



Eugene City Council

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EUGENE CITY COUNCIL AGENDA

May 11, 2020

5:30 p.m. CITY COUNCIL WORK SESSION

Due to Governor Kate Brown's Stay Home, Save Lives Executive Order to combat the spread of Covid-19, this meeting will be held remotely using virtual meeting technology. Information about online or other options for access and participation will be available at <https://www.eugene-or.gov/3360/Webcasts-and-Meeting-Materials>

**Meeting of May 11, 2020;
Her Honor Mayor Lucy Vinis Presiding**

Councilors

Emily Semple, President
Mike Clark
Chris Pryor
Betty Taylor

Jennifer Yeh, Vice President
Greg Evans
Claire Syrett
Alan Zelenka

5:30 p.m. CITY COUNCIL WORK SESSION

- 1. WORK SESSION: COVID-19 Update – Recovery**
- 2. WORK SESSION: Review of 2019 Implementation of Bond Measure to Fix Streets and 2020 Pavement Management Report**

For the hearing impaired, an interpreter can be provided with 48 hours' notice prior to the meeting. Spanish-language interpretation will also be provided with 48 hours' notice. To arrange for these services, contact the receptionist at 541-682-5010. City Council meetings are telecast live on Metro Television, Comcast channel 21, and rebroadcast later in the week.

El consejo de la Ciudad de Eugene agradece su interés en estos asuntos de la agenda. El lugar de la reunión tiene acceso para sillas de ruedas. Se puede proveer a un intérprete para las personas con discapacidad auditiva si avisa con 48 horas de anticipación. También se puede proveer interpretación para español si avisa con 48 horas de anticipación. Para reservar estos servicios llame al 541-682-5010. Las reuniones del consejo de la ciudad se transmiten en vivo por Metro Television, Canal 21 de Comcast y son retransmitidas durante la semana.

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or visit us online at www.eugene-or.gov.

EUGENE CITY COUNCIL AGENDA ITEM SUMMARY



Work Session: Review of 2019 Implementation of Bond Measure to Fix Streets and 2020 Pavement Management Report

Meeting Date: May 11, 2020
Department: Public Works
www.eugene-or.gov

Agenda Item Number: 2
Staff Contact: Katie Marwitz
Contact Telephone Number: 541-682-5034

ISSUE STATEMENT

Staff will present the citizen Street Repair Review Panel (SRRP) 2019 Annual Report to the City Council. This report is one of two documents prepared in compliance with the City Council resolution placing Measure 20-275, the 2017 bond measure to fix streets, on the ballot. In addition to the Street Repair Review Panel's annual report, the independent accountant's report by Isler CPA is also included. Staff will also present the 2020 Pavement Management Report.

BACKGROUND

Following considerable study and discussion, including forming a Council Committee on Transportation Funding and convening an ad-hoc citizen Street Maintenance Task Force, Council approved Resolution 4953, calling a city election on a measure authorizing the issuance of \$35.9 million of general obligation bonds to fund street preservation projects. In November 2008 Eugene voters approved Measure 20-145, the 2008 bond measure to fix streets. In 2012 Eugene voters approved Measure 20-197 that continued the City's road repair program for another five years with \$43 million of general obligation bonds to fund street preservation projects, and bicycle and pedestrian projects. In 2017 Eugene voters, for a third time, approved Measure 20-275 and \$51.2 million of general obligation bonds to fund street repairs and safety improvements for people who walk and bike. 2019 was the first year of implementation of the 2017 bond measure.

Beginning in April 2010, Council has received annual reports from the Street Repair Review Panel (SRRP) and the independent accountant regarding implementation of the 2008, 2012, and 2017 bond measures.

The 2017 bond measure to fix streets continues the requirements related to accountability included in the 2008 and 2012 measures. The City Council resolution and the information provided to voters specified:

- In order to promote accountability in the use of bond proceeds, the City Manager will contract with an outside auditor to prepare an annual written report on the use of the bond proceeds. The auditor will ascertain and report on whether the bond proceeds were used

May 11, 2020 Work Session

for the authorized purposes and in compliance with the restrictions set forth above. The City Manager will provide the report to the Council and make the report publicly available. (Resolution 5204, Section H)

- To further promote accountability and citizen involvement in street preservation projects, the City Manager will convene the citizen street repair review panel. The citizen street repair review panel will prepare an annual report, separate and distinct from the report prepared by the outside auditor, documenting the City's use of the bond proceeds and noting whether the bond proceeds were used in compliance with the terms of this Resolution. The City Manager will provide the SRRP's report to the Council and make the report publicly available. (Resolution 5204, Section I)

PREVIOUS COUNCIL DIRECTION

At the [May 29, 2019 City Council Work Session](#), staff presented the Review of 2018 Implementation of Bond Measure to Fix Streets and the 2019 Pavement Management Report.

COUNCIL OPTIONS

This work session is informational regarding the SRRP and PMS Reports; no action is requested.

CITY MANAGER'S RECOMMENDATION

This work session is informational; no action is requested.

SUGGESTED MOTION

This work session is informational; no action is requested.

ATTACHMENTS

- A. Citizen Street Repair Review Panel 2019 Report, including Auditor's Report
- B. 2020 Pavement Management Report

FOR MORE INFORMATION

Staff Contact: Katie Marwitz, Principal Civil Engineer AIC
Telephone: 541-682-5034
Staff E-Mail: kmarwitz@eugene-or.gov



Memorandum

Date: March 10, 2020
 To: Sarah Medary, City Manager Pro Tem
 From: Street Repair Review Panel
 Subject: 2019 Report of the Street Repair Review Panel

It is our pleasure to present the 2019 annual report of the Street Repair Review Panel, focusing on the first year of implementing the 2017 bond measure to fix streets. The Street Repair Review Panel was initially formed in 2009 to review the implementation of the 2008 street repair bond. This year's report responds to the accountability provisions in Measure 20-275, the 2017 bond measure to fix streets.

The 9-member panel met three times over a four-month period in preparation of this report, which included a physical inspection of the projects completed in 2019. We reviewed and accepted the report prepared by the City's external auditor (Appendix D) with respect to the City's use of the bond proceeds through December 31, 2019.

Based on this limited review and all materials presented to us, we unanimously conclude that the bond proceeds were used for the authorized purposes and in compliance with the limitations and restrictions outlined in Council Resolution 5063. We are also providing a detailed report, prepared at our request and with our approval, from the Public Works staff on the bond projects constructed in 2019.

Highlights from our review of the 2019 street bond projects include the following:

- **Progress** –2019 was the first year of the third 5-year bond measure that will continue to work towards reducing the preservation backlog and remain focused on active transportation and safety.
- **Current Conditions** - The projects funded in 2019 by the 2017 voter-approved bond measure resulted in the reconstruction or resurfacing of 24 streets and totaled more than 17 lane miles. Additionally, 6 streets were completed using remaining funds from the 2012 voter-approved bond measure. As noted in previous reports, the 2007 Pavement Management Report projected the anticipated backlog for rehabilitation needs would reach more than \$282 million in 2016 if steps were not taken to reduce the backlog. The backlog of street repair projects in 2019 was projected at \$76.3 million, an increase from \$68.4 million in 2018. Since the implementation of the 2008 bond, more than 180 lane miles of street work has been completed using bond funds.
- **Vision Zero** – In recognition of Council's Vision Zero resolution, which calls for eliminating traffic-related deaths or serious injuries on city streets, the improvements funded through the bond enhance safety for all road users. Specific examples include increased buffer zones for bicycle lanes and the use of green bike lanes in conflict zones.
- **Active Transportation** - The 2017 measure allocated funding for bicycle and pedestrian projects guided by the Transportation System Plan, City staff and the Active Transportation Committee. In 2019, significant improvements for people who walk and bike continued, including the installation of sidewalk ramps and improved bicycle lanes. Roughly half of the annual allocation will be used on the off-street path system. The first path improvement is expected in 202 with the improvement of the West Bank Path.
- **Collaborating with Partners and Leveraging Bond Funds** – Eugene's Pavement Preservation Program requires strong coordination with internal and external utility stakeholders to schedule and coordinate the street work with any needed upgrades and repairs to the nearby streets and utility facilities to avoid emergency repairs. The 2019 projects created opportunities to repair underground utilities including the water, wastewater and stormwater systems. We also appreciate the ability to leverage bond funds

with other sources of revenue. 2019 examples of this type of fund leveraging include the rehabilitation of an unimproved street segment adjacent to a bond funded street using funds from Public Works Maintenance and the rehabilitation of a neighboring local street segment using fuel tax funds. We encourage staff to continue to look for these types of opportunities.

- **Communicating with Citizens and Businesses** – Construction, by nature, is disruptive and residents recognize that in a busy construction season it is a challenge to coordinate activities to keep a project on schedule. This year, however, several of the projects were extremely frustrating for their neighbors, with streets torn up for extended periods without visible signs of progress and no firm timeline for completion. The SRRP is concerned that any repeat of these problems in upcoming years could jeopardize the passage of future bonds. We continue to encourage the department to coordinate projects and look for new and better ways to proactively coordinate communications and minimize impact to the public, impacted businesses and residents.
- **Achieving Sustainability Goals** –The City’s paving program is designed to extend the life of city streets before they fall into the reconstruct category. This helps to extend the life of the streets, and when combined with recent paving techniques, greatly reduces the City’s environmental footprint. Eugene is a leader using reclaimed asphalt materials, reducing the mining and production of virgin rock and asphalt materials. The continued use of warm mix asphalt saves energy, reduces emissions, and is an excellent example of the department’s commitment to sustainability efforts, consistent with the City’s Climate Recovery Ordinance. It is important to understand, however, that the real impact on the climate comes not from how we build roads, but how we use them. The amount of active transportation funding in this bond measure has increased, and staff are using these funds strategically to maximize improvement for walking, bicycling, and transit. However, achieving our climate recovery goals will require a far greater commitment of economic and political capital than what staff can achieve through bond measure projects.
- **Understanding the Process for Selecting Projects** – SRRP members often are asked what process is used to select streets for repairs. The streets chosen for bond funding were selected using the criteria listed on page 3 of the attached report. The selection of bicycle and pedestrian projects is guided by the Transportation System Plan, City staff and the Active Transportation Advisory Committee. The memo in Appendix C explains in more detail how these safety improvement projects are selected.
- **Recognizing the Continued Economic Value of Street Bond Projects** – A functioning transportation system is important for the community and economy. The bond is essential to maintaining the City’s infrastructure.
- **Bottom Line** – We believe the community is getting a good return for its investment in street repairs, and the bond funds are being used wisely to meet the objectives of Ballot Measure 20-275. An upfront investment in repairing and maintaining Eugene’s streets saves the community significant money.

We feel Public Works staff are doing an excellent job designing and constructing bond measure projects. We appreciate the support they have given us in the course of our review. The committee also continues to express its appreciation to the voters and taxpayers of Eugene for their ongoing support of the bond measures that have made our community a better place to live and do business.

Additional information about the Street Repair Review Panel can be found at www.eugene-or.gov/2110/Street-Repair-Review-Panel. Please feel free to contact any of us for additional information.

SRRP Members

John Barofsky	John Quilter
Janet Calvert	Matt Roberts
Allen Hancock	Ollie Snowden
Jim Mender	Gary Wildish
	Sue Wolling

City of Eugene Staff

Sarah Medary	Brian Richardson
Eric Johnson	Lacey Risdal
Katie Marwitz	Matt Rodrigues
Scott Milovich	Tammy Smith
Cathy Mueller	Jenifer Willer

Citizen Street Repair Review Panel 2019 Report

Implementation Update for Measure 20-275 Bonds to Fix Streets



May 11, 2020 Work Session - Item 2

2019 Report to the Citizen Street Repair Review Panel

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Acknowledgements

SRRP Members:

John Barofsky	John Quilter
Janet Calvert	Matt Roberts
Mel Damewood	Ollie Snowden
Allen Hancock	Gary Wildish
Jim Mender	Sue Wolling

City of Eugene Staff:

Cathy Mueller	
Eric Johnson	Brian Richardson
Rachael Love	Lacey Risdal
Katie Marwitz	Matt Rodrigues
Scott Milovich	Tammy Smith
	Jenifer Willer

Cover photo from 2019 projects: Completed Paving on Olive Street

INTRODUCTION

BACKGROUND

This report has been compiled for use by the Street Repair Review Panel (SRRP). It is intended to provide background on projects included in the 2017 voter-approved Bond Measure 20-275, the schedule for construction of these projects, and the details of bond projects constructed in 2019. The street repair measure approved \$51.2 million in bonding authority over a five-year period, with construction of bond-funded projects starting in 2019 and completing in 2023.

KEY TERMS

Bond - Bond Measure 20-275, Bonds to Fix Streets, approved by Eugene voters in November 2017.

Inlay – An inlay treatment consisting of removing a specified depth of the existing pavement surface and repaving that same depth with a new pavement surface. This treatment works well where the pavement distress is isolated to the removed portion of the pavement. At times, the inlay treatment needs to be supplemented with an “overlay,” which is when an additional thickness of pavement is placed over the inlaid pavement. An overlay is used when engineering analysis shows that the existing structure does not have sufficient strength to accommodate the projected traffic volume. The term “overlay” is commonly used to describe both the inlay and overlay practices.

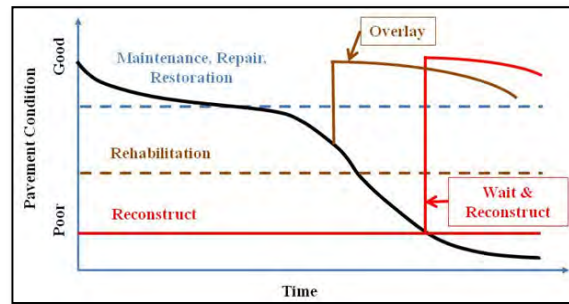
One of the benefits of performing an inlay treatment is that the new pavement surface will match existing adjacent structures and not increase the street cross grade. Another benefit of an inlay is that in the removal of the existing pavement, contractors grind up the old pavement and stockpile the material to be recycled into new pavement.

Full Depth Reclamation (FDR) – An alternative to a traditional reconstruction treatment that utilizes and reuses existing road base materials. The existing roadway materials are pulverized to a specified depth, mixed with a cement paste for strengthening, and allowed to cure for 18-48 hours. Once cured, the roadway is repaved. Two of the benefits of performing a reclamation treatment are reducing mining and producing new materials by reusing what is on-site and shortening the time the neighborhood is impacted due to lane closures.



FDR on Alder Street

Pavement Preservation Program (PPP) - This is the current capital project program to preserve Eugene's improved street system. A priority for this program is to preserve streets that have not yet degraded to a point where reconstruction is required. Preserving a street through inlay or similar treatment is four to five times more cost effective than waiting to repair a street until after it requires reconstruction. This program was initiated in 2003 and, until passage of the 2008, 2012, and 2017 street repair bond measures, was predominately funded with local fuel tax revenue and the reimbursement fee component of transportation system development charges.



**Pavement Life Cycle – City of Eugene
Transportation Service Profile Presentation**

Reclaimed Asphalt Pavement (RAP) - Reclaimed asphalt pavement is the grindings from the existing pavement during the inlay process, described above. The most common and effective use of this material is to supplement virgin materials used to make new asphalt pavement and reduce the use of costly asphalt binder. In Oregon, it is common to specify up to 30 percent of asphalt pavement can be made up of reclaimed asphalt pavement. Other reclaimed asphalt materials, such as shingles, can also be used to replace virgin asphalt binder in pavements. Reclaimed asphalt materials can be used as base rock.

Reconstruction – Once the street has deteriorated to the point that it can no longer be repaired with an inlay or overlay, it is repaired by reconstructing the pavement and underlying base. Traditional reconstruction involves digging up the existing pavement, any existing base rock, and subsurface soils to the depth that will accommodate a new pavement structure. As discussed above, full depth reclamation may sometimes be used as an alternative to traditional reconstruction. Reconstruction may be four to five times more expensive than an inlay treatment, making it the most expensive of the repair options, which is why the City prioritizes preserving streets before they reach the point of needing reconstruction.

Warm Mix Asphalt - Warm mix asphalt pavement is identical to conventional hot mix asphalt pavement, except that through a special mixing process it is produced at a temperature approximately 50 to 100 degrees cooler than conventional hot mix asphalt. In Eugene, all asphalt concrete producers have retrofitted their plants to produce warm mix asphalt using a water-foaming process. The foaming process allows temperature reductions of approximately 50 degrees. This reduction in temperature has several advantages:



Paving on Balfour Street

1. It reduces energy consumption to produce asphalt concrete, lowering costs and greenhouse gas emissions.

2. It reduces off-gassing (smoke) of asphalt concrete by keeping the temperature under the boiling point of “light oils” in the liquid asphalt, benefiting construction workers and the public.
3. Because the light oils are not boiled off, the liquid asphalt coating the rock particles is slightly thicker, which slows the aging process of the asphalt.
4. It reduces the oxidation caused during high temperature production that causes premature aging of the asphalt, which should provide a longer life product.

The use of warm mix asphalt pavement is specified for all City of Eugene paving projects.

SRRP MISSION

Per Resolution No. 5063 the SRRP “will prepare an annual report, separate and distinct from the report prepared by the outside auditor, documenting the City’s use of the bond proceeds and noting whether the bond proceeds were used in compliance with the terms of this Resolution.”

CRITERIA FOR PROJECT SELECTION AND SCHEDULING

STREET PROJECTS

Street projects to be financed by the bond were specifically listed in the Bond (see Appendix A). All street projects were identified by the Public Works Maintenance Pavement Management System as priorities for repair. In addition, the following criteria were used to select streets for the bond measure:

1. Citizen input with respect to prioritizing major streets in need of reconstruction.
2. Scientific information about needed street rehabilitation and reconstruction from the pavement management system.
3. Geographic distribution throughout the community to ensure all areas of the City receive a benefit from the bond proceeds.

The City has a longstanding policy to use capital preservation funds on the improved street system. An improved street has been designed for the type of soils and traffic use of the street and includes a storm drainage system. Curb and gutter is the traditional mark of a storm drainage system, but can include roadside swales and planters. The bond measure street list consisted of improved streets in need of preservation as identified in the pavement management system.

The list of the street bond projects, with their estimated repair cost from the Pavement Management System and the year constructed or planned year of construction, is included in Appendix A of this report. In scheduling the street repair projects, the priorities were preserving streets prior to their needing reconstruction, grouping projects by location for cost savings, and coordinating with utility work. The list includes a comparison of programmed costs to actual costs with any difference noted. Differences in total project costs on individual projects may affect the funding available for future projects.

BICYCLE AND PEDESTRIAN IMPROVEMENT PROJECTS



Protected Bike Lane on Barger Drive

The 2017 bond measure stated that the City will allocate an annual average of \$1,000,000 to support bicycle and pedestrian projects, also known as active transportation projects. These projects were not named in the bond measure; rather, the selection of the projects would be guided by the Pedestrian and Bicycle Master Plan, City staff, the Active Transportation Committee, and the City's goals to increase safety on City streets. In 2019, active transportation and safety improvements were added to several projects. These improvements are further described in the project details, below, and included in Appendix C of this report.

Commencement of the 2017 Bond Measure to Fix Streets

2019 was the first (of five) construction years of the 2017 Bond Measure. It is the third voter-approved bond measure dedicated to continuing to address needed work on Eugene's street system.

In 2000, the capital budget didn't include funding for preservation of the street system. At that time, it was estimated there was \$53 million in needed street repairs. The City created the Pavement Preservation Program in 2003, utilizing a recently-approved local gas tax to fund the work. Despite the supplemental funding the amount of needed street repairs grew to \$171 million in 2008.

Voters recognized and understood the looming issues. In 2008 they approved a five-year, \$35.9 million road bond. The measure promised to fix 32 streets and committed funds for off-street bike path improvements. Because of economic factors and measured spending, staff were able to extend funding from the bond measure to repair an additional 10 streets.

Voters approved a second five-year street repair bond measure in 2012. Staff utilized the \$43 million to fix 76 streets and fund dozens of improvements for people walking and biking. Because of continued favorable bids and resourceful spending, funds were available to repair an additional five streets in 2019. After ten consecutive years of utilizing bond funding, the amount of needed street repairs was estimated at \$68.4 million, a significant decrease from 2008.

Voters approved the third five-year street repair bond measure in 2017. Staff will continue look for ways to maximize and leverage funding from the bonds, striving to produce high-quality work and complete streets for people in Eugene.



Vision Zero

In November of 2015, the Eugene City Council joined a growing number of cities around the country in adopting a Vision Zero Resolution that states “no loss of life or serious injury on our transportation system is acceptable.” Vision Zero is a data-driven approach to educate the community and enable the City to prioritize resources based on evidence of the greatest need and impact.

The City regularly combines Vision Zero principles with ongoing pavement preservation projects. Cost effective intersection enhancements such as countdown pedestrian signals and audible pedestrian signals will continue to be a priority and standard practice on future projects. ODOT has shown that the inclusion of these types of enhancements can significantly reduce fatal and life-changing injury crashes.

ADA Transition Plan

As part of Title II of the Americans with Disabilities Act (ADA) of 1990, the City of Eugene conducted an evaluation of its public rights-of-way and developed a transition plan that outlines in detail how the organization will ensure safe access to all facilities for all individuals. Public Works collected detailed data on over 15,000 ramps and 250 pedestrian signals to develop transition schedules specific to these facilities. The Public Works Director approved an updated supplement to the City’s ADA Transition Plan focused on the Public Rights-of-Way by Administrative Order in July 2015. All capital rehabilitation projects are evaluated for access compliance and potential improvements during scoping and preliminary design.

In 2019, the City constructed and upgraded 423 sidewalk ramps, 386 through capital improvement projects and 37 through private development construction.

Sustainability and Gains through Technical Developments

In 2010, Eugene created the Community Climate and Energy Action Plan (CEAP), joining a growing list of forward-thinking cities around the world that are addressing climate change and energy challenges by planning with vision and creativity. The Climate Recovery Ordinance (CRO), adopted in 2014 and updated in 2016, is our community’s next step toward fulfilling these efforts. The 2016 update established the goal of reducing the 2010 levels of community fossil fuel use by 50 percent by the year 2030.



The City of Eugene continually strives to improve the quality, environmental footprint, and cost efficiency of its projects. In 2019, Eugene continued to use warm mix asphalt pavement and increased use of reclaimed binder to meet these sustainability criteria.

Warm mix asphalt continued to be specified for all the paving projects in 2019 in place of conventional hot mix asphalt; approximately 28,000 tons of warm mix asphalt pavement was placed on capital paving projects in 2019, reducing the need for nearly 700 tons of asphalt cement

and 9,000 tons of aggregate to be mined, refined, processed and subsequently shipped to the pavement producers.

Warm mix asphalt provides environmental and human health benefits as well as a potentially longer lasting product. The National Cooperative Highway Research Program (NCHRP) estimates that there is a CO₂ savings of 12 pounds per ton of pavement when using warm mix as compared to traditional hot mix asphalt. The NCHRP also estimates that the use of warm mix asphalt reduces the energy used in the asphalt batch plant by about 30 percent compared to hot mix asphalt.

FHWA Recycled Materials Study

In the Spring of 2019, the Federal Highway Administration (FHWA) approached the City of Eugene about participating in a study on the use of recycled materials, specifically the use of shingles, in asphalt paving. The effort was a subset of an FHWA program titled Development and Deployment of Innovative Asphalt Pavement Technologies (DDIAPT).

The primary objective of the effort was to identify and put forth best practices implemented by state highway agencies for responsible use of reclaimed asphalt shingles (RAS) in asphalt mixtures. To accomplish this objective information was collected, mostly through field visits, with six agencies. Eugene was the only local agency, the rest were state departments of transportation including, Delaware, Illinois, Missouri, Pennsylvania, and Texas.

The two-day Eugene field visit took place in July and members of the FHWA task force, City staff, and ODOT representatives visited 4 local projects that included asphalt pavements that contained RAP and RAS. The group also visited the asphalt plant of a local pavement supplier to learn more about the process of RAS production and its challenges.

The visit was mutually beneficial and Eugene staff was pleased to share our knowledge, experience, and focus on environmental stewardship through innovative paving practices. Data and best practices from the visit will be shared on the national platform of the DDIAPT study.

Funding Status and Forecast

Project cost estimates, used in project selection, were based on the overall surface condition of each street as described in the City's Pavement Management System. A unit cost was assigned to each street based on whether the street rehabilitation treatment was assumed to be a reconstruct or an overlay. Approximately 18 months prior to construction, more detailed pavement testing is conducted to determine specific treatments to each street based on the existing pavement structure, subgrade soil conditions, and traffic loading. Actual rehabilitation treatments may be different than the original assumptions, requiring more, less, or a combination of rehabilitation techniques.

For the streets scheduled for 2019 construction, the 2017 estimated cost with inflation was \$9,078,000. As of December 31, 2019, although not all project contracts have been closed out, the projected actual cost for the 2019 bond projects is \$9,936,649; a net difference of \$858,649 over the costs projected in 2017.

Details on an annual project-by-project basis are provided in the following pages and summarized in Appendix A.

The 2017 bond measure also allocated an average of \$1,000,000 for pedestrian and bicycle improvements each year. In 2019, the project expenditures on all pedestrian and bicycle improvements funded by the bond were estimated at \$207,486. Additional details are provided in Appendix C.

In 2018, City Council approved five additional streets to be repaired with the 2012 bond funds, all of which were constructed in 2019. Willamette Street was scheduled for construction in 2018 but because of the size and complexity of the partially federally funded project it has now been approved for 2020 construction.

Additional Streets Approved for 2019 Construction					
Street Name	Limits	Ward	Estimated Cost	Projected / Actual Cost	Difference
Jerry Street	Richard Ave to Royal Ave	7	\$427,000	\$474,484	(\$47,484)
Louis Street	Hawthorne Ave to Drwy 715	7			
Richard Avenue	Fairfield Ave to Hwy 99	7			
Barger Drive	100' east of Altimont to Primrose St	6	\$1,600,000	\$2,511,697	(\$911,697)
Villard Street	Franklin Blvd to 203' north of 15th Ave	3	\$500,000	\$476,518	\$23,482
W 19th Avenue	Jefferson St to Tyler St	1	\$830,000	\$951,366	(\$121,366)
Willamette Street*	24th Ave to 29th Ave	1,2	\$3,900,000	\$3,900,000	\$0
<i>*Willamette Street will be constructed in 2020, the total shown is a projection</i>					
Projected Construction Totals =			\$7,257,000	\$8,314,065	(\$1,057,065)

2019 Bond Construction Projects

The following pages are reports on individual projects. The total costs for each project listed are estimated as not all of the 2019 construction-related costs have been finalized as of January 2, 2020.



Completed 2019 Paving on Charnelton Street

WEST 11TH AVENUE STREET PAVING

Project Description: This project consisted of rehabilitation of a street in the West Eugene Community Organization neighborhood in Council Ward 8:

- West 11th Avenue from South Bertelsen Road to Tyinn Street

Treatment Methodology:

- W. 11th Ave was rehabilitated by removing the top 4 inches of asphalt pavement and replaced with a 4 to 5-inch pavement layer. The bus lane that was not rebuilt as part of the recent EmX construction was reconstructed with 12" of dowelled concrete.

Costs: Total project costs, from all funding sources, are estimated at \$2,469,799.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$1,874,000
Total Projected/Actual Paving Bond Funds Used =	\$2,240,416
Difference =	(\$366,416)

The primary source of cost overrun was unit bid prices higher than expected. The post-bid budget estimate was very close to the post-construction budget estimate.

Additional Sources of Funding: Stormwater utility funds, road funds, EWEB funds

Active transportation improvement street bond funds were used for the addition of a sidewalk access ramp.

Project Photo:



Completed Paving on W 11th Avenue

EAST 19TH AVENUE PAVING

Project Description: This project consisted of rehabilitation of a street in the South University Neighbors neighborhood in Council Ward 1:

- East 19th Avenue from Hilyard Street to Agate Street

Treatment Methodology:

- East 19th Avenue was reconstructed using the FDR process at a depth of 18 inches and was repaved with an 8-inch asphalt pavement surface.
- *This project was not completed in 2019 due to scheduling and weather conflicts and the remaining work will be completed in the spring of 2020.*

Costs: Total project costs, from all funding sources, are estimated at \$2,143,624.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$1,528,000
Total Projected/Actual Paving Bond Funds Used =	\$1,526,325
Difference =	\$1,675

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds.

Active transportation improvement street bond funds were used for the addition of bike lanes and median islands.

Project Photo:



Ongoing Paving on East 19th Avenue

GRANT STREET, WEST 5TH AVENUE, LAWRENCE STREET, CHARNELTON STREET, OLIVE STREET, EAST 3RD AVENUE AND MILL STREET PAVING

Project Description: This project consisted of rehabilitation of seven streets in the West Eugene Community Organization, Whiteaker Community Council, and Downtown Neighborhood Association neighborhoods in Council Ward 7:

- Grant Street from West 6th Avenue to West 5th Avenue
- West 5th Avenue from Grant Street to Chambers Street
- Lawrence Street from West 6th Avenue to Clark Street
- Charnelton Street from West 6th Avenue to West 4th Avenue
- Oak Street from East 6th Avenue to East 5th Avenue
- East 3rd Avenue from Pearl Street to High Street
- Mill Street from East 2nd Avenue to East 3rd Avenue

Treatment Methodology:

- Grant Street, West 5th Avenue, and Lawrence Street from West 6th Avenue to West 5th Avenue were rehabilitated by removing the existing asphalt pavement and replacing with a 6 to 7-inch asphalt pavement layer. Lawrence Street from West 5th Avenue to Clark Street, Charnelton Street, East 3rd Avenue, and Mill Street were reconstructed by removing the existing asphalt and plain concrete pavement layers and replacing with an 8 to 9-inch plain concrete pavement layer

Costs: Total project costs, from all funding sources, are estimated at \$2,029,578.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$1,897,000
Total Projected/Actual Paving Bond Funds Used =	\$1,842,743
<hr/>	
Difference =	\$54,257

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds, Local Gas Tax funds, Lane County funds

Active transportation improvement street bond funds were used for the addition of bicycle signal detection loops and shared-use lane markings.

Project Photo:



Completed Paving on 3rd Avenue

BROOKSIDE DRIVE AND SUNDANCE STREET PAVING

Project Description: This project consisted of rehabilitation of two streets in the Southwest Hills neighborhood in Council Ward 2:

- Brookside Drive from Brae Burn Drive to approximately 999 Brookside Drive
- Brookside Drive from Braeburn Drive to Montara Way
- Sundance Street from Sundial Road to the end of both cul-de-sacs

Treatment Methodology:

- Brookside Drive from 420 Brookside Drive to Brae Burn Drive will be reconstructed using the FDR process at a depth of 14 inches and were repaved with a 4-inch asphalt pavement surface. Sundance Street will be rehabilitated by removing the top 2 to 4 inches of existing asphalt pavement and replacing with a 5" asphalt pavement layer.
- *This project was not completed in 2019 due to scheduling and weather conflicts and the remaining work will be completed in the spring of 2020.*

Costs: Total project costs, from all funding sources, are estimated at \$1,160,086.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$1,036,000
Total Projected/Actual Paving Bond Funds Used =	\$1,116,348
Difference =	(\$80,348)

Brookside Drive was programmed as an overlay but during project design it was determined that an 1100' section of the roadway required reconstruction. The increased cost of reconstruction accounts for the project budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds

Project Photo:



Brookside Street Temporary Paving for Winter

ALDER STREET PAVING

Project Description: This project consisted of rehabilitation of a street in the Amazon Neighbors Neighborhood in Council Ward 3:

- Alder Street from 24th Avenue to 27th Avenue

Treatment Methodology:

- Alder Street from East 27th Avenue to East 26th Avenue was rehabilitated by removing the top 2 inches of existing pavement and repaved with a 2-inch asphalt pavement surface. Alder Street from East 26th Avenue to East 24th Avenue was reconstructed utilizing the FDR process at a depth of 14 inches and was repaved with a 4-inch asphalt pavement surface. The intersection of East 25th Avenue and Alder Street was rehabilitated by removing the existing pavement and repaving with 6 inches of asphalt.

Costs: Total project costs, from all funding sources, are estimated at \$874,082.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$309,000
Total Projected/Actual Paving Bond Funds Used =	\$578,861
Difference =	(\$269,861)

The increased quantity of full depth pavement repairs and additional concrete work accounted for the majority of the project budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, road funds, EWEB funds

Active transportation improvement street bond funds were used for traffic calming elements and additional sidewalk access ramps to include work on Alder Street at East 30th Avenue and along Avalon Street.

Project Photo:



Completed Paving on Alder Street

FAIR OAKS DRIVE, BEDFORD WAY, AND LARIAT DRIVE PAVING

Project Description: This project consisted of rehabilitation of three streets in the Cal Young Neighborhood Association neighborhood in Council Ward 4.

- Fair Oaks Drive and adjacent cul-de-sacs from Fairway Loop to Oakway Road
- Bedford Way from Fair Oaks Drive to Oakway Road
- Lariat Drive loop ending at Oakway Road
- Lariat Mesa from Lariat Drive to the end
- Lariat Meadows Drive from Lariat Drive to the end

Treatment Methodology:

- Fair Oaks Drive, Bedford Way, Lariat Drive, and Lariat Mesa were reconstructed utilizing the FDR process at a depth of 14 inches and were repaved with a 6-inch asphalt pavement surface. Lariat Meadows Drive, Greenview Street, Kristen Court, and Lariat Mesa cul-de-sac were rehabilitated by removing the top 2 inches of asphalt pavement and replaced with a 2-inch asphalt layer.

Costs: Total project costs, from all funding sources, are estimated at \$1,882,800.

Preliminary Estimate based on Pavement	
Management System (PMS) Surface Evaluation =	\$1,274,000
Total Projected/Actual Paving Bond Funds Used =	\$1,422,000
<hr/>	
	Difference = (\$148,000)

The increased quantity of subgrade stabilization and small incremental increases in bid quantities account for the majority of the budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds

Project Photos:



Paving on Fair Oaks Drive

BALFOUR STREET, CALGARY STREET, ELANCO AVENUE, TERRESA AVENUE, QUEBEC STREET, AND MONTREAL AVENUE PAVING

Project Description: This project consisted of rehabilitation of six streets in the Northeast Neighbors neighborhood in Council Ward 5:

- Balfour Street from Terresa Avenue to the end
- Calgary Street from Holly Avenue to Elanco Avenue
- Elanco Avenue and north cul-de-sac from Norkenzie Road to the end
- Terresa Avenue from Montreal Avenue to Gilham Road
- Quebec Street from Calgary Street to Elanco Street
- Montreal Avenue from Calgary Street to Balfour Street

Treatment Methodology:

- Balfour Street, Calgary Street, Elanco Avenue, Terresa Avenue, Quebec Street, and Montreal Avenue were reconstructed utilizing the FDR process at a depth of 14 inches and were repaved with 6 inches of asphalt pavement surface.
- Rehabilitation of Elanco Avenue west of Calgary Street was added to the project and funded by local gas tax.

Costs: Total project costs, from all funding sources, are estimated at \$1,381,851.

Preliminary Estimate based on Pavement Management	
System (PMS) Surface Evaluation =	\$1,160,000
Total Projected/Actual Paving Bond Funds Used =	\$1,209,956
Difference =	(\$49,956)

The increased quantity of subgrade stabilization accounted for the budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds

Project Photos:



Completed Paving on Calgary Street

JERRY STREET, LOUIS STREET, AND RICHARD AVENUE PAVING

Project Description: This project reconstructed three streets in the Active Bethels Citizens neighborhood in Council Ward 7:

- Jerry Street from Richard Avenue to Royal Avenue
- Louis Street from Hawthorne Avenue to approximately 715 Louis Street
- Richard Avenue from Fairfield Avenue to Highway 99

Treatment Methodology:

- Louis Street from 715 Louis Street to Royal Avenue was rehabilitated by removing the existing asphalt surfacing and replaced with 4-5" of asphalt pavement. Louis Street from Royal Avenue to Hawthorne Avenue was rehabilitated by removing the top 1.5 inches of asphalt pavement and overlaying with 1.5 inches of asphalt pavement. Jerry Street was reconstructed by removing the existing asphalt surfacing down to 18 inches and replaced with 12" of aggregate and 6 inches of asphalt pavement. Richard Avenue was rehabilitated by removing the top 2 inches of asphalt pavement and repaved with 2 inches of asphalt pavement.

Costs: Total project costs, from all funding sources, are estimated at \$588,174.

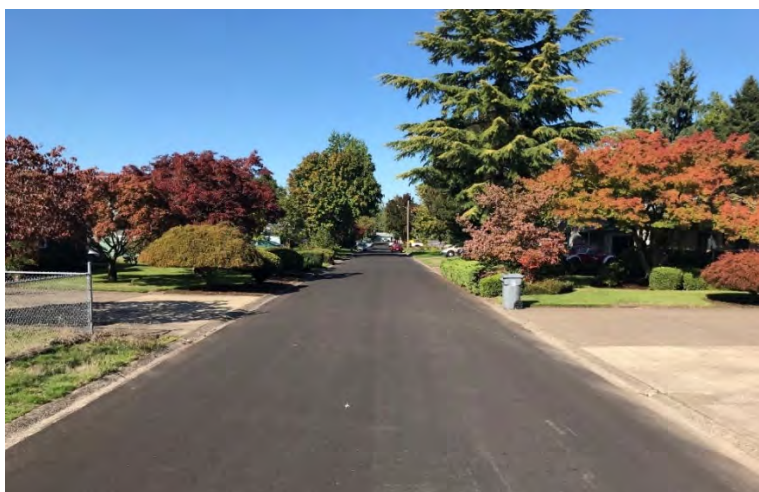
Preliminary Estimate based on Pavement Management

System (PMS) Surface Evaluation =	\$427,000
Total Projected/Actual Paving Bond Funds Used =	\$474,484
Difference =	(\$47,484)

The increased quantity of full depth pavement repairs on Louis Street accounted for the project budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds

Project Photos:



Completed Paving on Louis Street

BARGER DRIVE PAVING

Project Description: This project rehabilitated a street in the Active Bethel Citizens neighborhood in Council Ward 6:

- Barger Drive from Primrose Street to approximately 100 feet east of Altimont Street

Treatment Methodology:

- Barger Drive was rehabilitated by removing the top 4 inches of asphalt pavement and replaced with a 4-inch pavement layer. Some areas required full reconstruction with removal of pavement surfacing down to 21 inches and replaced with 12 inches of aggregate and 9 inches of asphalt pavement.

Costs: Total project costs, from all funding sources, are estimated at \$3,426,519.

Preliminary Estimate based on Pavement Management

System (PMS) Surface Evaluation =	\$1,600,000
Total Projected/Actual Paving Bond Funds Used =	\$2,511,697
Difference =	(\$911,697)

Several project elements were added to the original scope resulting in an increased budget. Median retrofits, a protected bicycle lane (funded in part by active transportation funds), and traffic signal modifications were added to the project and accounted for the project budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, local gas tax funds, transportation SDCs, road funds, EWEB funds

Active transportation improvement street bond funds were used for the addition of a protected bike lane.

Project Photos:



Completed Paving on Barger Drive

VILLARD STREET PAVING

Project Description: This project reconstructed a street in the Fairmont Neighbors neighborhood in Council Ward 3:

- Villard Street from Franklin Boulevard to approximately 200 feet north of 15th Avenue

Treatment Methodology:

- Villard Street was reconstructed by removing the top 18 inches of existing pavement and subgrade and repaved with 12 inches of aggregate and 6 inches of asphalt pavement.

Costs: Total project costs, from all funding sources, are estimated at \$607,268.

Preliminary Estimate based on Pavement Management	
System (PMS) Surface Evaluation =	\$500,000
Total Projected/Actual Paving Bond Funds Used =	\$476,518
Difference =	\$23,482

Additional Sources of Funding: Stormwater and wastewater utility funds, EWEB funds, University of Oregon funds

Project Photos:



Completed Paving on Villard Street

WEST 19TH AVENUE PAVING

Project Description: This project reconstructed a street in the Friendly Area Neighbors neighborhood in Council Ward 1:

- West 19th Avenue from Tyler Street to Jefferson Street

Treatment Methodology:

- West 19th Avenue was reconstructed utilizing the FDR process at a depth of 14 inches and were repaved with 6 inches of asphalt pavement surface. Intersections required removing the existing plain concrete pavement layer and replacing with an 8-inch dowelled plain concrete pavement layer.
- Rehabilitation of 20th Avenue was added to the project and funded by road funds.

Costs: Total project costs, from all funding sources, are estimated at \$1,252,632.

Preliminary Estimate based on Pavement Management	
System (PMS) Surface Evaluation =	\$830,000
Total Projected/Actual Paving Bond Funds Used =	\$951,366
<hr/>	
Difference =	(\$121,366)

Small incremental project additions during design and contract change orders during construction accounted for the project budget overrun.

Additional Sources of Funding: Stormwater and wastewater utility funds, local gas tax funds, road funds, EWEB funds

Active transportation improvement street bond funds were used for the addition of curb extensions and marked pedestrian crosswalks.

Project Photos:



Paving on West 19th Avenue

5-Year Street Bond Project List - Costs and Forecast

Project Map #	Street name	From	To	Ward(s)	Proposed Treatment	Programmed Cost (2017) plus inflation	Projected / Actual Cost	Difference
Construction Year 2019								
9	11th Ave (A)	Tynn St	Bertelsen St	8	Overlay	\$ 1,874,000	\$ 2,240,416	(366,416)
12	19th Avenue (C)	Hilyard St	Agate St	1	Reconstruction	\$ 1,528,000	\$ 1,526,325	1,675
1	3rd Avenue (L)	High St	Pearl St	7	PCC panel replacement	\$ 118,000	\$ 1,842,743	\$ 54,257
65	Mill Street (L)	2nd Ave	3rd Ave		Reconstruction/Overlay	\$ 60,000		
3	5th Avenue (L)	Chambers St	Grant St		Reconstruction/Overlay	\$ 250,000		
36	Charnelton Street (L)	4th Ave	6th Ave		Reconstruction/Overlay	\$ 360,000		
70	Olive Street (L)	5th Ave	6th Ave		Pavement Removal and Replacement	\$ 131,000		
60	Lawrence Street (L)	NS Dwy 36	6th Ave	2	Reconstruction	\$ 978,000	\$ 1,116,348	\$ (80,348)
27	Brookside Drive (L)	Brae Burn Dr (North)	Address 999		Reconstruction	\$ 229,000		
28	Brookside Drive (L)	Brae Burn Dr (South)	Montara Way		Reconstruction	\$ 437,000		
83	Sundance Street (L)	Sundial Rd	East End		Pavement Removal and Replacement	\$ 270,000		
84	Sundance Street CDS (L)	North End	Sundance St		Pavement Removal and Replacement	\$ 100,000		
18	Alder Street (L)	24th Ave	27th Ave	3	Reconstruction/Pavement Removal and Replacement	\$ 309,000	\$ 578,861	\$ (269,861)
44	Fair Oaks Drive (L)	Oakway Rd	Fairway Lp	4	Reconstruction	\$ 253,000	\$ 1,422,000	\$ (148,000)
24	Bedford Way (L)	Oakway Rd	Fair Oaks Dr		Reconstruction	\$ 200,000		
54	Lariat Drive (L)	Oakway Rd	Lariat Dr		Reconstruction	\$ 392,000		
55	Lariat Meadows Drive (L)	Lariat Dr	East End		Pavement Removal and Replacement	\$ 300,000		
56	Lariat Mesa (L)	Lariat Dr	East End		Reconstruction/Pavement Removal and Replacement	\$ 129,000		
23	Balfour Street (L)	Terresa Ave	North End	5	Reconstruction	\$ 150,000	\$ 1,209,956	\$ (49,956)
29	Calgary Street (L)	Holly Ave	Elanco Ave		Reconstruction	\$ 254,000		
43	Elanco Ave + CDS (L)	Norkenzie Rd	North End		Reconstruction	\$ 137,000		
87	Terresa Avenue (L)	Montreal Ave	Gilham Rd		Reconstruction	\$ 237,000		
76	Quebec Street (L)	Calgary St	Elanco Ave		Reconstruction	\$ 224,000		
67	Montreal Avenue (L)	Calgary St	Balfour St		Reconstruction	\$ 158,000		

(x) Street Classification Key: (L) = Local; (C) = Collector; (A) = Arterial

Projected Construction Year 2019 Totals = \$ 9,078,000 \$ 9,936,649 \$ (858,649)

Total Programmed Costs = \$ 9,078,000 \$ 9,936,649 \$ (858,649)

Pedestrian and Bicycle Improvements Project List

Projects			Average Annual Allocation \$1,000,000	Projected / Actual Cost	Difference
Construction Year 2019					
Alder Street				\$ 140,124	
Lawrence Street				\$ 3,988	
W 11th Avenue				\$ 4,578	
E 19th Avenue				\$ 58,796	
Construction Year 2019 Pedestrian & Bicycle Repairs Total =				\$ 207,486	\$ 792,514

Total Pedestrian and Bicycle Improvement Project Costs = \$ 5,000,000 \$ 207,486 \$4,792,514.00

Summary of Bond Costs

Total Street Projects in 2017 Dollars with inflation = \$ 9,078,000

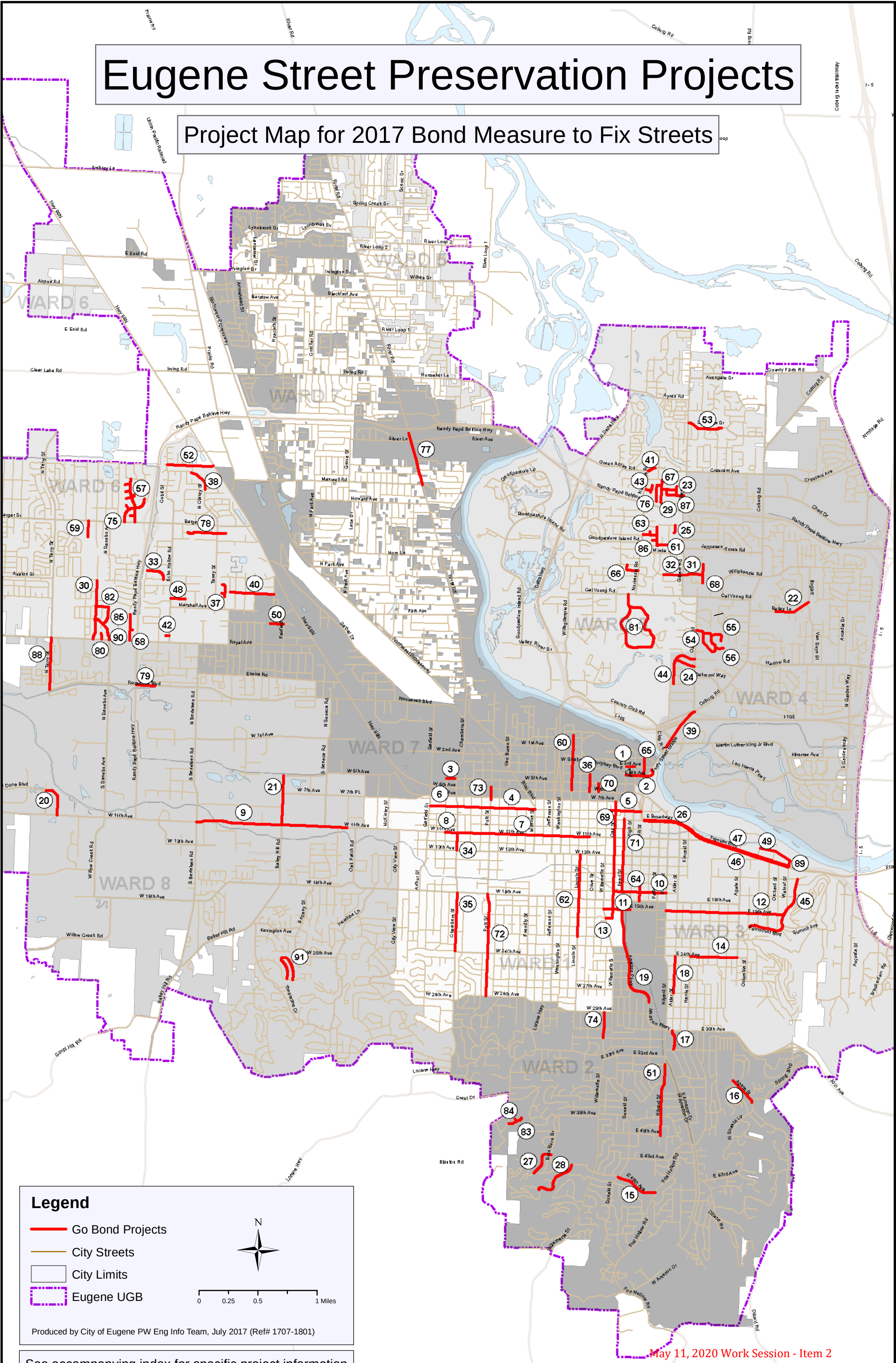
Total Pedestrian & Bicyclist Improvements = \$ 2,580,000

Bond Issuance Costs = \$ 260,000

Total Bond Costs = \$ 11,918,000

Eugene Street Preservation Projects

Project Map for 2017 Bond Measure to Fix Streets



May 11, 2020 Work Session - Item 2

Project List for 2017 Bond Measure to Fix Streets

MAP NUMBER	STREET NAME	FROM	TO
1	03RD AVENUE	HIGH ST	PEARL ST
2	04TH AVENUE	COBURG RD	PEARL ST
3	05TH AVENUE	CHAMBERS ST	GRANT ST
4	08TH AVENUE	CHAMBERS ST	MONROE ST
5	08TH AVENUE	WILLAMETTE ST	MILL ST
6	08TH AVENUE	GARFIELD ST	CHAMBERS ST
7	11TH AVENUE	CHARNELTON ST	CHAMBERS ST
8	11TH AVENUE	CHAMBERS ST	GRANT ST
9	11TH AVENUE	TYINN ST	BERTELSEN RD
10	17TH AVENUE	HILYARD ST	OAK ST
11	19TH AVENUE	WILLAMETTE ST	HIGH ST
12	19TH AVENUE	HILYARD ST	FAIRMOUNT BLVD
13	20TH AVENUE	WILLAMETTE ST	OAK ST
14	24TH AVENUE	HARRIS ST	AGATE ST
15	46TH AVENUE	FOX HOLLOW RD	DONALD ST
16	AGATE STREET	N 163 BLACK OAK RD	FIRLAND ST
17	ALDER STREET	30TH AVE	32ND AVE
18	ALDER STREET	24TH AVE	27TH AVE
19	AMAZON PARKWAY	19TH AVE	2693 S OF E 24TH
20	ARROWSMITH STREET	TERRY ST	11TH AVE
21	BAILEY HILL ROAD	5TH AVE	11TH AVE
22	BAILEY LANE	BOGART LN	LUELLA ST
23	BALFOUR STREET	TERRA AVE	NORTH END
24	BEDFORD WAY	OAKWAY RD	FAIR OAKS DR
25	BREWER AVENUE	BREWER AVENUE	SOUTH END
26	BROADWAY	MILL ST	11TH AVE
27	BROOKSIDE DRIVE	BRAE BURN DR (NORTH)	ADDR 999
28	BROOKSIDE DRIVE	BRAE BURN DR (SOUTH)	MONTARA WAY
29	CALGARY STREET	HOLLY AVE	ELANCO AVE
30	CANDLELIGHT DRIVE	AVALON	ROYAL
31	CARMEL AVENUE	GILHAM RD	NORWOOD ST
32	CARMEL AVENUE	DIANE ST	GILHAM RD
33	CATALINA STREET	JUHL ST	WILLHI ST
34	CHAMBERS STREET	11TH AVE	13TH AVE
35	CHAMBERS STREET	18TH AVE	24TH AVE
36	CHARNELTON STREET	4TH AVE	6TH AVE
37	CHASE STREET + CDS	500' NORTH OF MARSHALL	NORTH END
38	CLAREY STREET	BEAN ST	1071' S OF BEAN ST
39	COBURG ROAD	FERRY STREET BRIDGE	OAKWAY RD
40	CONCORD STREET	BERNTZEN RD	JACOBS DR
41	CRESCENT AVENUE	NORKENZIE RD	ADDRS 1670
42	ECHO HOLLOW CDS	WEST END (CDS) (880-960)	ECHO HOLLOW RD
43	ELANCO AVENUE + 1 CDS (NORTH)	NORKENZIE RD	END OF NORTHERLY CDS
44	FAIR OAKS DRIVE	OAKWAY RD	FAIRWAY LP
45	FAIRMOUNT BOULEVARD	15TH AVE	COLUMBIA ST
46	FRANKLIN BOULEVARD EB	WALNUT ST	11TH AVE
47	FRANKLIN BOULEVARD WB	WALNUT ST	11TH AVE

May 11, 2020 Work Session - Item 2



December 2019

Street Repair Review Panel,

This memo summarizes walking and bicycling projects built in 2019 using Pavement Bond Measure (PBM) funds and offers a look ahead to projects anticipated for construction in 2020.

Background

The 2017 Pavement Bond Measure stipulates that the city identify and complete an average of \$1 million in safety improvements for people who bike and walk. Transportation Planning staff works with the Active Transportation Committee (ATC) to develop a list of walking and bicycling projects for review, based on guidance provided by the Transportation System Plan. The projects include additions to scheduled pavement projects as well as stand-alone projects.

Where do the Walking and Biking Projects Come From?

Staff uses the Transportation System Plan (TSP) to identify network improvements for walking and bicycling. The TSP is the city's transportation policy document and long-term vision for transportation improvements.

For pavement preservation projects city staff consult the TSP to determine what network improvements should be made based on long-term system needs. Pavement projects present an opportunity to implement some improvements, such as bike lane striping, because striping will be entirely replaced as part of the pavement project.

There are also projects developed based on community input (ATC, etc.), coordination with 4j and Bethel Safe Routes to School programs, and through site investigations by city staff. The Vision Zero Action Plan is also used to evaluate project locations to improve safety outcomes for people walking and bicycling.

Through discussions with staff and the Active Transportation Committee, it has been decided that about half of the money should be spent on shared use path maintenance with the other half used for discretionary walking and bicycling projects throughout Eugene.

How Were PBM Walking/Biking Funds Spent in 2019?

Some of the walking and bicycling projects occur on streets where there is a pavement project while others do not. Projects developed in 2019 are listed below.

Projects Occurring with Pavement Projects

- Alder Street (24th to 27th). Alder Street was retrofitted with Neighborhood Greenway treatments to make the sharing of travel lanes more comfortable for people bicycling. Shared lane markings and speed humps were added to Alder Street between 24th Avenue and 30th Avenue. Curb extensions and crosswalks were also added at Alder Street at 26th Avenue to improve the walking experience on Alder Street. This street is also the first to include "Neighborhood Greenway" signage to identify it as a street that prioritizes walking and bicycling.
- Barger Drive (Altamont to Primrose). A variety of bicycling infrastructure and stormwater management devices were added during construction. Notably for people bicycling, there are now buffered bike lanes on Barger Drive and the intersection of Barger Drive at Cubit Street was redesigned to feature a protected sidewalk-level bike lane and bicycle signal.

- Lawrence (Clark to 6th). A green bike lane was added in the eastbound direction on 5th Avenue at Lawrence Street.
- 11th (Tyinn to Bertelsen). The southbound bike lane on Seneca Road was located curbside at 11th Avenue. This presented a safety hazard in that the adjacent traffic would turn right across the bike lane. The safer condition was for people riding bikes to use the crosswalk across 11th Avenue so a sidewalk access ramp was installed on Seneca Road just north of 11th so people on bikes could access the crosswalk more safely.
- 19th (Hillyard to Agate). While not completed during the preparation of this memo, temporary diversion will be added to 19th Avenue at Alder Street. The diversion will allow people walking and bicycling to cross 19th Avenue and remain traveling on Alder Street, however, all motor vehicle traffic will turn right from Alder Street onto 19th. If the diversion performs as expected, it will be made permanent at a future date yet to be decided.

Discretionary Projects

- West Bank Path Lighting and Resurfacing – delayed until 2020. Roughly half of the annual \$1M allocation of walking and bicycling bond money was to be used on repaving the West Bank Path from Stephens Drive to Copping Street. In addition to resurfacing the path, the addition of overhead lighting was also to be installed. Due to a variety of environmental conditions, additional studies need to be completed before construction can occur. This project was delayed until 2020.

What Projects are you Exploring for 2020?

Due to the large number of walking and bicycling projects planned for delivery citywide in 2020, there is not likely to be much capacity to design and construct additional projects. Planned projects that use a variety of funding sources include for the following. (Funding source identified in parentheses.)

- Northeast Livable Streets (ODOT funded)
- Riverfront Park (will draw \$500K from the 2017 PBM walking and bicycling account)
- W Bank Path (2017 PBM, delayed from 2019)
- 13th Avenue 2-way Protected Bikeway (ODOT)
- Roosevelt Path Extension to HWY 99 (ODOT)
- Safe Routes to School Sidewalks and Crossings (ODOT)

As a result of this project backlog, the only additional expenditure of 2017 PBM walking and bicycling monies will be for enhancing existing pavement preservation projects. These projects may include the following.

- Bikeway and crossing improvements near Eugene Civic Alliance (17th Avenue, Oak Street, 19th Avenue, 20th Avenue repaving projects)
- Garden Avenue (Moss to Walnut). Neighborhood greenway treatments will be added including traffic calming, shared lane markings, and curb extensions.
- Chambers Street (11th to 13th). Possible pedestrian improvement at 12th Avenue across Chambers Street.
- 4th Avenue (Pearl to Coburg). Add buffers to existing bike lanes.

If you have any questions about planning for walking and bicycling projects, or use of PBM funds to deliver these projects, please contact me: RDunbar@eugene-or.gov, (541) 682-5727.

Sincerely,
 Reed Dunbar, AICP
 Senior Transportation Planner (Bicycle and Pedestrian Planner)



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Eugene, OR 97403
541.342.5161
www.islercpa.com

INDEPENDENT ACCOUNTANT'S REPORT ON APPLYING AGREED-UPON PROCEDURES

To Sarah Medary, City Manager Pro Term
City of Eugene
Eugene, Oregon

We have performed the procedures enumerated below, which were agreed to by the City of Eugene ("City"), solely to assist you in connection with the determination of whether expenditure of the 2017 general obligation bond funds approved for issuance through voter's approval of Ballot Measure 20-275 were expended in accordance with the purposes and limitations outlined in City Council Resolution No. 5204; namely that such expenditures were: a) used only for costs related to street preservation projects, fund bicycle and pedestrian projects and payment of bond issuance costs and not to expand the motor vehicle capacity of the street system; and, b) limited to projects included in Exhibit A to the Resolution unless upon completion of all of the projects listed in Exhibit A the Council adds other street preservation projects to the list in order to utilize unspent bond proceeds. Management is responsible for the accounting records pertaining to the use of the bond proceeds. This agreed-upon procedures engagement was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of those parties specified in this report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which this report has been requested or for any other purpose.

The City provided the following documents and information in connection with our agreed-upon procedures testing:

- An Excel spreadsheet detailing all charges allocated and/or invoices received by the City for expenditures related to the use of the bond proceeds;
- Copies of Resolution No. 5204 and Ballot Measure 20-275;
- Copies of bids and contracts issued by the City for any projects to be completed using the bond proceeds;
- Copies of supporting documentation including, but not limited to, invoices, cancelled checks, payroll records, certifications of payments and bank statements; and
- Copies of the City's general ledger detail for the bond fund accounts.

The procedures we performed and the related findings are as follows:

- (1) *Expenditure testing.* From January 1, 2019 through December 31, 2019, total expenditures for the projects funded by the 2017 bond proceeds were \$8,355,736 per the City's general ledger. We tested \$4,660,201 or 55.77% of those expenditures. All tested expenditures were supported by appropriate documentation such as vendor invoices, certifications of payment, payroll records, signed contracts, and/or photographs of the work in progress. All tested expenditures were recorded in the proper account, fund and period and were spent on street projects included in Exhibit A of City Council Resolution No. 5204 or other street preservation projects approved by City Council, as permitted under Resolution 5204. No exceptions were noted.

- (2) We reviewed bids and contracts related to two of seven new construction projects during 2019. The bidding and contracting process for the two projects complied with the City's procurement policies and procedures.
- (3) We recalculated the amount of unspent bond proceeds and compared that amount to the actual amount of bond proceeds remaining. The following is a summary of the 2017 bond proceeds and project expenditures from inception of the Street Bond projects to December 31, 2019:

	From Issuance to 12/31/2019
Bond proceeds	\$ 9,800,000
Project expenditures	\$ 8,355,736

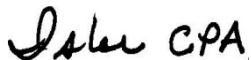
As of December 31, 2019, the City had \$4,500,000 outstanding on the line of credit facility. From January 1, 2019 through December 31, 2019, the City received \$9,800,000 in bond proceeds and was charged interest of \$46,331.32; the City repaid \$5,300,000 during the same period, as well as \$46,331.32 of interest. At December 31, 2019, the City had \$41,400,000 in authorized borrowing remaining on the bonds (\$51,200,000 authorized less \$9,800,000 in proceeds received to date).

Based on our limited testing, we noted that the City followed the purpose and limitation of the City Council Resolution 5204.

We were not engaged to and did not conduct an audit, the objective of which would be the expression of an opinion on the financial records. Accordingly, we do not express such an opinion. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the information and use of the City Manager of the City of Eugene, and is not intended to be and should not be used by anyone other than the City Manager.

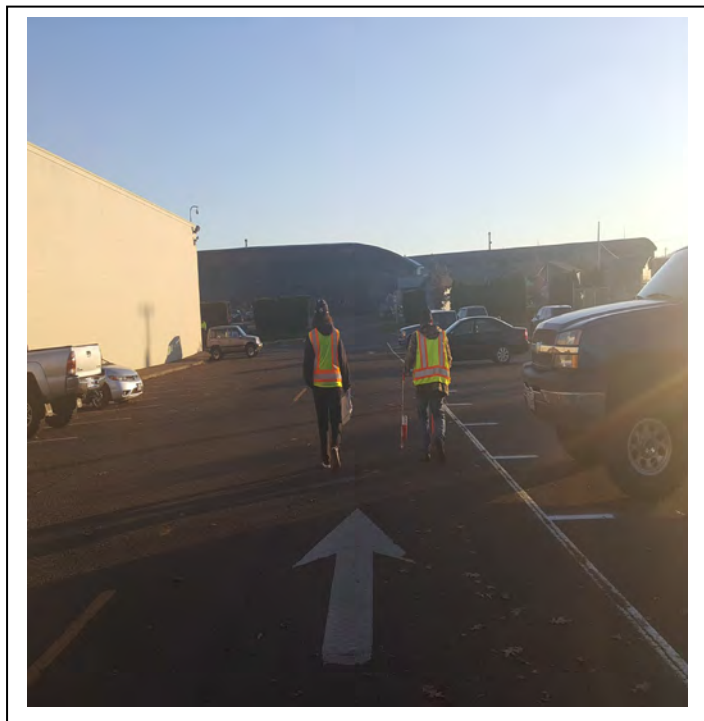
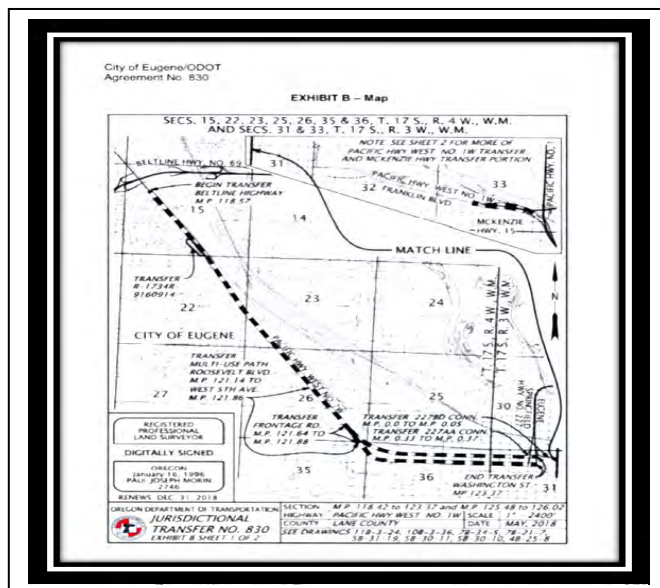
Isler CPA



Eugene, Oregon
February 18, 2020

2020 PAVEMENT MANAGEMENT REPORT

An Update on Asphalt Pavement Conditions and Programs
(2019 Rating & Inventory Data)



Prepared by:
Public Works Maintenance
Surface Technical Team
1820 Roosevelt Blvd.
Eugene, OR 97402



Cover Photos (top left – clockwise): GO BONDS, Maintenance Crews repairing surface under Coburg Bridge Exhibit B Hwy99 Transfer Map, Manny Montesinos and Abby Cole 2019 Pavement Raters.

EXECUTIVE SUMMARY

The annual Pavement Management Report is generated to provide updated information and data regarding the City of Eugene's transportation system including improved streets, unimproved streets and off-street shared-use paths. This report provides surface descriptions and associated mileage, reviews current treatment programs and costs, and projects future treatment needs based on several funding scenarios.

The transportation system is a significant public asset which requires continued maintenance and management. The asset is described in lane miles and/or centerline miles. Currently, Public Works manages 1412 lane miles (563 centerline miles) of streets and approximately 46 centerline miles of off-street shared-use paths within the City limits. This report includes a breakdown of the street transportation system in terms of pavement type, level of improvement, and functional classification.

Street, improved alley, and off-street shared-use path condition data is collected by Public Works Maintenance staff through on-site inspections. Utilizing this data, a Pavement Condition Index (PCI) score is generated. Formulas and methodology within the software help establish resourceful treatment recommendations and identify the financial implications of various response strategies. The Pavement Management System (PMS) also provides a detailed street inventory and condition trends using street condition data collected since 1987.

A local gas tax was established in 2003 for a Pavement Preservation Program (PPP) because street repair funding was not adequate to keep pace with rehabilitation needs. Even with the local gas tax in place, it was reported in 2007, the anticipated backlog for rehabilitation needs would reach more than \$282 million by 2016 (2007 Pavement Management Report). In 2008, a \$35.9 million five-year bond measure was approved by voters, and an additional five-year bond for \$43 million was approved by voters in 2012. The 2017 Bond measure (\$51.2 M) addresses 91 street projects with 5 million going toward pedestrian and bicycle infrastructure improvements. With these funding sources, more than 204 streets in Eugene have been or are identified to be repaired by 2023. The revenues from the local gas tax and the bond measures have helped reduce the backlog of street repair projects over the last 17 years. The current calculated backlog for repairs on improved asphalt streets at the end of 2019 is \$76.3 million, in 2018 the reported backlog was \$68.4 million.

In addition to funding from the current street repair bond ending in 2023 and rising constructions costs, other factors contribute to current and future backlogs:

- Since the beginning of the Pavement Preservation Program (PPP) in 2002 the primary focus for preservation has been arterial and collector streets. These formerly rehabilitated streets are now showing signs of deterioration beyond what can be addressed using standard maintenance practices.
- Residential streets account for the majority of the street backlog while receiving minimal preservation funds.
- It is anticipated that costs will continue to increase at a steady rate. Changes in costs for construction materials and labor will affect long-term backlog estimates.

EXECUTIVE SUMMARY – (*continued*)

- New construction techniques such as in-place recycling (also known as in-place cement treated base, ICTB) which strengthens existing roadbed materials for reuse and lowers impacts to the environment have been successfully used in place of conventional reconstruction techniques and resulted in additional cost savings.
- In 2018, Public Works hired a third party consultant to review pavement data, confirming accuracy.
- In 2019, State of Oregon transferred approximately 34 lane miles of Hwy 99 to the City of Eugene.

The backlog estimate does not take into account the repair needs for concrete streets, unimproved streets, sidewalks, off-street shared-used paths, or other elements of the transportation system.

The report utilizes three funding scenarios to project treatment needs and costs over a 10-year period. The analyses uses bi-annually updated costs provided by Public Works Engineering, which are adjusted to include a 2 percent inflation factor. Following is a summary of the analyses:

- Based on the projected funding (Table 3, pg. 14), a \$242 million backlog is projected in 10 years. Last year the projected backlog was \$192 million. In 2023 bond funding will end, decreasing pavement preservation funds from an average of \$11.9 million to \$3.3 million.
- Based on current and projected funding of \$3.3 million, an additional \$7.5 million is needed annually to prevent arterial and collector streets from falling into the reconstruct range and to eliminate the reconstruct backlog for arterial and collector streets in 10 years.
- In addition to the above mentioned need, \$4.5 million annually is also needed to prevent residential streets from falling into the reconstruct category, and to eliminate the residential reconstruct backlog in 10 years.

SCOPE OF REPORT

This report is comprised of four primary sections:

Street Inventory: The street inventory is discussed, including improvement status and functional classification definitions.

Pavement Management System (PMS): A brief history and description of the Pavement Management System used by the City, and the selection process including conversion to the Paver system is discussed. Included in this section are: the rating methodology, pavement inspection frequency, pavement conditions described by the Pavement Condition Index (PCI), and specific distress definitions and the resulting reports.

Pavement Preservation Program (PPP): The Pavement Preservation Program is highlighted in this report, including Maintenance and Engineering division roles, treatment types and estimated unit costs, project prioritization, sustainable construction, current treatment costs, projected funding, historical and projected funding graphs, unimproved streets, and off-street shared-use paths.

Projects: This section includes both completed and future project lists and maps, including a map of the projects identified in the 2017 bond measure.

EUGENE'S STREET INVENTORY

The City of Eugene has jurisdictional responsibility for many types and classifications of transportation facilities. Many factors such as age, development type, traffic loads, use, and future transportation needs affect the maintenance and rehabilitation planning for the system. The section inventory component of the PMS allows a reporting of both centerline miles (intersection to intersection) and lane miles of each section of the system. While commonly used in reporting distance, centerline miles do not relate equally across streets of different widths or number of lanes. For this report, comparisons typically are shown both in centerline and 12 foot-wide lane miles unless otherwise noted.

Improvement Status

For purposes of establishing budget allocations and rehabilitation priorities, and performing maintenance activities based on established maintenance policies, the City of Eugene divides the street inventory into two distinct categories:

Improved Streets are streets that are engineered for structural adequacy, have storm drainage facilities which typically include curbs and gutters, and have either an asphalt concrete (AC) or a Portland cement concrete (PCC) surface. Improved streets are either fully improved at the time of development, at the developer's expense or were improved through a local improvement district (LID) and paid for in part by the abutting property owners. In some cases, a street may have been fully improved while under state or county jurisdiction and then surrendered to the City. Improved streets receive the highest level of ongoing maintenance and are eligible for rehabilitation funding through Eugene's Capital Improvement Program (CIP) and (PPP).

Unimproved Streets are streets with soil, gravel, or asphalt mat surfaces, have not been structurally designed, and no curbs or gutters. Typically, an unimproved street must be fully improved through a LID, and funded in part by the abutting property owners before a higher level of service will be provided (see “City of Eugene Street Maintenance Policy and Procedure Manual” for levels of maintenance service). These streets receive a low level of ongoing maintenance, limited primarily to emergency pothole patching (three inches or greater in depth), and minimal roadside ditch maintenance. To address the deterioration of these streets, Public Works is currently allocating more than \$200,000 annually from the Road Fund for the Enhanced Street Repair Program. Since 2008, 136 unimproved streets, totaling 55 lane miles, have been resurfaced as a temporary treatment. In addition, several unimproved streets have been upgraded to engineered street standards through assessment projects.

The following table (Table 1) categorizes Eugene’s Improved and Unimproved Street System in centerline miles and 12-foot lane-miles by pavement type and by functional class.

IMPROVED SYSTEM	Asphalt (ACP)		Asphalt over Concrete (APC)		Concrete (PCC)		Gravel		Undeveloped		Total	
	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles
Major Arterial	20.46	98.30	0.14	0.43	7.17	9.97	0.00	0.00	0.00	0.00	27.77	108.71
Minor Arterial	63.21	213.61	2.25	7.49	3.60	12.35	0.00	0.00	0.00	0.00	69.05	233.45
Major Collector	31.30	95.45	1.14	2.67	3.28	9.14	0.00	0.00	0.00	0.00	35.71	107.26
Neighborhood Collector	24.26	62.88	0.45	1.23	1.66	4.70	0.00	0.00	0.00	0.00	26.37	68.81
Residential	315.30	727.77	1.93	4.98	21.26	54.28	0.00	0.00	0.00	0.00	338.48	787.02
Total	454.52	1198.00	5.91	16.79	36.96	90.44	0.00	0.00	0.00	0.00	497.39	1305.24

UNIMPROVED SYSTEM	Asphalt (ACP)		Bituminous Surface-Oil Mats (BST)		Concrete (PCC)		Gravel		Undeveloped		Total	
	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles	Miles	12' Lane Miles
Major Arterial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Minor Arterial	1.69	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69	3.15
Major Collector	2.47	5.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.47	5.55
Neighborhood Collector	3.86	7.71	0.27	0.62	0.00	0.00	0.00	0.00	0.00	0.00	4.13	8.32
Residential	42.14	69.23	2.39	3.67	0.03	0.03	8.61	12.56	4.16	4.34	57.33	89.83
Total	50.16	85.64	2.66	4.29	0.03	0.03	8.61	12.56	4.16	4.34	65.62	106.86

Table 1 Miles and Lane Miles of Street System by Classification and Pavement Type

Functional Classifications

The quantity and associated vehicle weight of traffic using streets is a critical factor affecting the rate at which pavement and roadbeds deteriorate. Eugene divides streets into five categories called functional classifications (FC), each representing a different volume and type of vehicular usage. The Paver terminology for functional classification/section rank is identified as follows:

Major Arterial (FC-1) - (A): Major Arterials are usually four or more lanes and generally connect various parts of the region with one another within the city and with the “outside world”. They serve as major access routes to regional destinations such as downtowns, universities, airports, and similar major focal points within the urban area. Major Arterials typically carry an average of more than 20,000 vehicles per day. Major Arterials receive high priority maintenance.

Minor Arterial (FC 2) - (B): Minor Arterials are typically two or three lanes. These streets provide the next level of urban connectivity below major arterials. In most cases, their main role tends to be serving intra-city mobility. Minor Arterials carry between 7,500 and 20,000 vehicles per day. Minor Arterials receive priority maintenance.

Major Collector (FC-3) - (C): Major Collectors can be found in residential, commercial, and industrial areas. They typically carry between 2,500 and 7,500 vehicles per day. Major Collectors have a higher priority for maintenance than local streets.

Neighborhood Collector (FC-4) - (D): Neighborhood Collectors are found only in residential neighborhoods and provide a high degree of access to individual properties in a neighborhood. They typically carry between 1,500 and 2,500 vehicles per day.

Local (FC-5 - (E): Local streets provide access to individual properties along the roadway. They are narrow, slow-speed, and low-volume service facilities. They typically carry fewer than 1,500 vehicles per day and receive low priority maintenance. Local streets are also referred to as Residential streets.

The following graph (Fig.1) illustrates both centerline miles and lane miles by improvement type and functional classes.

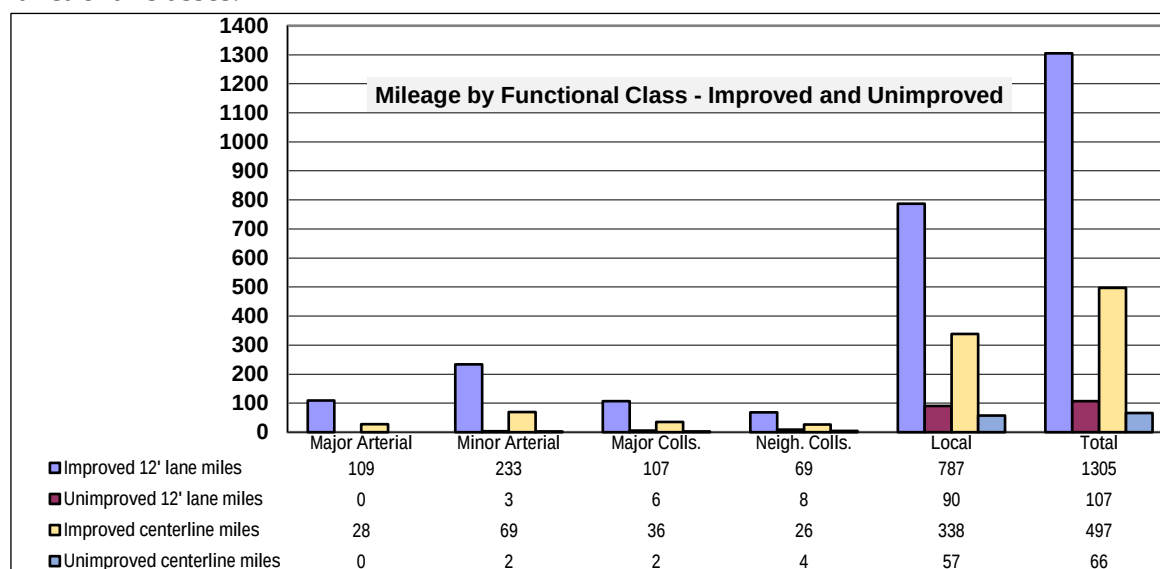


Figure 1 Mileage by Functional Class – Improved and Unimproved

PAVEMENT MANAGEMENT SYSTEM

Public Works has used Paver since 2013 as its pavement management system. Pavement Management System (PMS) programs analyze collected rating data to provide reports on the current and projected conditions of the street system. In addition, the program is used to evaluate the effectiveness of planning and funding priorities and provides guidance in the decision-making process. A primary goal, through judicious maintenance, is to prevent pavement failures in the most efficient means based on selected parameters.

Pavement Inspection Frequency

Two predominant work efforts required to maintain the PMS are; updating the street inventory, and performing the annual inspection of surface conditions.

City streets are divided into sections based on their Functional Classification (FC), pavement type, and geometric design. Sections are the basic unit for evaluating streets and surface conditions. A section is defined as a portion of a street with a beginning and ending description. Changes in geometric features are used as a guide for determining sections. Examples of geometric differences are the surface type, section width, surface age, and extent of past rehabilitation. Public Works currently manages over 6100 street sections.

Field inspections are conducted by pavement raters who walk each street section evaluating the pavement surface for signs of distress. Arterial and collector streets are inspected annually, residential streets are inspected on a three-year cycle, and off-street shared-use path and improved alley inspections are completed on a two-year cycle.

This year, staff inspected 162 miles of arterial and collector streets, 150 miles of local streets in the Bethel/Danebo and South Hills areas, plus 46 miles of off-street multi-use paths throughout the city.

Pavement Condition Index (PCI), Deduct Values, and Distresses

Pavement distresses are dependent on pavement type and are rated by severity and extent. Paver provides a numerical value (PCI) calculated internally based on deduct values for the distresses rated per street section.

A street with a PCI of 100 represents a new or very recently rehabilitated street. This PCI value is the basis used to analyze the surface treatment needs. Distress data is collected using tablets and then uploaded to the pavement management software. Paver method rates severities and all their extents for up to 20 different types of distress. As the condition of a street's surface begins to deteriorate, the PCI decreases. Asphalt distresses typically observed are alligatoring, longitudinal and transverse cracks, rutting, and raveling. Distresses in concrete streets typically observed and rated include cracks per panel, raveling, joint spalling, faulting, and crack sealing. Descriptions of some common distresses are shown below:

Alligator Cracking: When the asphalt begins to crack in all directions it is called alligator cracking.



Longitudinal Cracking/Transverse Cracking: These are cracks that run parallel to the roadway centerline (longitudinal) and perpendicular to the roadway center-line (transverse). These distresses usually divide the piece into different sections and are caused by repeated traffic loading. The low-severity cracks are not considered serious to the overall function and safety of the road. Medium to high-severity cracks are usually caused by heavy traffic loads and environmental factors and can become very serious distresses. The picture below shows longitudinal cracking.



Rutting: When the traffic of the street becomes heavy for long periods of times the asphalt begins to sink into the wheel path of the vehicles causing a rut. These ruts are typically along the length of the road and are one to two feet wide. There are almost always two ruts, one for each wheel path of vehicles. The severity of the rut is rated on the average rut depth from $\frac{1}{4}$ " to more than $\frac{3}{4}$ " in depth.



Raveling: The roads, mainly asphalt, over time become worn and rough unlike when they were newly installed. This is often due to age and the effects of UV rays. Raveling measures the severity of the roughness and coarseness of the top layer of the street.



Joint Spalling: Spalling is the deterioration of the edges of a concrete slab within two feet (0.6m) of the joint. The edges get chipped off of concrete slabs causing spalling. Spalling is caused by heavy traffic loads and environmental factors.



Faulting: Faulting is the difference in elevation across the slab. One side may be leaning up more over the other side. Causes are soft foundations, heavy traffic, poor construction, and environmental damage.



How Pavement Management System Information is Used

The primary purpose of maintaining a PMS is to collect and analyze information relating to street system condition and deterioration trends. With this vital information, public works managers ensure the most cost-effective maintenance or rehabilitation strategies are identified and performed at the optimum time.

Each year the PMS is used to generate several reports requested by other agencies as well as statistical data requested within our own agency. The following is a sample of reports produced with PMS data:

- Pavement Preservation Project List
- Crack Seal Program
- Five-Year Surface List – five-year moratorium for street cutting
- ODOT Oregon Mileage Report
- City of Eugene Public Infrastructure Table
- Annual Insurance Marketing Report
- Transportation Service Profile
- HB2017 - Keep Oregon Moving

PAVEMENT PRESERVATION PROGRAM

Street preservation and rehabilitation, capital improvements, off-street shared-use path projects, and maintenance efforts make up Eugene's Pavement Preservation Program (PPP). Additionally, Public Works budgets funding for Maintenance Operations to repair portions of the unimproved street system through the Enhanced Street Repair Program. Both PW Maintenance and PW Engineering divisions have important roles within the PPP.

PW Maintenance Roles

Public Works Maintenance Surface Technical team conducts the pavement rating, budget and street life analysis, resulting in a list of proposed projects provided to Engineering for field testing and final grouping. Operations staff provides preventative maintenance of all City streets (including concrete streets) and off-street shared-use paths. Preventative maintenance extends the life of the transportation asset and is of the highest priority. Improved streets receive the highest level of maintenance. Preventative maintenance helps prevent a street's PCI from dropping into a more costly treatment category.

PW Engineering Roles

Public Works Engineering receives projects proposed for preservation from the Maintenance Division three years in advance of planned construction. Engineering performs field investigations to confirm treatment needs and reviews historic data on construction and maintenance of streets. Streets are then prioritized for detailed pavement testing and design recommendations based on the available funding and the assessed condition of the streets. Pavement testing and design reports identify whether a street needs to be reconstructed or rehabilitated (overlaid) and the range of treatment options available. If a street requires a full reconstruct, it is typically deferred until funding is identified.

Public Works Engineering is responsible for capital project management including design, stakeholder coordination and communication, contract administration, and construction management. Public Works Maintenance receives updated construction costs from Engineering and utilizes this data for analysis and reporting of projected backlogs. Reports are based on a system-wide approach, not at the project level performed by Engineering.

Treatment Types

Treatments reflected in the backlog analysis are limited to three types: slurry seal, overlay, and reconstruct.

Slurry Seal: The slurry seal option allows for a cost-effective treatment to seal the surface and restore the skid resistance of local streets, which do not carry high traffic loads. This treatment is not used on streets which require strengthening or reconstruction. Typical slurry seal costs include street cleaning, removal of vegetation, minor base repairs (dig-outs), sealing of cracks, and application of an emulsified asphalt-aggregate mixture to the entire paved surface. Associated costs include replacement of striping and pavement markings, and other work needed to return the street to normal operation.

Overlay: Typical overlay rehabilitation costs include milling of existing pavement to a moderate depth to remove existing cracking and increase the strength of the structural section. Isolated areas of severely distressed pavement are removed and replaced including a new aggregate base. Associated costs include replacement of striping and pavement markings, adjustment of manholes, and other work needed to return the street to normal operation.

Reconstruct: Typical street reconstruction costs include removal of the existing pavement and base structural section and replacement with a new structural section which will meet a 20-year design life. Isolated areas of curb and gutter are replaced where they would not be suitable to contain new paving or have severe drainage problems.

The following table (Table 2) identifies the estimated costs for the various treatment types including costs to upgrade curb ramps to comply with the American with Disabilities Act (ADA). The slurry seal treatment is exempt from ADA requirements. Construction costs are updated on a bi-annual basis.

Treatment – Functional Class Improved System	12' Lane Mile Cost			
	Updated Eng. 2006 cost	Updated Eng. 2011 cost	Updated Eng. 2016 cost	Updated Eng. 2018 Cost
Overlay - FC 1 & 2	\$215,000.00	\$243,000.00	\$336,000.00	\$409,000.00
Overlay - FC 3 & 4	\$184,000.00	\$214,000.00	\$311,000.00	\$312,000.00
Overlay - FC 5	\$169,000.00	\$195,000.00	\$255,000.00	\$269,000.00
Re-Const - FC 1 & 2	\$765,000.00	\$724,000.00	\$892,000.00	\$959,000.00
Re-Const - FC 3 & 4	\$677,000.00	\$679,000.00	\$884,000.00	\$902,000.00
Re-Const - FC 5	\$505,000.00	\$505,000.00	\$649,000.00	\$681,000.00
Slurry Seal - FC 5	\$19,000.00	\$25,000.00	\$44,000.00	\$49,000.00

Table 2 12' Lane Mile Cost by Treatment and Functional Class (Updated bi-annually)

The following graph (Fig.2) identifies the trigger points (PCI) for each treatment based on Functional Class.

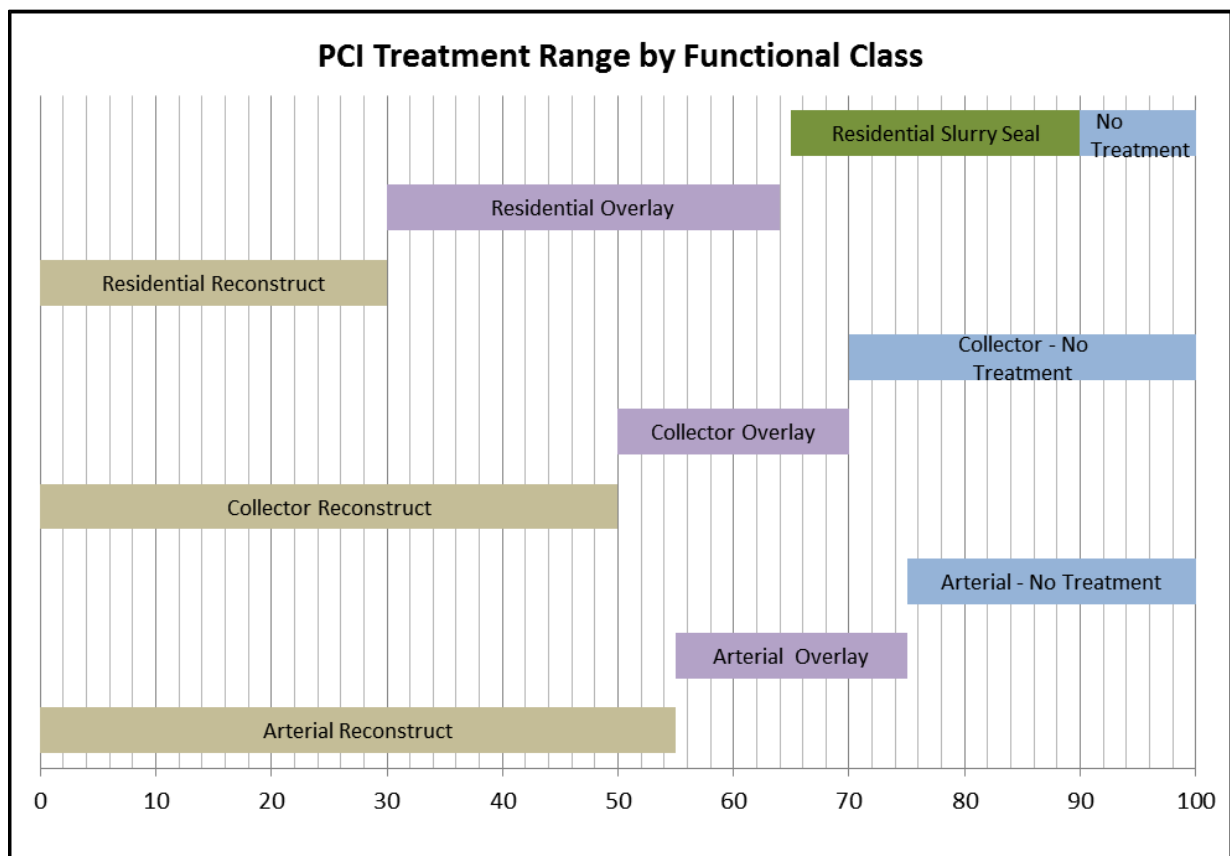


Figure 2 PCI Treatment Range by Functional Class

Project Prioritization Methodology

Selecting streets or street sections for treatment is done through a process involving analysis, testing, and staff experience. Using the data produced by Paver, and combining this information with estimated revenues allows staff to approximate backlogs and group potential street sections for consideration for treatment under the Pavement Preservation Program.

As a means of optimizing funding, streets are not prioritized on a “worst first” basis. Rather, Public Works’ main objective is to keep street sections from slipping into Reconstruct, a more costly category, see 12’ Lane Mile chart above. By overlaying a street before it significantly deteriorates, 15 to 20 years of useful life can be added, resulting in substantial cost savings. Once a street has deteriorated to the point that it must be reconstructed, the opportunity for an overlay is lost. As a result, streets that are categorized as overlay projects receive the highest priority for corrective treatment. Street Bond Measures have been the exception, additional criteria such as citizen input and equitable geographic distribution of projects throughout the community are also considered.

Sustainable Construction

Since 2008, Eugene has been in the forefront of sustainable construction and paving practices, some of which include paving with warm mix asphalt (WMA), using reclaimed asphalt pavement (RAP), and full depth reclamation (FDR). Production of warm mix asphalt is a “green” solution for the environment with noticeably reduced energy consumption and greenhouse gas emissions. Exposure to fuel emissions, fumes, and odors are reduced for asphalt producers, construction workers, and the public. Benefits of paving with WMA are the ability to extend the paving season in colder weather, longer haul distances, and better road performance. Warm mix asphalt is identical to conventional hot mix asphalt, except that through a special mixing process it is produced at a temperature approximately 50 to 100 degrees cooler than conventional hot mix asphalt. This mixing process for asphalt has many benefits, it aids in compaction during paving, helps prevent premature aging, and slows the aging process of asphalt. In Eugene, all asphalt producers have retrofitted their plants to produce warm mix asphalt.

Council set goals in 2011 for waste reduction by requiring that the volume of material placed in landfills be reduced. In addition to using WMA, Public Works conducted two pilot projects specifying that reclaimed asphalt shingles (RAS) be used as a binder in the asphalt mix, thereby keeping this material from entering the waste stream. The City continues to use warm mix asphalt and in-place recycling techniques to improve the quality, environmental footprint, and cost efficiency of the street bond projects. Key terms in sustainable construction practices:

In-Place Recycling: A process in which a large piece of equipment called a reclaimer pulverizes and mixes the existing base rock and a portion of subgrade soils with dry cement and water to create a cement-treated base. This process greatly reduces the use of virgin materials and trucking that are needed using conventional remove-and-replace construction techniques.

Full Depth Reclamation: When applicable, partial or full-depth reclamation (FDR) is used as a cost and time-saving alternative to traditional reconstruction. Associated costs include replacement of striping and pavement markings, adjustment of manholes, and other work needed to return the street to normal operation.

Crack Seal: Placing specialized materials into cracks in unique configurations to keep water and other matter out of the crack and the underlying pavement layers. Crack sealing can be used for two different reasons in pavement maintenance. One is a treatment to seal the cracks in order to prevent moisture intrusion into the pavement. The other is preparatory work for other treatments, such as overlays, and slurry seals.

Reclaimed Asphalt Pavement (RAP): The term given to removed and/or reprocessed pavement materials containing asphalt and aggregates. These materials are generated when asphalt pavements are removed for reconstruction, resurfacing, or to obtain access to buried utilities. When properly crushed and screened, RAP consists of high-quality, well-graded aggregates coated by asphalt cement that can be reused as a substitute for a portion of virgin materials in asphalt and aggregate base.

Recycled Asphalt Shingles (RAS): A primary reason for the high potential value of recycled shingles is that they contain ingredients that hot mix asphalt (HMA) producers purchase to enhance their paving mixtures including asphalt cement (or AC “binder”) and mineral aggregate. Asphalt shingles also contain a fibrous mat made from organic felt (cellulose) or fiberglass that can also be valuable as fiber in some asphalt paving mixes.

Current Treatment Costs

This chart (Fig.3) provides detail of the current cost for treatment of the entire improved system excluding concrete streets at the end of the 2019 rating period. The total estimated treatment cost backlog at the end of 2019 is \$76.3 million up from \$68.4 million reported in 2018.

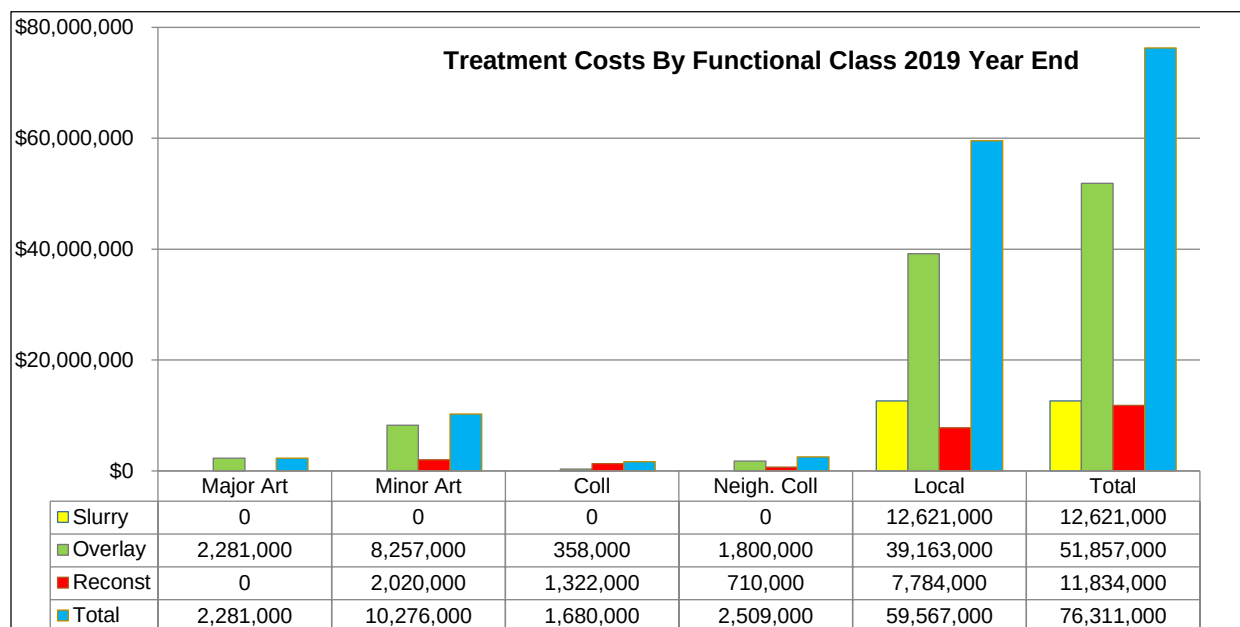


Figure 3 Treatment Costs By Functional Class

Projected Funding for Pavement Preservation Program FY18 through FY25

From the inception of the Pavement Preservation Program (PPP), Eugene has been faced with the challenge of securing adequate, sustainable funding for this program. There are several sources that contribute funding for pavement rehabilitation and reconstruction projects. The primary source of ongoing revenue is the City's local motor vehicle fuel tax ("gas tax"), which is currently levied at 5 cents per gallon. The reimbursement component of Transportation System Development Charges (SDCs) have historically generated close to \$800,000 per year for PPP projects, but have dropped significantly. The cumulative effect of these factors is that PPP annual revenues, which were once projected at \$4.2 million annually, are now projected to level out at approximately \$3.3 million.

Projected Funding Sources Pavement Preservation Projects					
FY18 through FY25					
Fiscal Year	Local Gas Tax Note 1	SDC Note 2	Bond Note 3	Other Note 4	Total Funding
FY18 (actual)	\$3,135,901	\$469,737	\$8,814,000	\$53,252	\$12,472,890
FY19 (actual)	\$3,156,006	\$664,187	\$10,724,300	\$7,524,798	\$22,069,291
FY20 (est)	\$3,100,000	\$371,986	\$8,755,000	\$127,781	\$12,354,767
FY21 (est)	\$3,100,000	\$122,567	\$9,030,000	\$125,207	\$12,377,774
FY22 (est)	\$3,100,000	\$122,567	\$8,820,000	\$117,584	\$12,160,151
FY23 (est)	\$3,100,000	\$122,567	\$9,620,000	\$119,492	\$12,962,059
FY24 (est)	\$3,100,000	\$122,567	\$9,990,000	\$121,185	\$13,333,752
FY25 (est)	\$3,100,000	\$122,567	\$0	\$122,664	\$3,345,231
Notes:					
1) Local Motor Vehicle Fuel Tax (gas tax) revenues are assumed at the 5-cent level throughout the forecast period.					
2) SDC reimbursement revenue is projected to maintain low level of activity through the forecasted period.					
3) November 2017 voters passed a 3rd 5 year bond.					
4) "Other" revenue generally includes investment interest, permit fees and other miscellaneous resources.					
This does include the Jurisdictional transfer funds for Hwy 99.					

Table 3 Projected Funding Sources PPP FY18-FY25

Historical and Projected Funding Outcomes

Based on current funding, a ten year analysis (2019-2029) has been performed using Paver, the current PMS software program. The program evaluates the deterioration of each section based on individual PCI ratings. It then projects when to apply the necessary treatment at the appropriate time. When possible, the program recommends a less expensive treatment earlier in the degradation curve to prevent the street from falling into an overlay or reconstruct range. In the following four graphs (Figs. 4,5,6,7) this projected evaluation includes historical data to present a more comprehensive view of the street system. The graphs show the impact of past and current funding over a 20-year period (2009 to 2029). Each graph indicates the percentage of streets that fall within a specific treatment range (reconstruct, overlay and no treatment). Plotting the percentages of streets within a treatment range over time visually demonstrates the overall condition of streets within that class. This is useful when deciding how to allocate funds in future years.

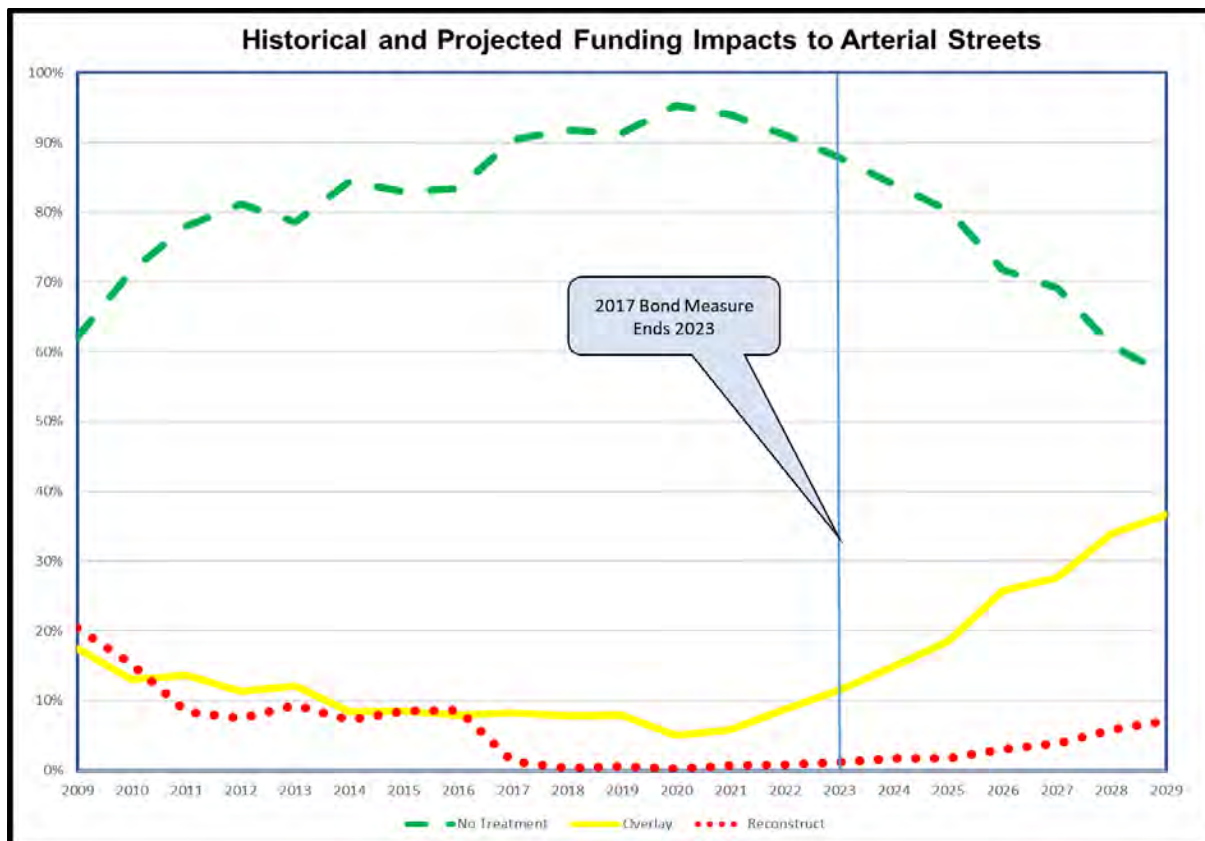


Figure 4 Historical and Projected Funding Impacts to Arterial Streets

Arterial streets have been a major focus of the PPP since 2002; as a result, the percentage of arterial streets within the reconstruct treatment range has steadily declined. Roughly 39 lane-miles are planned for treatment through the 2017 Bond Measure. When the Bond Measure ends in 2023, we see an increase in the overlay range due to streets beginning to deteriorate beyond regular maintenance activities, approximately 111 lane miles in 2029. The projected funding of \$3.3 million is inadequate to prevent overlays at the bottom end of the range from falling into the reconstruct category, approximately 57 lane miles in 2029. The increased cost for reconstruct treatments as well as a decrease in projected funding furthers the potential for overlays falling into the reconstruct category.

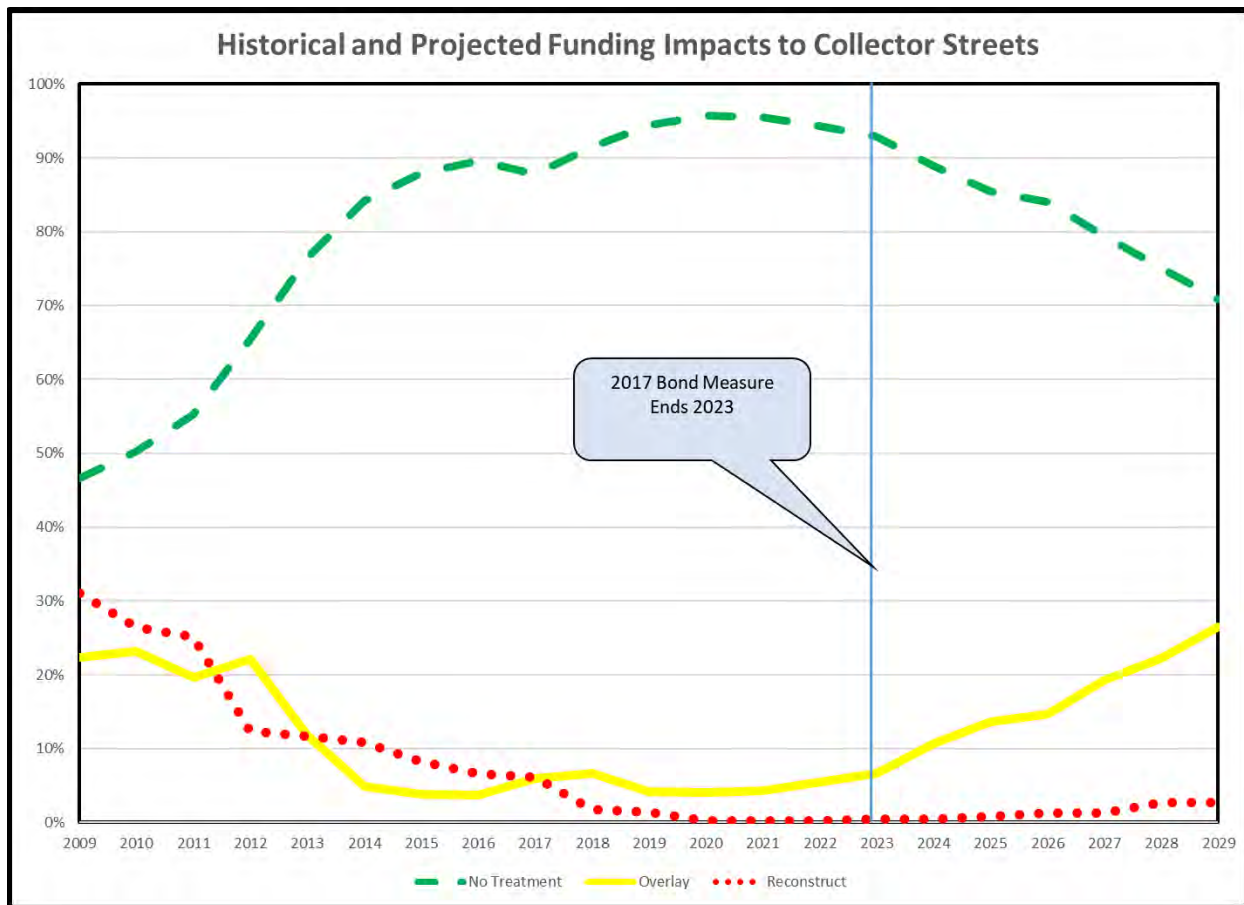


Figure 5 Historical and Projected Funding Impacts to Collector Streets

As a result of completed projects, reconstruction and overlay treatment needs have also decreased since 2009. However, analysis indicates overlay treatment needs are increasing such that by 2029 we will be approaching the overlay treatment needs that were required in 2009. After 10 lane miles are treated with funds from 2017 bond funding, analysis indicates an increase in reconstruct needs of approximately 4 lane miles. The previously treated streets in the collector system will begin to show deterioration beyond regular maintenance activities.

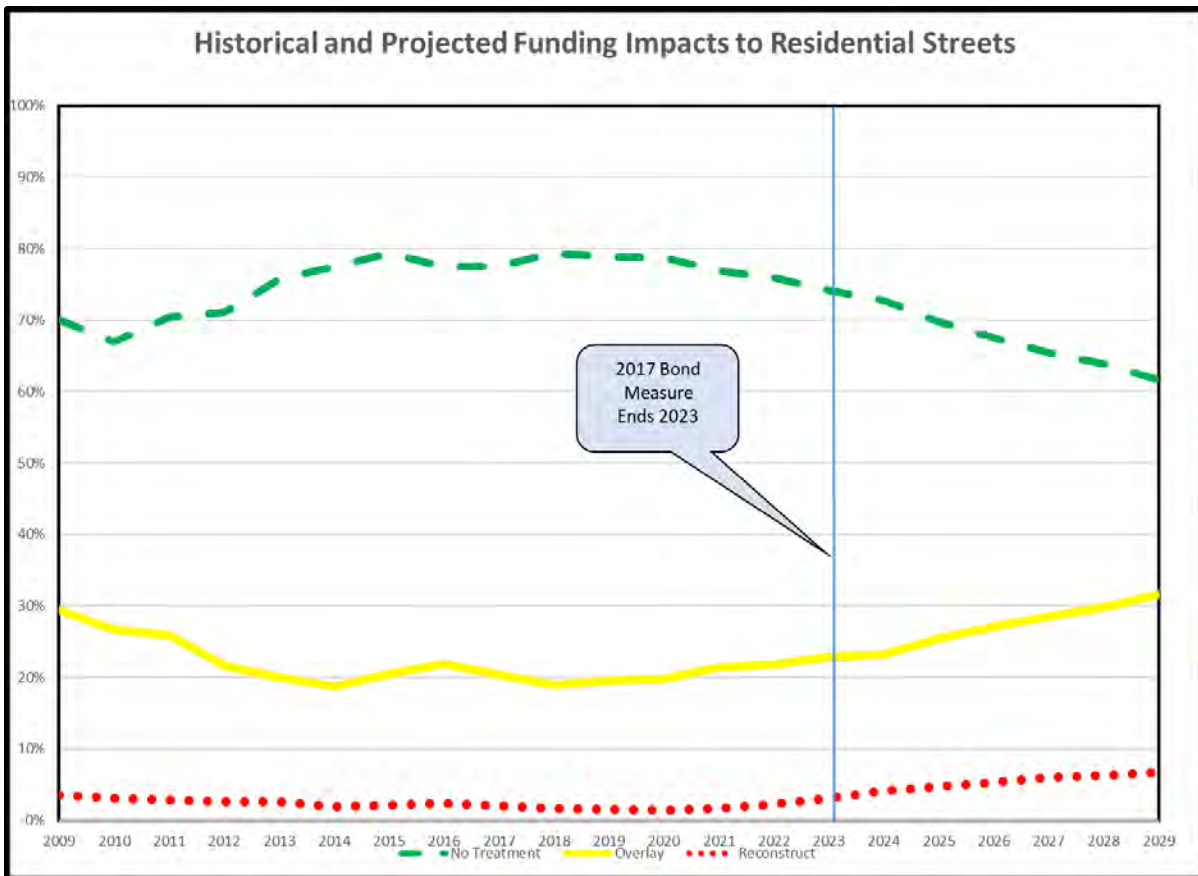


Figure 6 Historical and Projected Funding Impacts to Residential Streets

To date, the primary treatment for residential streets has been slurry seals, which are included in the no treatment category, 217 lane miles (93 centerline miles). Slurry seal treatment may increase the life by five to seven years, and increase the PCI, typically elevating it out of an overlay range. Following this time period, these same streets will typically fall into the mid to low end overlay treatment category.

Residential (Local) streets make up 75 percent of the total street system backlog in 10 years. To date, residential streets have not been adequately funded for preservation. Between the three bond measures, approximately 31 centerline miles have or are slated to receive repair other than a slurry seal treatment, less than 10 percent of the residential street system. The percentage of streets within the overlay treatment range continues to increase along with an increase of reconstruct treatments. Looking back, the percentage of residential streets within the no-treatment range has been dropping and is projected to continue such that by 2029, 75 percent of residential streets will require treatment totalling 56 percent of the \$242 million dollar backlog cost in ten years.

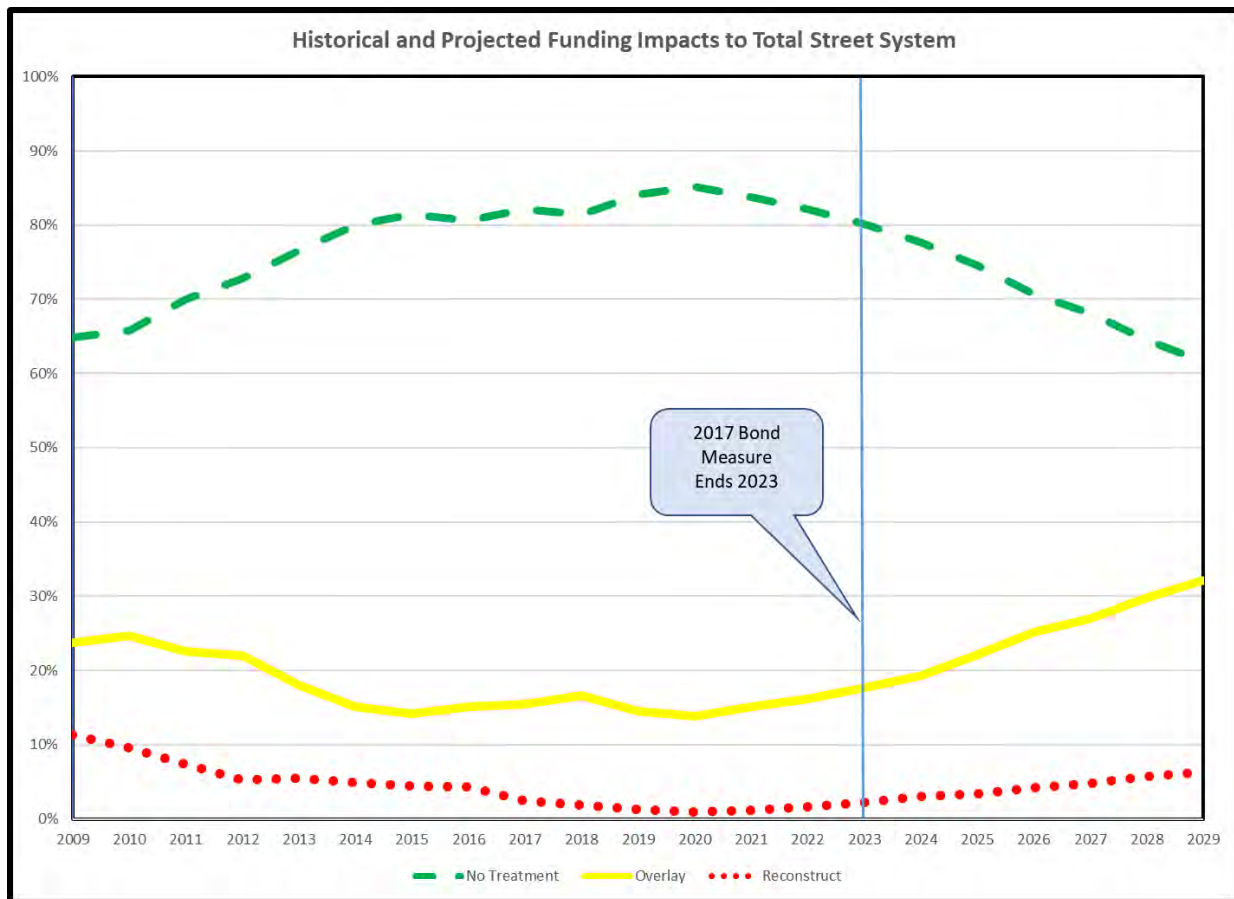


Figure 7 Historical and Projected Funding Impacts to Total Street System

The graph (Fig.7) of the combined arterial, collector and residential streets reflects the recommended treatment needs for the overall street system and indicates the insufficient funding for residential streets. The percentage of streets needing “no treatment” declines, while streets requiring both reconstruction and overlay treatments increase.

The projected \$242 million backlog in 10 years represents a majority of streets in the high-end overlay ranges. Arterial, collector, and residential streets benefitting from past rehabilitations may require a less expensive treatment in the future.

Concrete Improved Street System

Of the 563 centerline miles of streets 37 centerline miles (90 lane miles) are concrete. In 2015 staff were able to refine concrete street inventory data so condition inspections could be completed. Unlike asphalt streets, concrete streets require panel counts plus an average width and length of the panel for the calculation of PCIs. Concrete sections are best evaluated when defined as a city block. Historical concrete designs for typical city blocks contained 66 panels, three columns of panels within a block length, or 33 panels with two columns.

Concrete streets, like bike paths, are built for a life of 50 or more years before requiring complete reconstruction. Deterioration of concrete streets occurs within individual panels with many panels not requiring repair. Due to these unique factors for concrete streets, analyses which predict future needs of this system tend to be less accurate than asphalt surfaces. However, like unimproved streets and bike paths, we collect data and provide a current condition of the system.

Past repair of these streets was provided primarily by City maintenance crews which consisted of panel replacements for the most deteriorated panels. Historical construction data indicates that 60 percent of concrete streets in Eugene are over 70 years in age. Based on past maintenance repairs these streets over time may have had a majority of panels replaced.

By the end of the 2017 Bond Measure (2023), approximately 17 lane miles (six centerline miles) of concrete streets will have been rehabilitated from past and current funding sources. Through the new bond measure, an estimated \$5 million will be spent on approximately seven lane miles of concrete streets.

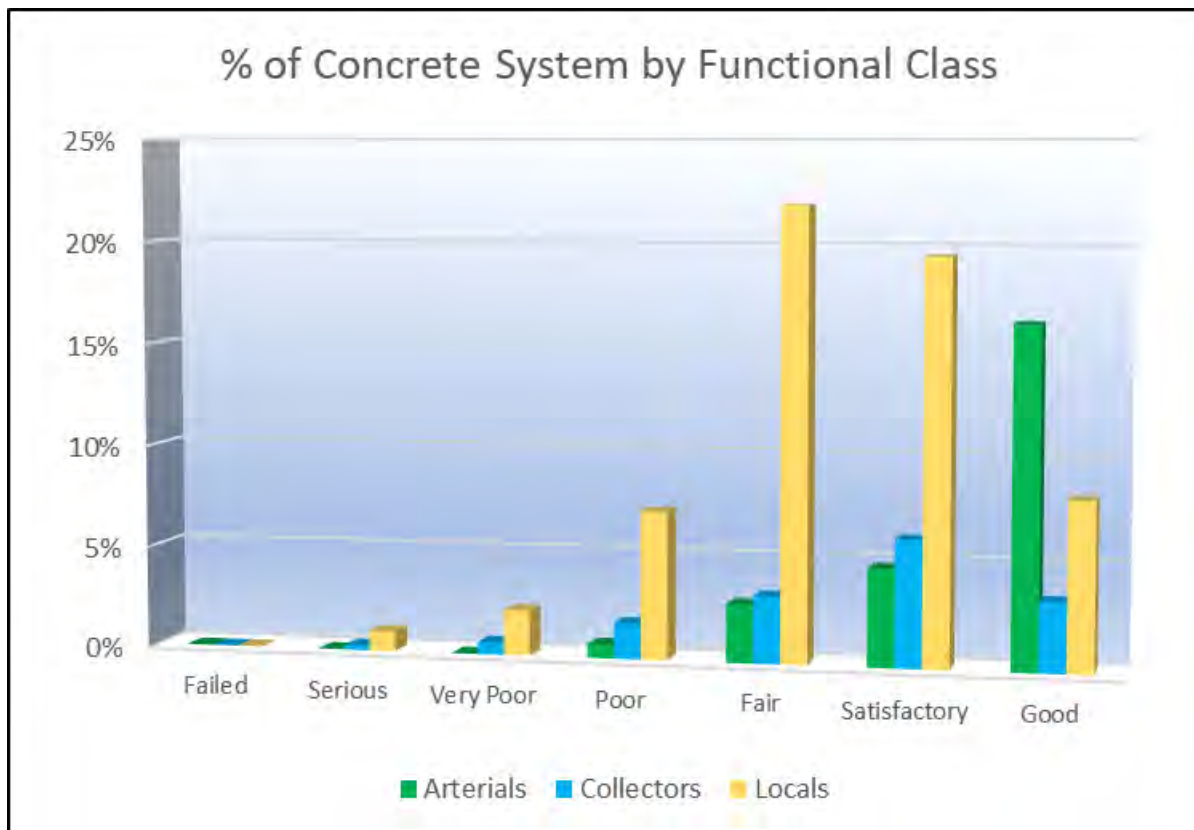


Figure 8 Percentage of Concrete System by Functional Class

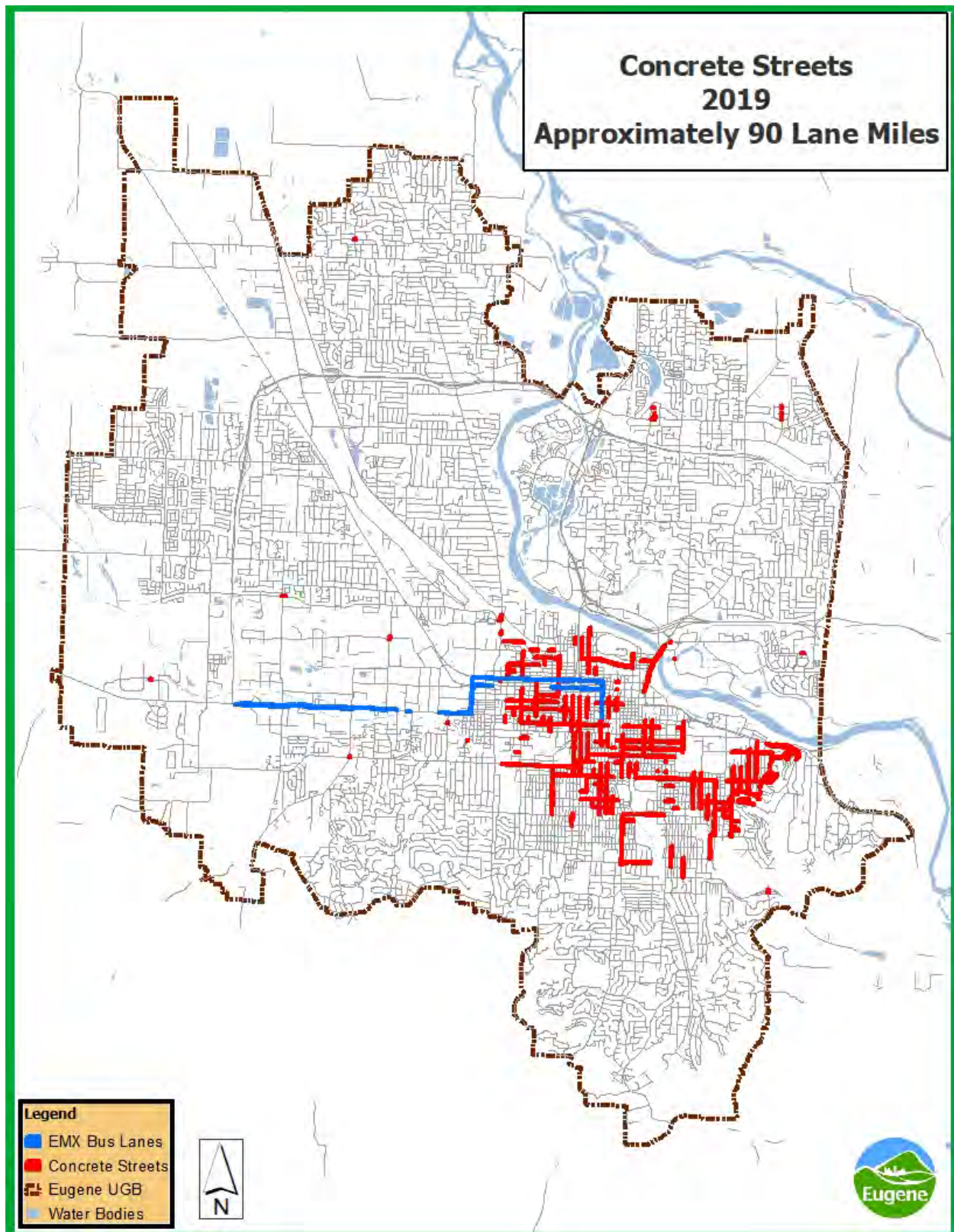


Figure 9 Map of Concrete Streets

Unimproved Street System

The City's transportation system consists of 563 centerline miles of improved and unimproved streets. The unimproved portion of this total includes 53 centerline miles (91 lane miles) of asphalt and bituminous surface streets. The intent of this section is to describe the overall condition of unimproved asphalt streets, highlight potential treatment needs, display associated rehabilitation costs, and indicate the projected backlog repair cost for addressing the street classification. It is important to note that any treatment short of being brought up to full urban street standards should be considered temporary. The estimated cost to improve this classification to meet the urban street standards is approximately \$60 million. In addition, the following backlog figure is separate from the improved street backlog figure.

Based on 2019 rating data of the unimproved street system, there is a backlog of temporary repair projects, totaling an estimated \$3.2 million, the same as reported in 2018. The following charts and graphs indicate that 70 percent of the system falls into a no treatment category. Approximately 136 unimproved streets have benefited from full or partial treatment since 2008, though eleven percent of the system falls into the "poor" category. Public Works Maintenance plans to spend more than \$200,000 annually to address a portion of these streets when funding allows.

2019 Unimproved Asphalt Street Condition and Rehabilitation Report (2019 Rating Data)						
PCI	Lane Miles	% of System	Condition	Rehabilitation Cost	Unit Cost/SQFT *	Treatment **
0-10	0.3	0.3%	Poor	\$63,490	\$3.50	FDR
11-20	3.5	3.9%	Poor	\$610,913	\$2.75	FDR or 2" AC
21-30	6.5	7.2%	Poor	\$724,600	\$1.75	1.5"-2" AC
31-40	6.5	7.2%	Fair	\$720,237	\$1.75	1.5"-2" AC
41-50	5.2	5.8%	Fair	\$580,263	\$1.75	1.5"-2" AC
51-60	1.7	1.8%	Fair	\$184,396	\$1.75	1.5"-2" AC
61-65	2.8	3.1%	Fair	\$314,496	\$1.75	1.5"-2" AC
66-70	3.0	3.3%	Good	\$0	\$0.00	No Treatment
71-80	5.4	6.0%	Good	\$0	\$0.00	No Treatment
81-85	8.6	9.5%	Good	\$0	\$0.00	No Treatment
86-90	11.1	12.2%	Excellent	\$0	\$0.00	No Treatment
91-100	36.1	39.8%	Excellent	\$0	\$0.00	No Treatment
			Total Rehabilitation	\$3,198,395	* Unit cost based on recent project costs	** Example treatments. Actual treatment would need further analysis.
	90.8	100.00%				

Table 4 Unimproved Asphalt Street Condition and Rehabilitation

The following graphs (Fig.10, 11) are a visual representation of the information provided in (Table 4), above.

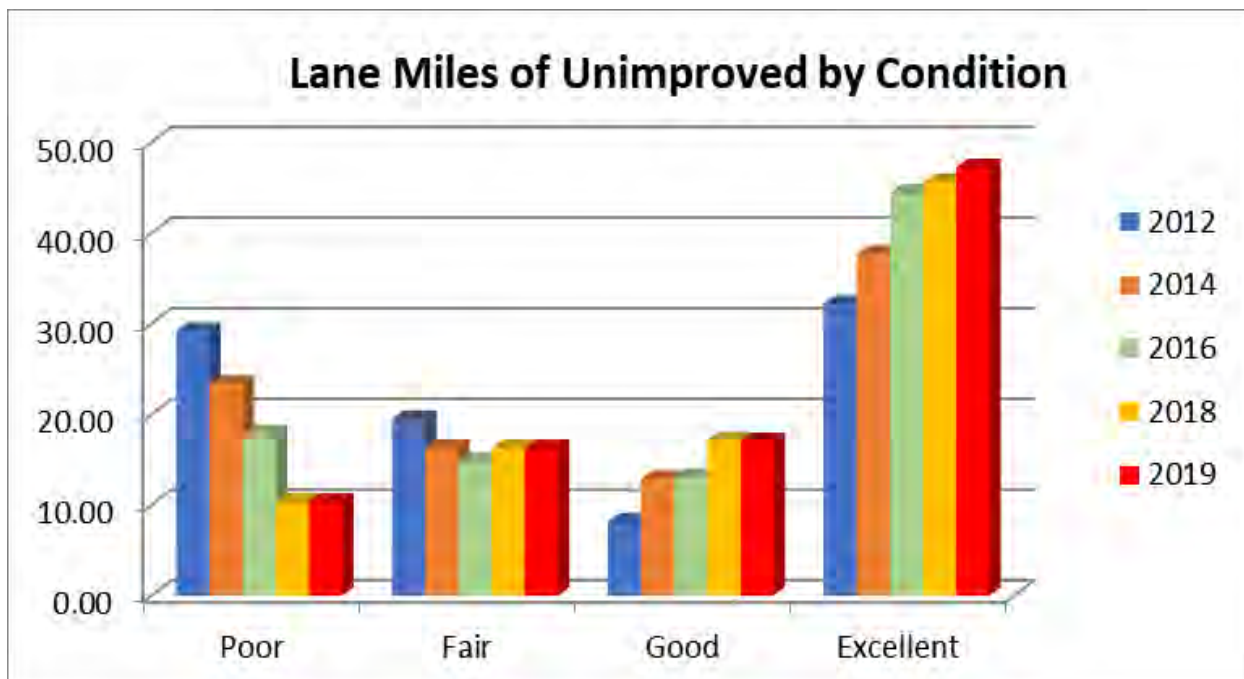


Figure 10 Lane Miles of Unimproved Streets by Condition

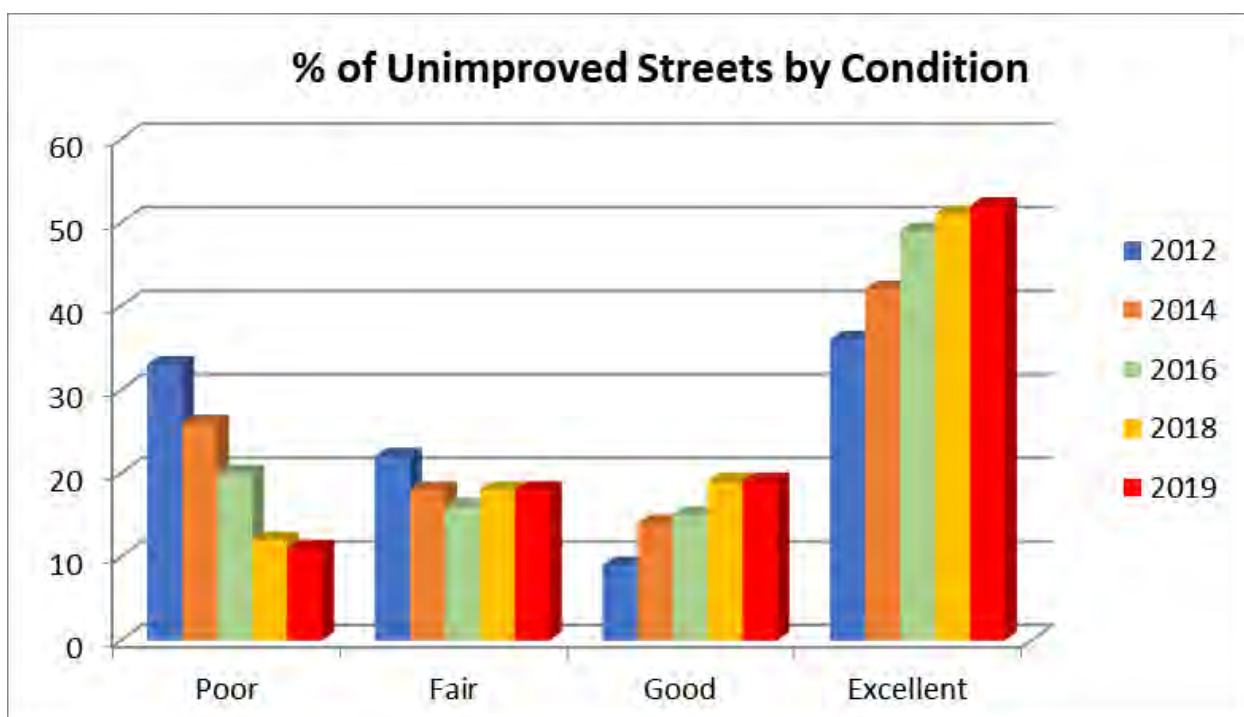


Figure 11 Percentage of Unimproved Streets by Condition

Off-Street Shared-Use Paths

Shared-use paths are utilized by a variety of non-motorized users including; pedestrians, cyclists, skaters, and runners. Shared-use paths are typically wider than an average sidewalk and paved with asphalt or concrete.

There are approximately 46 miles of shared-use paths. In 2019 approximately 24 miles of shared-use paths are in a PCI condition of 90 or better. This is down two miles from 2018.

The City standards for shared-use paths require a concrete structure no less than six inches deep and 12 feet wide. Paths designed, constructed or reconstructed to current standards are expected to have a 50-year life. Of the \$51.2 million 2017 bond, \$5 million will go toward safety improvements for pedestrian and bicycle infrastructure.

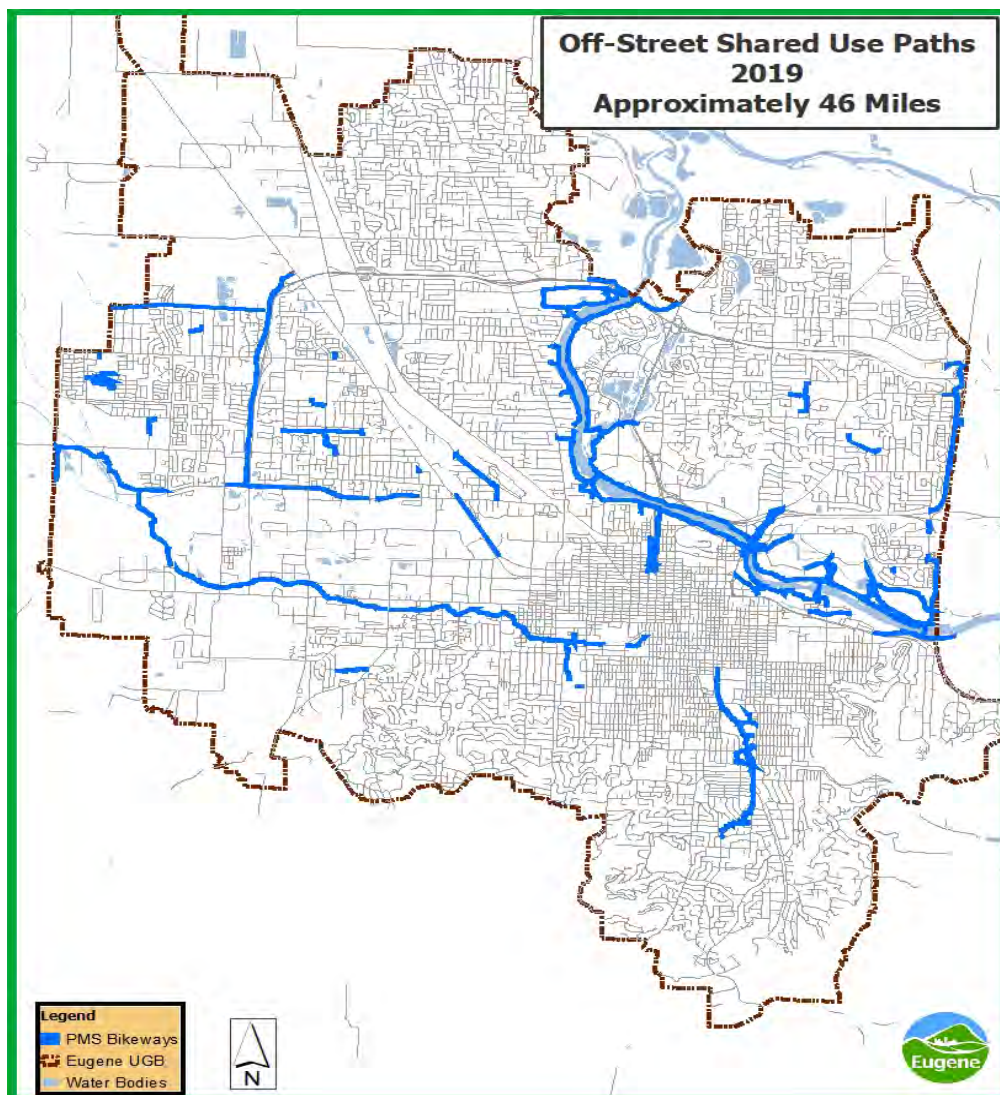


Figure 12 Map of Off-Street Shared Use Paths

The following graphs (Fig 13,14) show the division of surface types and widths within the system as of 2019.

Off-Street Shared-Use Path Surface Type:

Off-Street Shared-Use Path Existing Widths:

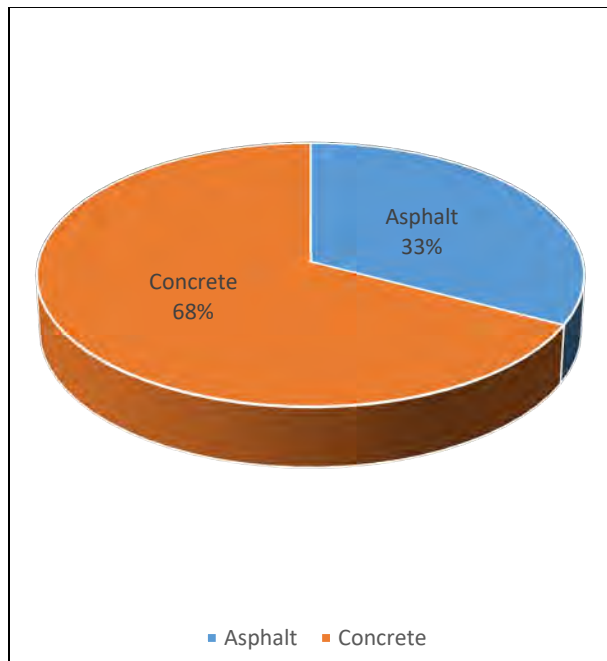


Figure 13 Path Type Percentage

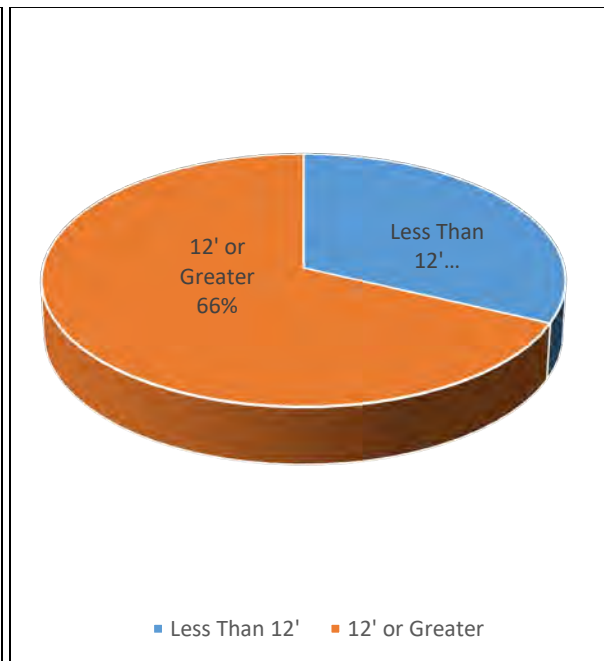


Figure 14 Path Widths Percentage

The following graph (Fig.15) shows the path condition in 2019 for the system.

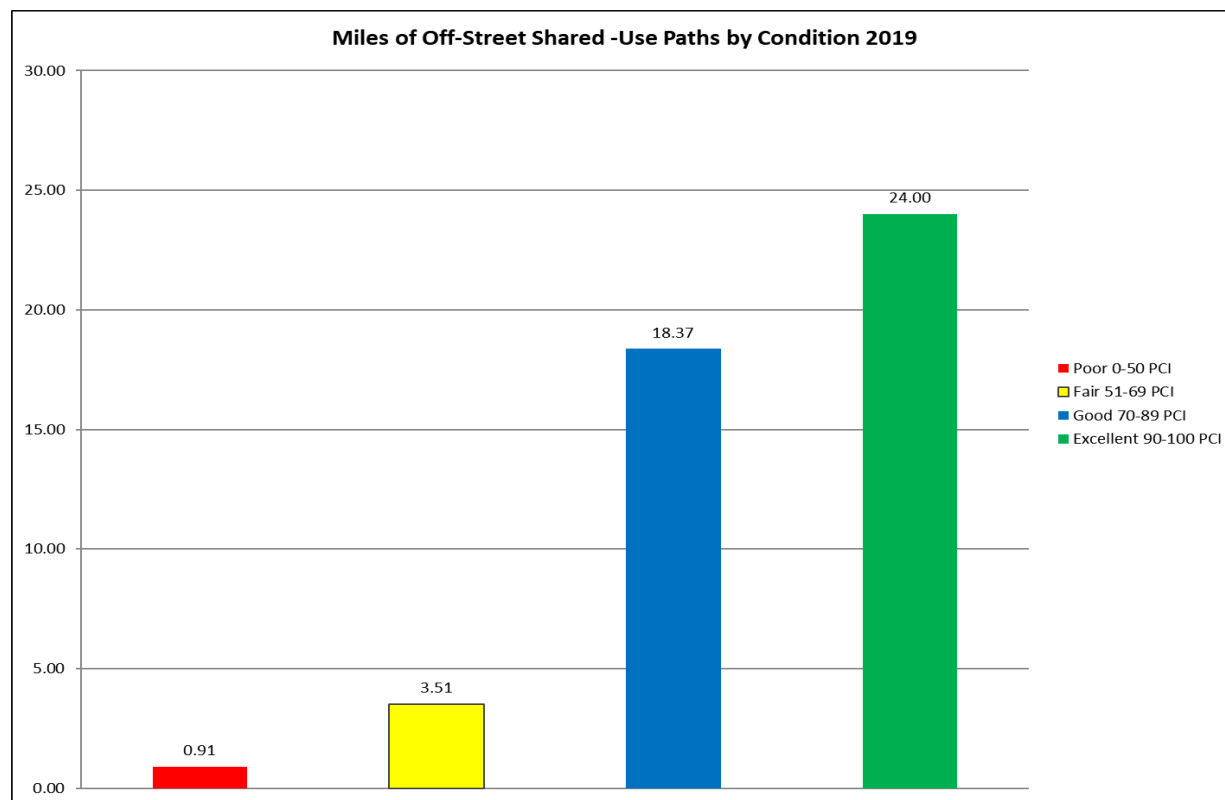


Figure 15 Miles of Paths by Condition

Shared-use path projects have been historically funded by state and federal grants and more recently by voter-approved bond measures. There is currently no long-term funding identified specifically for shared-use paths. The following is a list of completed and current projects, including shared-use paths funded by the bond measures.

Name	Fiscal Year	Funding
Fern Ridge Path Rehabilitation - Chambers to City View	2004	(TE) Funds
Garden Way Bike Path Rehabilitation	2005	(TE) Funds
N Bank Path Rehabilitation - Club Rd to 3000' West	2006	(TE) Funds
West Bank Path Rehabilitation	2007	(TE) Funds
Amazon Path Rehabilitation – 19th - 31st	2009	PBM
Delta Ponds Bridge New Construction	2010	Various Federal and Local Funds
Fern Ridge Path /Westmoreland Connector Rehabilitation	2010	PBM
South Bank Path Rehabilitation	2011	PBM
West Bank Path New Construction	2011	(TE) Funds
Fern Ridge Path Rehabilitation - Chambers to Arthur	2012	(TE) Funds
West Bank Path Rehabilitation - Greenway to Copping	2012	PBM
Amazon/Willamette River Path Connectors New Construction	2012	(TE) Funds
North Bank Path Rehabilitation - DeFazio Bridge to Leisure Ln.	2012	(TE) Funds
Fern Ridge Path New Construction - Terry to Greenhill	2013	(TE) Funds
South Bank Path Rehabilitation - Riverplay to DeFazio Bridge	2013	PBM
South Bank Path Rehabilitation - Knickerbocker Bridge to Franklin Blvd	2015	(TE) Funds
Fern Ridge Path New Construction - Commerce to Connector Path	2016	LGT
I-5 @ Beltline Interchange New Construction	2017	(TE) Funds
Jessen Multi-Use Path New Construction - BeltLine Hwy to Ohio St.	2018	(TE) Funds
West Bank Path Rehabilitation - Maurie Jacobs to Copping	2020	POS/PBM
South Bank Path Rehabilitation – EWEB Plaza to Autzen Connector	2020	PBM

Table 5 *List of Shared-Use Path Projects*

Project Funding Abbreviations

PBM – Paving Bond Measure

LGT – Local Gas Tax/SDC/Other

TE – Transportation Enhancement (Federal)

POS – Parks Bond Measure

Scheduled Street Projects for 2020

2020 Project Name and Limits	Lane Miles	Funding
4th Avenue (Pearl Street to Coburg Road)	0.89	PBM
8th Avenue (Willamette Street to Mill Street)	0.88	PBM
17th Avenue (Hilyard Street to Oak Street)	1.36	PBM
17th Avenue (Hilyard Street to Alder Street)	0.19	LGT
19th Avenue (Agate Street to Fairmount Boulevard)	0.93	PBM
19th Avenue (Willamette Street to High Street)	0.59	PBM
20th Avenue (Willamette Street to Oak Street)	0.15	PBM
Chambers Street (11th Avenue to 13th Avenue)	0.50	PBM
Fairmount Boulevard (15th Avenue to Columbia Street)	2.00	PBM
Garden Avenue (Moss Street to Walnut Street)	0.52	PBM
Grant Street (18th Avenue to 24th Avenue)	1.03	LGT
Hayes Street (18th Avenue to End)	0.74	LGT
Mill Street (3rd Avenue to 4th Avenue)	0.20	PBM
Mill Street (16th Avenue to 18th Avenue)	0.41	PBM
Moss Street (Garden Avenue to Franklin Blvd.)	0.19	LGT
Oak Street (13th Avenue to 20th Avenue)	1.44	PBM
Pierce Street (18th Avenue to 23rd Avenue)	1.11	LGT
Polk Street (6th Avenue to 7th Avenue)	0.26	PBM
Villard St (Garden Ave to Franklin Blvd.)	0.21	LGT
Walnut Street (Franklin Boulevard to Garden Avenue)	0.12	PBM
Willamette Street (23rd Ave to 29th Ave)	1.36	PBM

Table 6 2020 Street Projects

Project Funding Abbreviations

PBM – Paving Bond Measure

LGT – Local Gas Tax

The following map (Fig.16) illustrates the Pavement Projects scheduled for 2020.

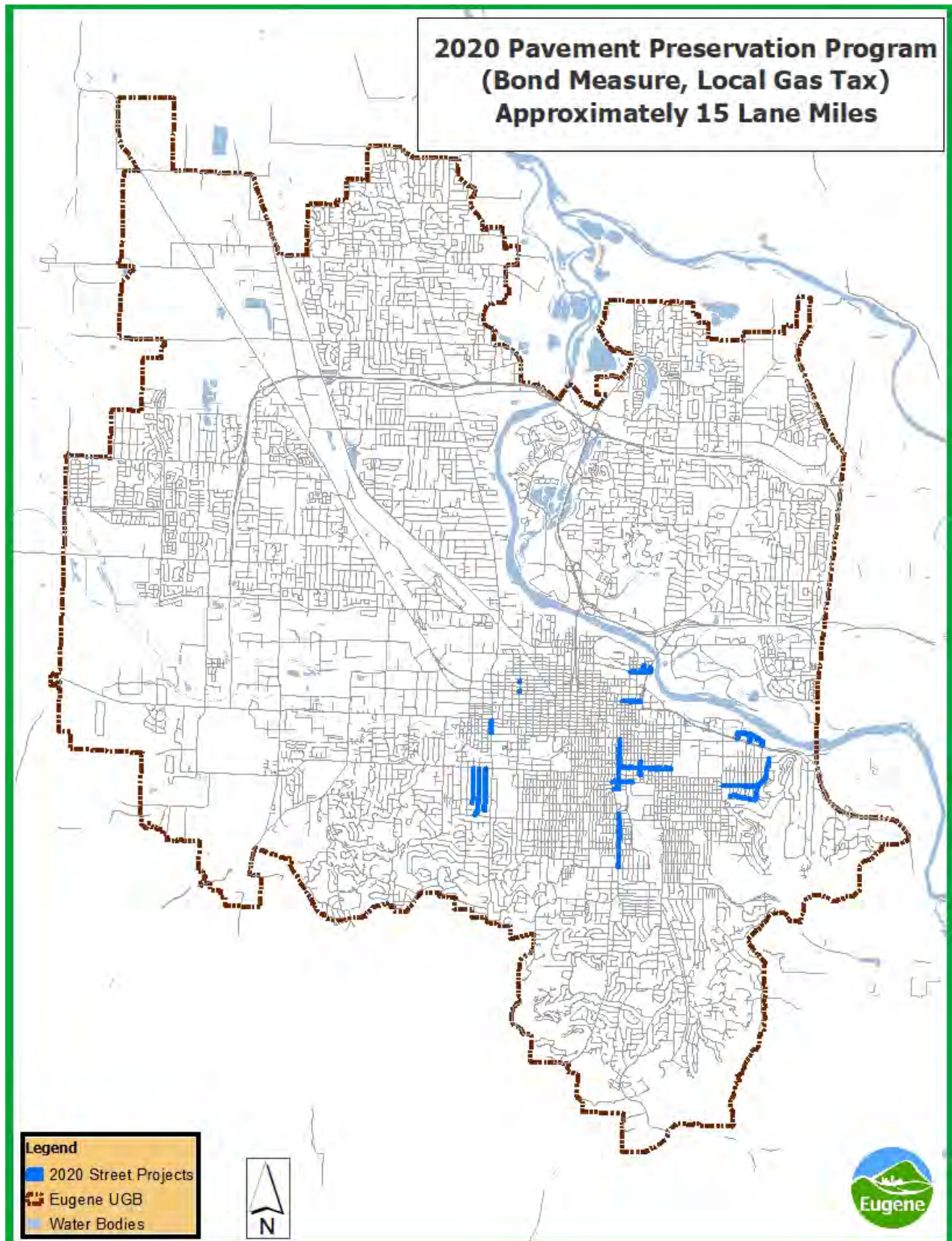


Figure 16 Map of 2020 Street Projects

The following map (Fig.18) illustrates Pavement Preservation Projects since inception of the program 2002 - 2019.

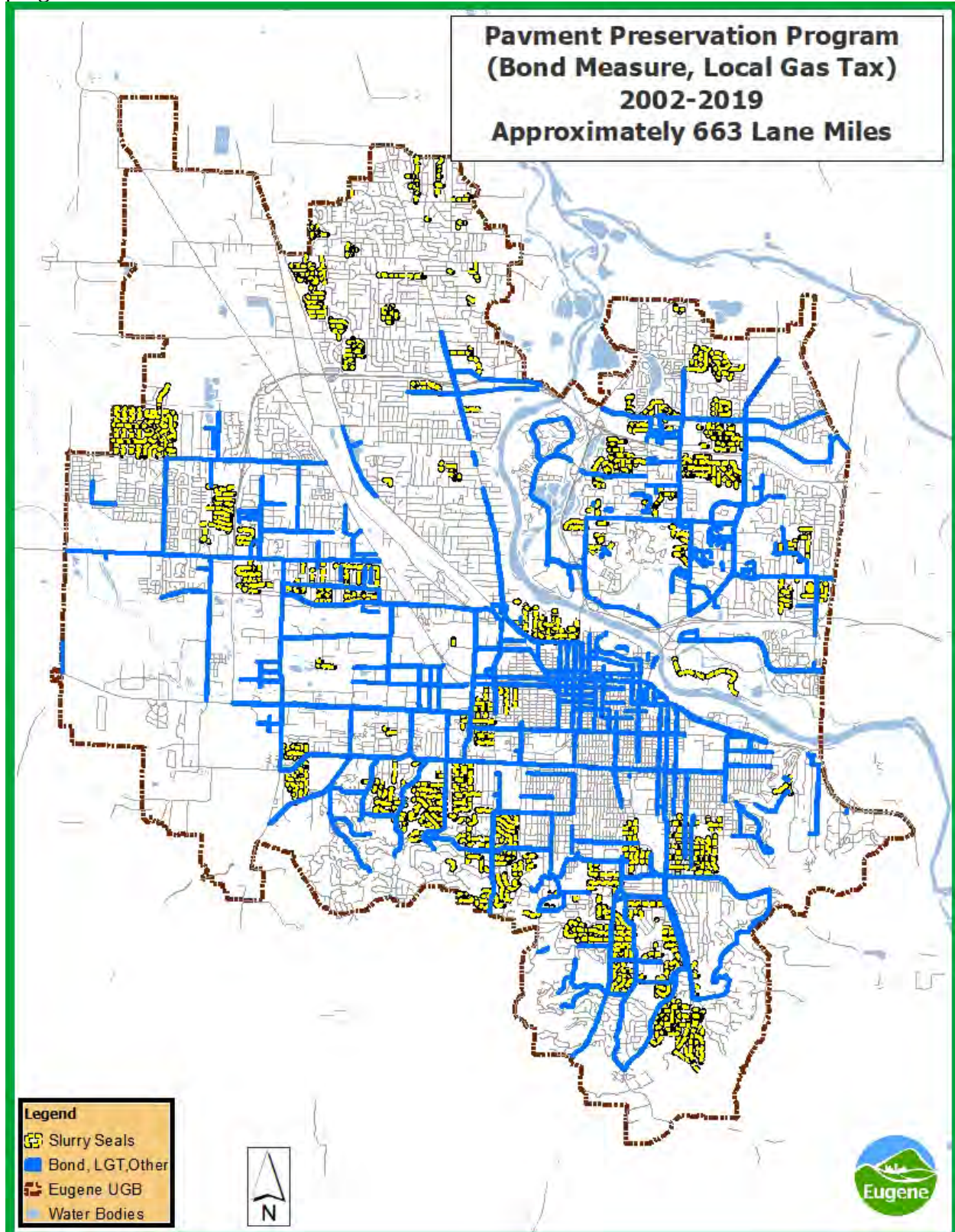


Figure 18 Projects Since PPP Inception

The following map (Fig.19) illustrates the Enhanced Street Repair Program 2008-2019.

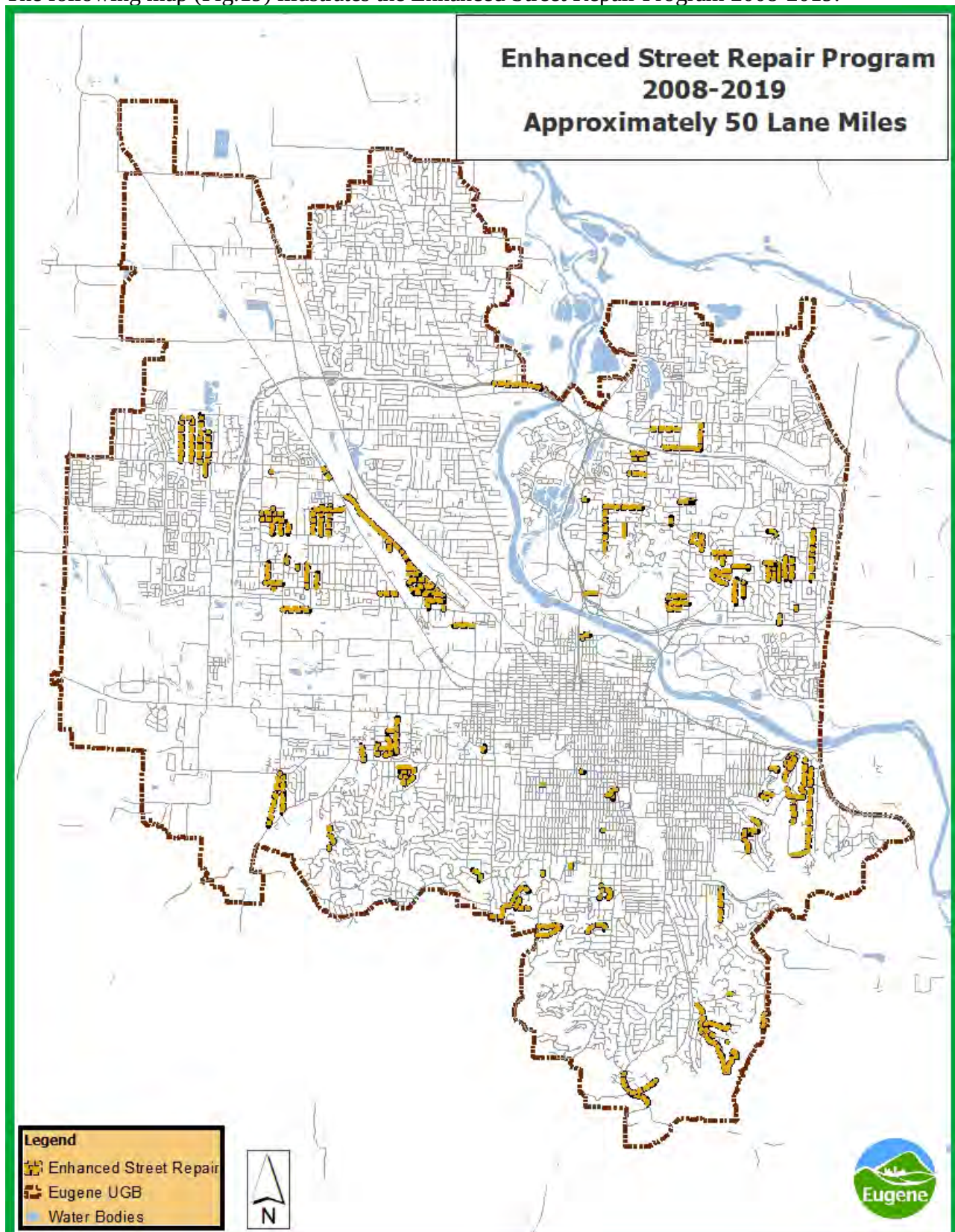


Figure 19 Enhanced Street Repair Program

The following map (Fig.20) illustrates Pavement Preservation Projects and Enhanced Street Repair Program since inception of the programs 2002 – 2019.

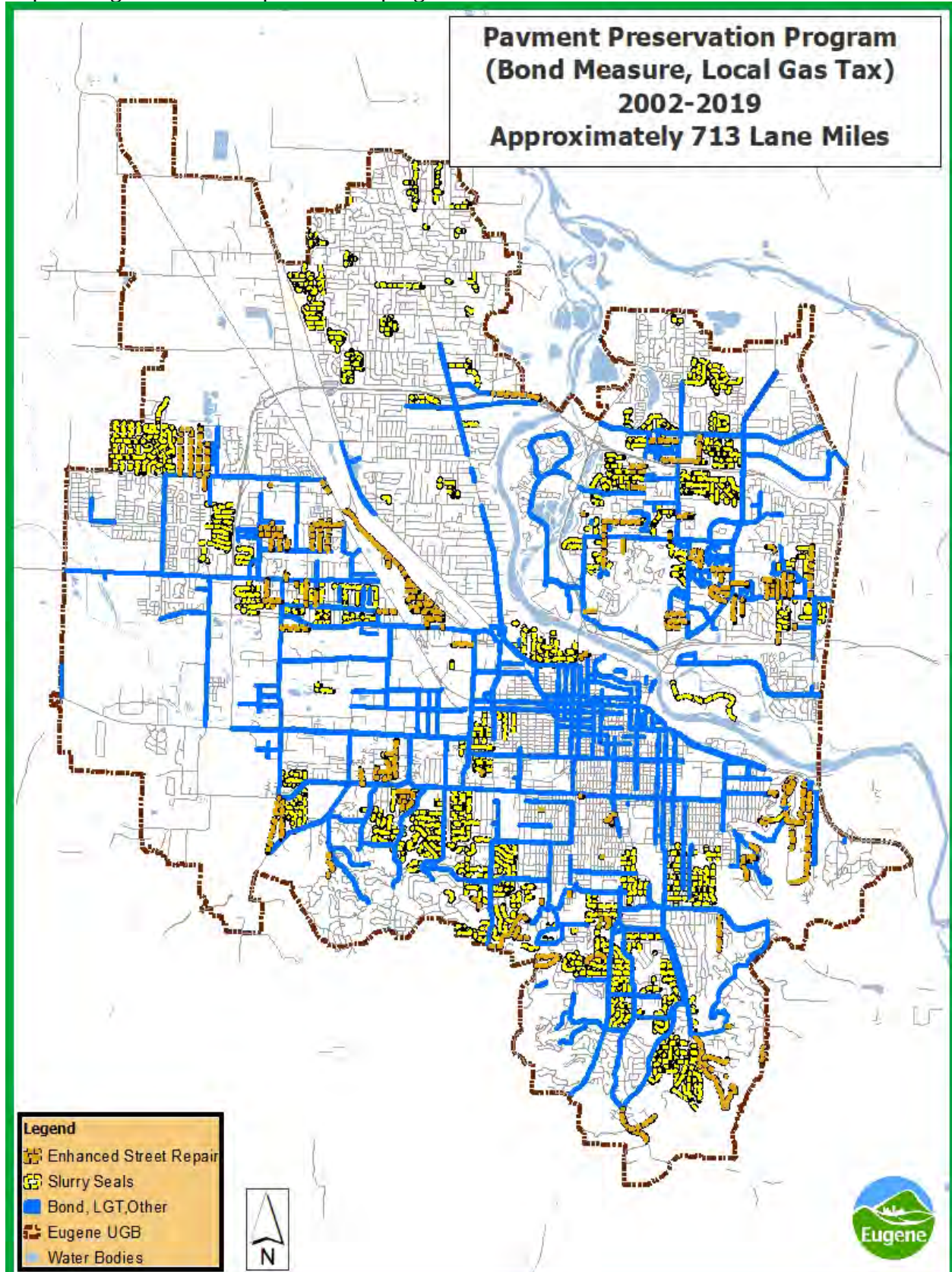


Figure 20 All Projects Since Inception

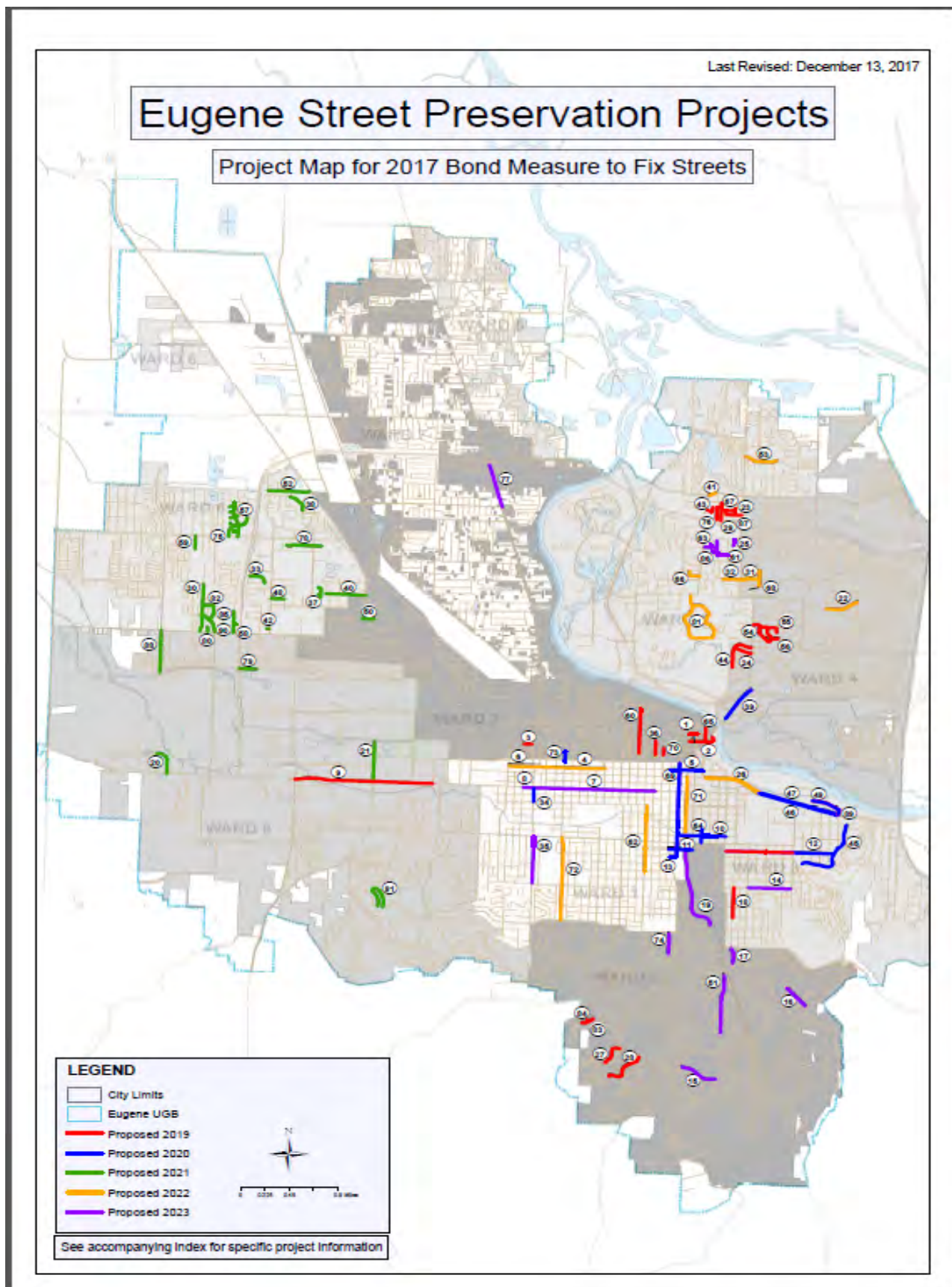


Figure 21 2017 Bond Projects

Project List (Table 7) for 2017 Bond Measure to Fix Streets

MAP #	Street Name	From	To
1	03RD AVENUE	HIGH ST	PEARL ST
2	04TH AVENUE	COBURG RD	PEARL ST
3	05TH AVENUE	CHAMBERS ST	GRANT ST
4	08TH AVENUE	CHAMBERS ST	MONROE ST
5	08TH AVENUE	WILLAMETTE ST	MILL ST
6	08TH AVENUE	GARFIELD ST	CHAMBERS ST
7	11TH AVENUE	CHARNELTON ST	CHAMBERS ST
8	11TH AVENUE	CHAMBERS ST	GRANT ST
9	11TH AVENUE	TYINN ST	BERTELSEN RD
10	17TH AVENUE	HILYARD ST	OAK ST
11	19TH AVENUE	WILLAMETTE ST	HIGH ST
12	19TH AVENUE	HILYARD ST	FAIRMOUNT BLVD
13	20TH AVENUE	WILLAMETTE ST	OAK ST
14	24TH AVENUE	HARRIS ST	AGATE ST
15	46TH AVENUE	FOX HOLLOW RD	DONALD ST
16	AGATE STREET	N 163 BLACK OAK RD	FIRLAND ST
17	ALDER STREET	30TH AVE	32ND AVE
18	ALDER STREET	24TH AVE	27TH AVE
19	AMAZON PARKWAY	19TH AVE	2693 S OF E 24TH
20	ARROWSMITH STREET	TERRY ST	11TH AVE
21	BAILEY HILL ROAD	5TH AVE	11TH AVE
22	BAILEY LANE	BOGART LN	LUELLA ST
23	BALFOUR STREET	TERRA AVE	NORTH END
24	BEDFORD WAY	OAKWAY RD	FAIR OAKS DR
25	BREWER AVENUE	BREWER AVENUE	SOUTH END
26	BROADWAY	MILL ST	11TH AVE
27	BROOKSIDE DRIVE	BRAE BURN DR (NORTH)	ADDR 999
28	BROOKSIDE DRIVE	BRAE BURN DR (SOUTH)	MONTARA WAY
29	CALGARY STREET	HOLLY AVE	ELANCO AVE
30	CANDLELIGHT DRIVE	AVALON	ROYAL
31	CARMEL AVENUE	GILHAM RD	NORWOOD ST
32	CARMEL AVENUE	DIANE ST	GILHAM RD
33	CATALINA STREET	JUHL ST	WILLHI ST
34	CHAMBERS STREET	11TH AVE	13TH AVE
35	CHAMBERS STREET	18TH AVE	24TH AVE
36	CHARNELTON STREET	4TH AVE	6TH AVE
37	CHASE STREET + CDS	500' NORTH OF MARSHALL	NORTH END
38	CLAREY STREET	BEAN ST	1071' S OF BEAN ST
39	COBURG ROAD	FERRY STREET BRIDGE	OAKWAY RD
40	CONCORD STREET	BERNTZEN RD	JACOBS DR
41	CRCENT AVENUE	NORKENZIE RD	ADDRS 1670
42	ECHO HOLLOW CDS	WEST END (CDS) (880-960)	ECHO HOLLOW RD
43	ELANCO AVENUE + 1 CDS (NORTH)	NORKENZIE RD	END OF NORTHERLY CDS
44	FAIR OAKS DRIVE	OAKWAY RD	FAIRWAY LP

MAP #	Street Name	From	To
45	FAIRMOUNT BOULEVARD	15TH AVE	COLUMBIA ST
46	FRANKLIN BOULEVARD EB	WALNUT ST	11TH AVE
47	FRANKLIN BOULEVARD WB	WALNUT ST	11TH AVE
48	FULLER AVENUE	ECHO HOLLOW RD	JAY ST
49	GARDEN AVENUE	MOSS ST	WALNUT ST
50	HAWTHORNE AVENUE	WEST END	FAIRFIELD AVE
51	HILYARD STREET	W AMAZON DR	40TH AVE
52	JESSEN DRIVE	ELIZABETH ST	HWY 99
53	LAKEVIEW DRIVE	207' E OF SARAH LN	GILHAM RD
54	LARIAT DRIVE	OAKWAY RD	LARIAT DR
55	LARIAT MEADOWS DRIVE	LARIAT DR	EAST END
56	LARIAT MESA	LARIAT DR	EAST END
57	LAURELHURST DRIVE + 5 CDS	MELROSE LP	BARGER DR
58	LAURELHURST DRIVE + SHEFFIELD CT CDS	HARRIET AVE	ROYAL AVE
59	LAVETA LANE	BARGER DR	SOUTH END
60	LAWRENCE STREET	DRWY 36	6TH AVE
61	LEMMING AVENUE	TARPON ST	SHILO ST
62	LINCOLN STREET	13TH AVE	22ND AVE
63	LINNEA AVENUE + 1 CDS	NORKENZIE RD	TARPON ST
64	MILL STREET	16TH AVE	18TH AVE
65	MILL STREET	2ND AVE	4TH AVE
66	MONTEREY AVENUE	NORKENZIE RD	LARKSPUR AVE
67	MONTREAL AVENUE	CALGARY ST	BALFOUR ST
68	NORWOOD STREET	MONTEREY ST	MARLOW ST
69	OAK STREET	7TH AVE	20TH AVE
70	OLIVE STREET	5TH AVE	6TH AVE
71	PEARL STREET	BROADWAY	17TH AVE (AMAZON BRIDGE)
72	POLK STREET	18TH AVE	28TH AVE
73	POLK STREET	67' N OF 6TH AVE	72' S OF 7TH AVE
74	PORTLAND ST	29TH AVE	31ST AVE
75	PRIMROSE STREET + 1 CDS	BARGER RD	100' N OF PARKER PL (S)
76	QUEBEC STREET	CALGARY ST	ELANCO ST
77	RIVER ROAD	MAXWELL RD	BELTLINE RD
78	ROBIN AVENUE	200' EAST OF RUSKIN ST	396' EAST OF TANEY ST
79	ROOSEVELT BLVD	BELTLINE	APPROX 800' EAST OF BELTLINE
80	ROYAL AVENUE CUL DE SAC	ROYAL AVE	N END CDS
81	SPYGLASS DRIVE	CAL YOUNG RD	LOOP AROUND BACK TO SPYGLASS DR
82	STAGECOACH ROAD	CANDLELIGHT DR	SURREY LN
83	SUNDANCE STREET	SUNDIAL RD	EAST END
84	SUNDANCE STREET CDS	NORTH END	SUNDANCE ST
85	SURRY LANE	STAGECOACH	WELCOME WY
86	TARPON STREET + CUL-DE-SAC	BREWER AVE	LEMMING AVE
87	TERRA AVENUE	MONTREAL AVE	GILHAM RD
88	TERRY STREET	ROYAL AVE	ROOSEVELT BLVD
89	WALNUT STREET	FRANKLIN BLVD	GARDEN AVE
90	WELCOME WAY	CANDLELIGHT DR	ROYAL AVE
91	WINDSOR CIRCLE EAST/WT	WILSHIRE LN	WILSHIRE LN

Table 7 List of 2017 Bond Projects