.
- Within that pipe network we maintain 3,694 structures (catch basin, curb inlets, manholes, etc.).
- In 2017 Powell repaired 50 structures and appurtenances at a cost of \$102,177.70 (\$2,043.55 each).

Outside Agency Street Maintenance Policies

Westerville

Ratings done every two years. 155 miles of City Streets. Has a policy statement to maintain Streets at different levels depending on functional classification – major roadways in better condition than local roadways.

Dublin

Considers the following factors when deciding which streets to repair.

- 1. Existing pavement condition index.
- 2. Type and severity of deterioration.
- 3. Average daily traffic.
- 4. Functional classification of the street.
- 5. Annual maintenance costs.
- 6. Expected economy of grouping streets by location to gain contractor efficiency and minimize neighborhood disruptions.
- 7. Evaluate the condition of the existing curb and gutter that work is aligned with the pavement work.

Street Maintenance Financial Analysis

We looked at three scenarios to form a picture of roadway condition and expenditures over a 10-yr span starting in 2018. The Engineering Department modeled future income growth, labor and material cost inflation, and expected roadway deterioration. Example data used in this analysis is shown below in Figure 1. This analysis is approximate and doesn't account for many of the factors that could affect future expenditures.

		2015	2016	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Annual PCR decline:		1.5	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Annual road overlayed (ft):		9,000	-	2,715	0	17,538	4,188	3,887	3,774	3,664	3,557	3,454	3,353	3,255
Actual length Completed (ft):		10,905	5,340											
	Estimated Budget	\$655,000	\$500,482	\$270,000	\$0	\$1,850,000	\$455,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000
	Overlay Budget:	\$655,000	\$500,482	\$270,000	\$0	\$1,850,000	\$455,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000
	Base Repair Budget:			\$8,418	\$0	\$54,367	\$12,982	\$36,149	\$35,097	\$34,074	\$33,082	\$32,118	\$31,183	\$30,275
	Slurry Seal Budget:			\$14,256	\$0	\$92,074	\$21,986	\$20,407	\$19,813	\$19,236	\$18,675	\$18,131	\$17,603	\$17,090
	Crack Seal Budget:	\$14,052	\$0	\$6,517	\$0	\$42,091	\$10,051	\$9,329	\$9,057	\$8,793	\$8,537	\$8,289	\$8,047	\$7,813
	Total Program Cost:			\$299,191	\$0	\$2,038,532	\$500,018	\$500,885	\$498,966	\$497,103	\$495,294	\$493,538	\$491,833	\$490,178
Overlay Cost Per Linear Foot:		\$60.06	\$93.72	\$99.43	\$102.41	\$105.49	\$108.65	\$111.91	\$115.27	\$118.73	\$122.29	\$125.96	\$129.73	\$133.63

Scenario 1

Scenario 1 explores Powell's current street maintenance budget. Our funds for street maintenance are derived from fuel taxes. Revenue from this source is not expected to increase annually for a number of reasons, including the rise alternate fuel vehicles and increased fuel efficiency standards. This scenario assumes an annual program budget of roughly \$500,000. The total 10-year cost for this scenario is approximately **\$6,300,000**. In 2028 the minimum and *Average Pavement Condition Rating* (PCR) would be 55 and 69, respectively. Figures 2 and 3 depict the PCR and distribution of PCR values on an annual basis.



Figure 2 – Scenario 1 PCR Scores



Scenario 2

Scenario 2 explores the requested annual street maintenance budget of \$1,350,000. Because funding in this scenario is assumed to be partially sourced from income tax, annual budgets are expected to grow with income inflation. The total 10-year cost for this scenario is approximately **\$18,000,000**. In 2028 the minimum and average PCR rating would be 66 and 81, respectively. Figures 4 and 5 depict the average pavement condition rating (PCR) and distribution of PCR values on an annual basis.



Figure 4 – Scenario 2 PCR Scores



Figure 5 – Scenario 2 Street Conditions

Scenario 3

Scenario 3 evaluated costs to maintain city streets in a desirable condition without the use of slurry seal. Complaints from residents about the texture and appearance of slurry seal are common. We anticipate a slightly higher rate of annual PCR decline by omitting this preservation treatment. Funding in this scenario is assumed to be partially sourced from income tax so annual budgets are expected to grow with income inflation. The total 10-year cost for this scenario is approximately **\$21,500,000**. In 2028 the minimum and average PCR rating would be 65 and 81, respectively. Figures 6 and 7 depict the average pavement condition rating (PCR) and distribution of PCR values on an annual basis.



Figure 6 – Scenario 3 PCR Scores



Roadway age

Roadway age is an important consideration when discussing the funding needs of our transportation network. Powell's growth has generally followed regional trends of boom and bust in the construction industry. Accordingly, when looking at the age of our roads clusters of similar age streets occur during these periods. Because an average asphalt street which needs resurfaced every 25 years we can expect future times when large concentrations of our street network are in distress. Attending to these clusters may stretch a street maintenance annual budget. See figure 8 below for a chart of total length of streets sorted by age.



Figure 8 - Powell Roadway Age

Addendum

- 1) PCR Example Photos
- 2) City of Westerville Street Maintenance Brochure
- 3) Scioto Street Storm Sewer Inspection Photos



90.00 (Very Good to Excellent)



85.00 (Good)



80.00 (Good)



71.35 (Fair)



65.00 (Poor to Fair)

STREET MAINTENANCE PROGRAM

PROTECTING YOUR INVESTMENT



CITY'S RESPONSIBILITY



The City implements an annual Street Maintenance Program to maintain streets and improve the safety of the traveling public.

Every two years the City evaluates each street and rates the condition of its pavement. The pavement condition is evaluated and measured using a pavement condition index rating system which assigns a numerical rating to each street based on the presence and severity of 39 potential distresses. A database program keeps track of the maintenance history of all streets.

HIGH STANDARDS



It's the City's policy that at least 85 percent of the major roadways will have a pavement condition rating of good or better.



The remaining roads will be maintained so that at least 60 percent will have a rating of good or better.





WORKING TO IMPROVE YOUR STREETS

There are many different treatments the City may use to repair and reconstruct pavement to meet our quality benchmarks.

CRACK FILL

A crack fill fixes moderate sized cracks. This reduces water penetration and extends pavement life. Debris is cleaned from the cracks with compressed air and a hot sealant is applied into and across the crack. This treatment is continually moving so traffic is maintained at all times, except in the immediate vicinity of the crack filling operation.

PAVEMENT REJUVENATION

A pavement rejuvenator reverses the effects of sunlight and water. It extends pavement life by restoring oil and sealing it from water. The treatment is sprayed on, then a thin layer of sand is spread on to prevent the material from being picked up by tires. After a few days, the street is swept to remove the sand. Travel on the material should be avoided until fully cured – typically three to four hours.

> 1 1 Avoid driving on these treated areas for about 4 hours.

PLANE AND OVERLAY

With this treatment, the existing pavement surface is ground off (planed). It may be a few weeks later before the new asphalt surface is installed. Base pavement repairs, curb ramp upgrades to comply with ADA standards and spot curb repairs are also completed, as needed. During curb replacement, a portion of driveway approaches may be removed and replaced. Traffic is maintained throughout the treatment, but driveway access may be restricted for up to seven days while any necessary curb repairs are completed.

Driveway access may be restricted up to 7 days around treatment area.

SLURRY SEAL

Much like seal coating your driveway, slurry seal is spread in a thin layer over pavement. The material consists of small gravel, an asphalt binder and additives. It binds with pavement to protect it from sun, snow, rain and damage from vehicles. The rough surface is hard-wearing to promote traction and prevent slipping. Travel on the street is prohibited while the material cures – typically three to four hours.

RECONSTRUCTION

When other treatments are no longer cost effective, existing pavement is removed entirely and new pavement is installed. Reconstruction typically includes new curbs and the partial removal and replacement of driveway approaches. Curb ramps at intersections are made ADAcompliant, if needed. Water main, storm and/or sewer utility improvements may precede this work, which may require the removal and replacement of some sidewalk. Access to your home is maintained to the greatest extent possible although periodically you will need to park in the street.

FREQUENTLY ASKED QUESTIONS

Why do we have a Street Maintenance Program?

Proactively maintaining and repairing streets helps protect residents' investment in our street infrastructure and is significantly more cost-effective than rebuilding them. Since there are more roads requiring attention than available funding, the Street Maintenance Program is designed to prioritize those that provide the most cost-effective and long-term benefits.

How do you decide which roads receive maintenance?

Every two years, the City evaluates the streets and rates pavement conditions. A pavement condition index rating system assigns a numerical rating to each street based on the presence and severity of 39 potential distresses. A database program tracks the maintenance history of all streets. Streets are visually inspected for deteriorated surfaces, cracks and other distresses. This data is noted and recorded. The pavement ratings, along with observed roadway conditions, prior maintenance history, traffic volumes and other factors are used to determine what type of maintenance is required and when.

My street is scheduled for maintenance this year. When will construction take place?

As the date of construction nears, you'll receive a door hanger with the date, duration and treatment to be performed, as well as any special information you might need including street access and/or parking restrictions.

For up-to-date schedule information, visit westerville.org/construction.

Please be advised that street maintenance treatments require good weather - rain or cold temperatures can temporarily delay work. Other unforeseen issues (like equipment problems or material unavailability) may also impact the schedule. Due to these factors, the schedule posted on our webpage should be considered as tentative.

For all types of treatments, "No Parking" signs will be posted along the street 24 to 72 hours in advance of the work. The signs will indicate the date(s) on which the parking restriction is in effect. The signs will be reposted should rescheduling become necessary.

Will I be able to get to/from my home while maintenance is in progress?

If your street is receiving a plane and overlay or a crack fill, every effort is made to maintain access to your home. Since these treatments are moving operations, access to your home will only be impacted in the immediate vicinity of the work while the material cools. For crack fill, this may result in a brief delay of ten to fifteen minutes. For an asphalt overlay, the material may need to cure up to a half hour before traffic is permitted on the new surface.

If your street is receiving a pavement rejuvenation or slurry seal, vehicles must be kept off it for several hours while the material cures.

If your street is receiving reconstruction, access to your home is maintained to the greatest extent possible although periodically you will need to park in the street.

For all treatments, emergency access will be maintained at all times. Arrangements can be made for residents with special needs to access their homes. It's recommended you park your vehicle on a nearby street if you have pressing appointments to ensure you will be able to leave as necessary.

Q

Will my yard be damaged?

Typically, pavement rejuvenation, slurry seal and crack fill treatments will not affect lawns. Minimal disruption to lawns may happen because of plane and overlay or reconstruction treatments where curbs are repaired, curb ramps and sidewalks are improved, or where utility work is performed. Lawn areas affected by the Program will be fully restored. Additional information about the restoration process will be provided in door hangers as it occurs.

DEDICATED TO SERVICE

You can take a short online survey once a project is completed to give us your valuable feedback.



- Obey speed limits
- Pay attention to road surface
- Keep a safe following distance
- Watch for lane switches
- Obey the flagger
- Watch out for workers and equipment
- Please be patient and courteous

FOR UPDATES OR MORE INFORMATION CONTACT

614.901.6845 | streets@westerville.org westerville.org/construction

🗗 @cityofwesterville | У @tellwesterville

INCIDENT CODE: DSF INCIDENT DESCRIPTION: DEPOSITS SETTLED: FINE FEET: 0000.0 PERCENTAGE: 55 POSITION: 3 TO 9

INCIDENT CODE: DSZ INCIDENT DESCRIPTION: DEPOSITS SETTLED: OTHER FEET: 0008.0 PERCENTAGE: 25 POSITION: 4 TO 8 COMMENTS: DIRT AND GRAVEL

INCIDENT CODE: FH4 INCIDENT DESCRIPTION: FRACTURE LONGITUDINAL HINGE, 4 FEET: 0185.4 POSITION: 10 TO 2

INCIDENT CODE: JSL INCIDENT DESCRIPTION: JOINT SEPARATED (OPEN): LARGE FEET: 0032.5