Seattle Department of Transportation

Memo

Date: June 30, 2025
To: Seattle City Councilmembers
From: Adiam Emery, Director, Seattle Department of Transportation
Subject: SDOT Response to Statement of Legislative Intent regarding request that SDOT provide a report on the pothole repair program and pavement condition (SDOT-105S-A-001-2025)

As part of the 2025 budget process, the City Council adopted Statement of Legislative Intent (SLI) SDOT-105S-A-001-2025. The SLI requested the Seattle Department of Transportation (SDOT) provide a report on the pothole repair program and performance indicators for potholes and pavement conditions. The SLI stated:

This Statement of Legislative Intent (SLI) requests that the Seattle Department of Transportation (SDOT) provide a report on the pothole repair program. The report should describe how SDOT identifies, prioritizes and repairs potholes. In addition, the report should describe the key performance indicators along with the objectives and key results that SDOT uses to evaluate pothole incidents and roadway conditions. The report should also describe any notable trends and insights pertaining to SDOT's pothole repair program, together with relevant industry best practices.

This report provides background on potholes and then walks through the three elements requested in the SLI:

- How SDOT identifies, prioritizes, and repairs potholes;
- Description of the key performance indicators SDOT uses to evaluate pothole incidents and roadway conditions; and
- Notable trends and insights for the pothole repair program, including relevant industry best practices.

SDOT's Pothole Repair Program

A pothole is an abrupt depression in the roadway, typically where traffic loading has broken loose a section of the pavement. Over time, with heavy vehicle traffic (structural fatigue) and exposure to the elements (weathering), pavements steadily accumulate cracks and other distress. Potholes occur most frequently after precipitation, when pavement layers have been weakened by water that infiltrates through cracks in aging pavements. Cycles of freezing and thawing on roadways exacerbates this condition. Another cause of potholes is utility cuts which are often restored in a temporary condition. This is the reason that we coordinate closely with utilities on major capital projects so that we can do utility work while the right of way is open to prevent utility cuts into new pavement later. Seattle typically fills 15,000 – 25,000 potholes every year.

In 2024, SDOT's Pothole Program expended almost $5 million. The program is run out of SDOT's Maintenance Operations Division and includes:

- 4 District Crew Chiefs
- 8 Truck Drivers
- 4 Asphalt Rakers

- 16 Maintenance Laborers

Equipment resources include raker, traffic, and dump trucks; pavers; grinders; steel drum rolls; and rubber tire rolls. SDOT maintains four hotbox trucks strategically located around the city, in the northeast, northwest, West Seattle and central south geographic sectors.

Seattle has large pothole and spot paving/patching programs (such as Arterial Major Maintenance in the CIP Project MC-TR-C071) to keep deteriorated streets serviceable. Those programs apply stopgap repairs to keep streets safe for ordinary travel, albeit at a condition level below optimal. Major, corridor level contract paving projects are usually delivered through the Arterial Asphalt and Concrete Program (CIP Project MC-TR-C033). It is the major projects that renew streets so that potholes are rare.

The 2024 Transportation Levy, via new dollars to the Arterial Asphalt and Concrete Program has reached the highest funding level for major paving in decades, $330 million over eight years or $41.25 million per year.

Pothole Identification, Prioritization and Repair

Pothole repair is SDOT's first response to pavement damage allowing SDOT to keep streets serviceable. SDOT receives reports of potholes from Seattle residents and travelers via four primary channels:

- Find It Fix It App
- Phone: 206-684-7623(ROAD) (SDOT Customer Care Center)
- 206-386-1218 (SDOT Charles St Dispatch office)
- Report a pothole online

SDOT goal is to respond to pothole repair requests within three business days, starting the day after the request is received. In order to meet this departmental goal, the pothole crews respond with a first reported, first repaired method as the prioritization model. In addition to those more formal means of reporting, SDOT roadway maintenance crews identify potholes during their day-to-day work while responding to the reported pothole repairs. SDOT also receives specific repair requests through the Mayor's Office and City Council.

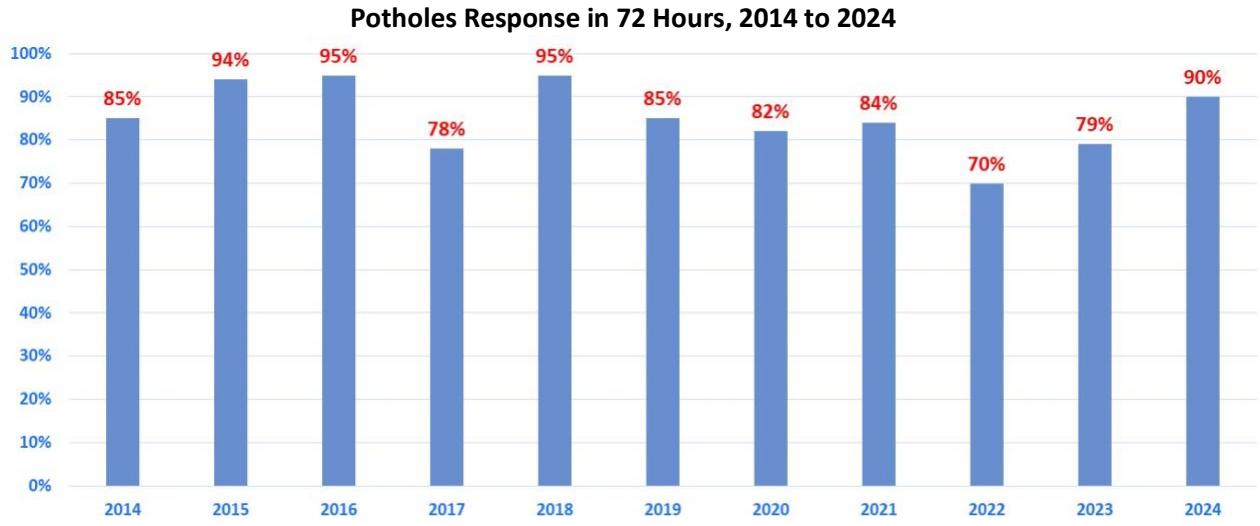
SDOT's primary pothole repair method involves the placement of hot mix asphalt dispensed from a Pothole Ranger Thermolay vehicle that maintains the mix temperature over a work shift. The patch area is cleaned and loose material removed, a tack coat is placed, hot-mix asphalt is raked to level, the mix is compacted with a heavy vibratory plate, and the edges are sealed and sanded. A tack coat is an emulsion used to promote bonding of the new asphalt to the base and sides of the pothole. This method generally follows the best practices recommended by the Federal Highway Administration (FHWA). SDOT has arrived at its current approach through reviews of industry best practices and decades of local experience.

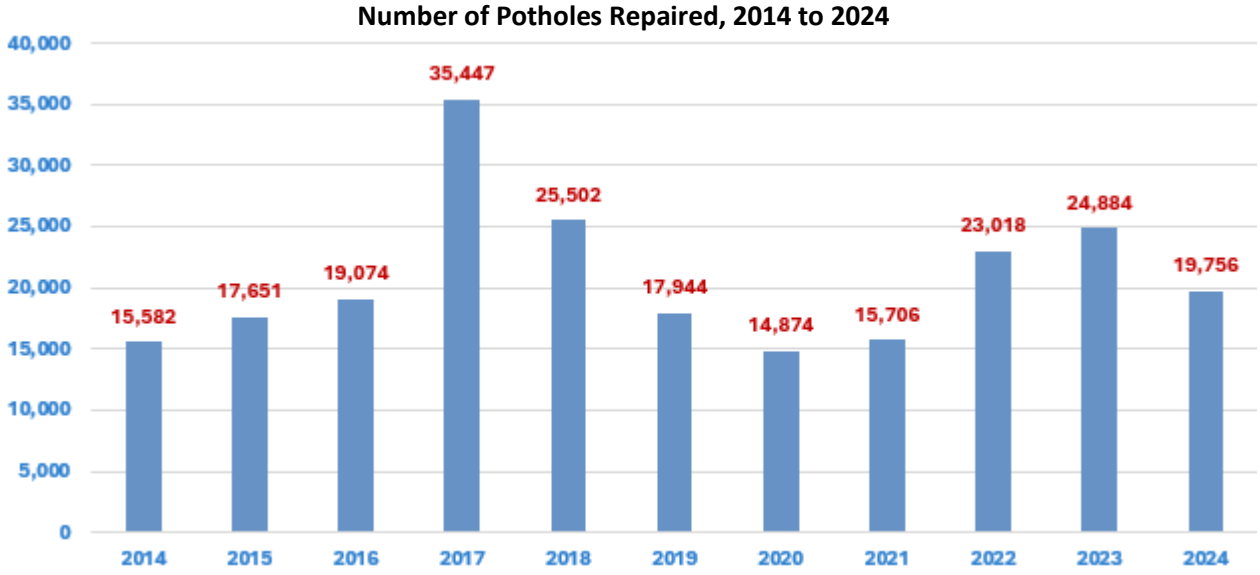
The images below show the cleaning, tack application, and final repair following compaction using the roller shown in the bottom right of the image. SDOT occasionally uses other pothole repair methods, such as cold mix during off-shift emergencies, in inclement weather, and when hot mix is not available. Due to the soft nature of cold-mix, these repairs are typically not as durable as hot-mix and the areas are commonly re-visited with hot mix asphalt for more durable results when weather conditions improve.

It is important to recognize that pothole patching must strike a balance between responsiveness and patch quality/durability. When a street is failing, the point in the pavement life cycle when potholes usually form, it does so gradually and globally. New potholes do not always form in an area that has been patched, but often in areas that have not been patched. This means quick, high-output repairs are important, but durable repairs are also needed as full road fixes may take a long time. A pothole repair program must find a balance point between responsiveness and patch quality/durability. These factors have led SDOT to its current repair methodology.

Key Performance Indicators for Pothole Repair

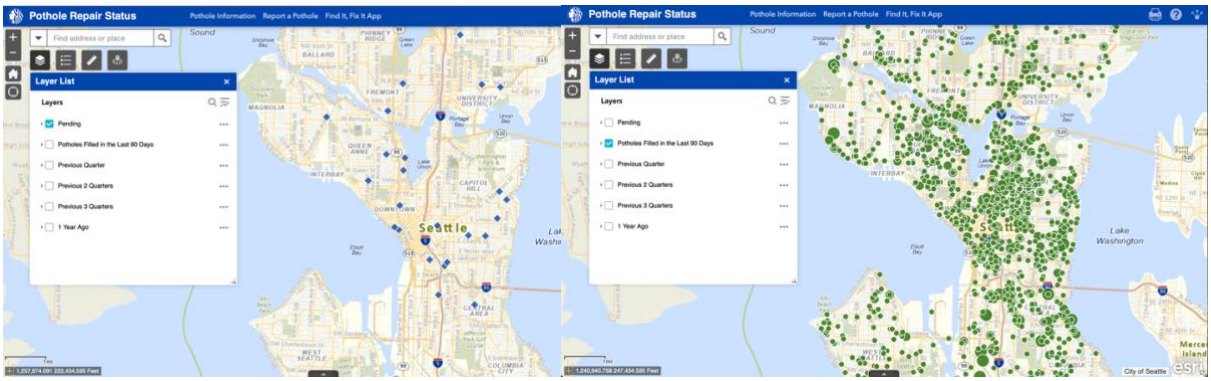
SDOT aims to provide a 72-hour response to reported potholes by the public. In 2024, that target was met 90 percent of the time. The charts below show pothole response and potholes repaired 2014 to 2024. The weather in the winter of 2017 was particularly active, leading to a high number of potholes in need of repair.





Pothole repair is temporary. One repaired today will likely need repair in the future because it is placed on a compromised foundation. Moreover, another pothole is likely to develop adjacent to one recently patched since pavement distress is widespread on roadways with recurring potholes. The long-term solution to potholes is repaving the road as conditions worsen but before they deteriorate.

Like other requests that come through or are otherwise entered into the Customer Service Response (CSR) system are automatically posted to the public facing Seattle Pothole Repair map, which serves as a tool for both reducing duplicate requests and for residents and other members of the public to track repairs as they are completed. The map is refreshed with current data each night. It displays all pothole requests that have not been completed, and pothole repairs that have been completed since March 15, 2010. People can filter their searches pothole reports pending repair, repairs in progress, and repairs within the previous 90 days, previous quarters, or the previous year.



Screenshots of Seattle Pothole map filtered for pending repairs on left image and repairs made in last 90 days on right frame.

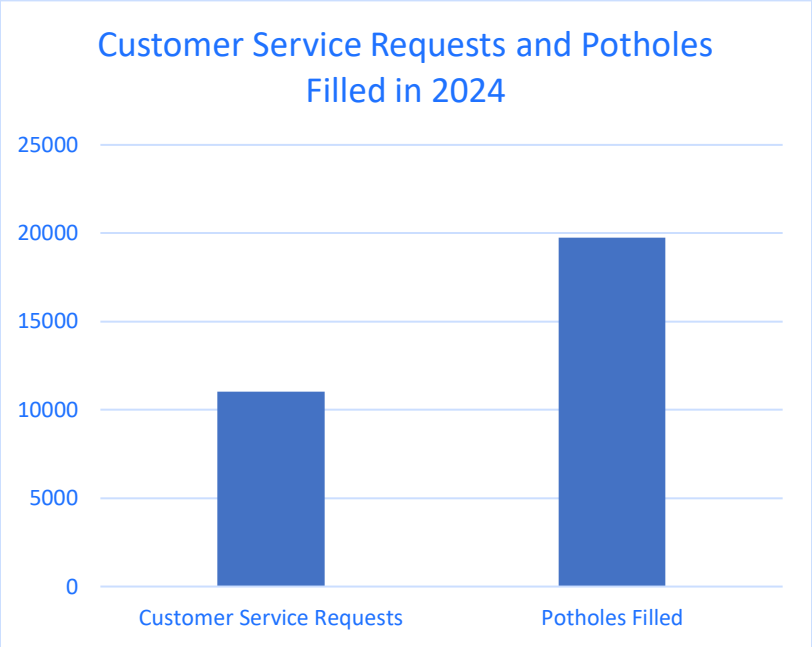
Other Trends and Insights

The transportation industry continues to evolve and SDOT ensures that its staff stays keeps up with the latest trends in the industry. The City's current approach to pothole repair follows the best practices recommended by the Federal Highway Administration (FHWA) via numerous studies. SDOT has arrived at its current approach through reviews of industry best practices and decades of local experience. Staff closely follow technology and occasionally attend conferences (e.g. World of Asphalt/Concrete, Slurry Systems Workshop, et al) for a closer look at pavement repair developments.

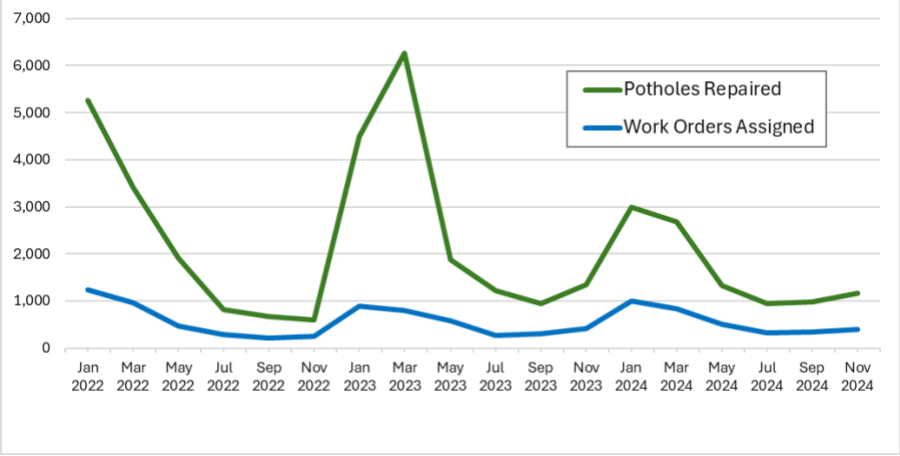
SDOT has also tested other pothole repair technologies such as spray patching but has generally found the patch durability unacceptable. SDOT's staff follow developments in the paving industry, and we seek to test and implement new methods that show promise. A pothole repair program must find a balance point between responsiveness and patch quality/durability. In general, these improvements are evolutionary and involve incremental improvements to productivity and materials.

The 72-hour pothole response goal is carefully balanced to optimize performance of what is primarily a reactive program. SDOT has successfully achieved 80 percent or greater response to potholes within 72 hours in 8 of the past 11 years. In 2017, despite only achieving that metric 78 percent of the time, SDOT filled over 35,000 potholes. This is a significant output compared to the annual average. A 72-hour response communicates solid customer service and good governance while still providing some capacity

for crews to address potholes outside of the specific customer service request. For comparison, Portland Bureau of Transportation has a goal of filling potholes in 30 days and in San Francisco it is 72 hours.



This table shows that for every service request SDOT received in 2024, almost two potholes were filled. SDOT pothole repair teams must balance the responsiveness of the 72-hour goal while optimizing time in the field to repair adjacent, additional potholes. In addition, some severe winter weather events or seasons result in hundreds or thousands of new potholes. Typically, after a storm, SDOT will deploy crews to proactively identify potholes outside of the routine customer service response to optimize efficiency in these circumstances. The table below shows how pothole reports reflect the damaging effects of freezing weather conditions.



As mentioned above, heavy vehicle traffic and exposure to the elements, pavements steadily accumulate cracks and other distress. Potholes occur most frequently after precipitation, when pavement layers have been weakened by water that infiltrates through cracks in aging

pavements. Frost action exacerbates this condition and results in the seasonal increases of failures (potholes) shown in this graph. The peaks are typically seen in February which aligns with what is often the month with the greatest chance of below freezing temperatures in Seattle.

Conclusion

Addressing potholes is a critical priority for SDOT. We are committed to meeting our performance targets on pothole repairs. In the long run, continuing to address our overall pavement conditions through our ongoing pavement programs and our major capital development program is the best approach to prevent potholes.