State of Our Transportation System

Pavement Preservation - Fish Passage Barriers - Bridges

Prepared by
Thurston Regional Planning Council
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Transportation – moving something from one place to another – is one of our most basic human needs. Transportation helps us access goods and services, links us to other people and places, and supports our commerce.

Across the nation, communities struggle to maintain and retrofit their transportation infrastructure. Those costs are high. The cost of doing nothing can be even higher – collapsing bridges, flooded roads – all affecting our ability to safely move around our community.

A truck struck the bridge over Interstate 5 near Chehalis in July of 2016, closing all but one lane in each direction and backing up traffic for miles. In 2007, flooding closed the same stretch for 5 days, leading to an estimated $47 million in lost economic output state-wide.

Outdated infrastructure can also impact our environment and natural resources. For instance, salmon fishing in the Puget Sound contributes an average economic impact of $100 million a year. Culverts under roads may threaten fisheries by creating barriers to salmon reproduction and migration.
To be proactive in addressing transportation system issues, Thurston Region policy makers asked a basic question:

**WHAT IS THE STATE OF OUR TRANSPORTATION SYSTEM?**

This report begins to answer that question, focusing on three major topics:

- Pavement Preservation
- Bridges
- Fish Passage Barriers

Over time, we hope to add to this list of topics, such as transit, multimodal systems, or low impact development.
**PAVEMENT PRESERVATION**

**WHY IT MATTERS**

Streets and roads are one of local governments’ largest assets to maintain. In Thurston County, cities and the county spend over $10 million* a year preserving some 1,600 miles of local public roadways – or around 2 percent of their total budgets. But even with this investment they are losing ground. Local staff estimate that it will require over $25 million a year just to keep roadways in their current condition. Investing now will save money later, as regular maintenance extends the lifetime of pavement. If pavement condition declines too much, the roadways require rebuilding – which is both costly and disruptive to traffic flow.

**STATE OF OUR PAVEMENT**

Local governments inventory the pavement condition of their roads regularly. In general, residential or neighborhood streets are in better condition than the major roadways that serve as the backbone of our transportation network. Arterials and collectors link communities, anchor our commercial and industrial areas, and carry more traffic than residential streets, including trucks, buses, and other large and heavy vehicles.

Based on information from local public works staff, we estimate that 71 percent of major roadways today are in good or very good condition. With regular maintenance, these roadways can remain in good condition indefinately. Twenty percent of the roadways are in fair condition, and nine percent are in poor condition. Once roadways reach fair or poor condition, regular maintenance is no longer effective, and they will eventually need to be rebuilt.

*excluding grant funding for road reconstruction*
**BEST FIRST APPROACH**

Local jurisdictions use pavement management systems to assess and prioritize their roadways. The systems are designed to guide investments to a “Best First” approach, recognizing that regular maintenance is much more cost effective than allowing a roadway to deteriorate and then rebuilding it. The backlog of deteriorated roadways, however, make it necessary for some funding to be directed to rebuilding roads.

**Regular maintenance extends the lifetime of pavement**

One of the key goals of pavement preservation is to prevent pavement in good condition from deteriorating to the point where the roadway requires rebuilding. Preventative maintenance is not only much cheaper over the long term than road reconstruction, it also keeps roads in better condition overall.

**No Regular Maintenance:** Residential roadways require rebuilding every 20 to 25 years if they aren’t maintained regularly. An average cost of rebuilding a roadway is around $100 per square yard.

**Regular Maintenance:** Roadways that are maintained regularly with a seal or overlay can last indefinitely. The average cost over 25 years for maintenance is around $50 per square yard.

A regular maintenance approach not only costs about half as much as allowing roadways to deteriorate before rebuilding them, but it also keeps roadways in better shape – reducing friction and vehicle wear and tear, and avoiding delays due to lengthy construction seasons.
WHAT THE FUTURE HOLDS

Local governments rate pavement on a scale of 1 to 100, with 100 being brand new roadways. While the cities and county all have slightly different ways to inventory and rate pavement condition, in general, poor pavement has a rating of 0 to around 40 or 50. Fair pavement has a rating of 40 or 50 to 60 or 70. And good and very good pavement ratings are over 60 to 70. Today, the average pavement rating of all roadways in the County is 76. In ten years or so, local staff estimate that it will drop to 36. This means we're losing ground each year, and while roadway condition deteriorates, the backlog of unfunded and costly rehabilitation projects grows.

SOURCES OF FUNDING

Sources of funding for pavement maintenance include general government budgets, local transportation benefit districts, property tax, state motor vehicle fuel tax, and federal gas tax, among others. Over the last few decades, caps on property tax, changes in fuel tax distribution of new funding (such as the Connecting Washington package), and rising costs of maintenance have led to an acute shortfall in maintenance funding necessary just to keep roadways in their current condition.

Local governments have responded by passing Transportation Benefit Districts – and increasingly, regionally allocated federal funding is being directed towards pavement maintenance - but these sources don't generate enough funding to keep up.

NEXT STEPS

Local government budgets are stretched thin to meet all the competing needs – but this is one place where investing now saves money in the future. Building new roads and bridges is an opportunity for ribbon cutting and celebration – we need to learn how to celebrate maintaining them as well.

This is not just a local issue – communities across the nation are beginning to identify new sources of funding for infrastructure. As Washington State begins work on a new transportation infrastructure funding package – it will be important to keep maintenance on the list of priorities.

Over the next few years, TRPC will dig deep into transportation financing – to get the region prepared for the discussion.
WHY IT MATTERS

State law requires that structures in streams provide for fish passage\(^1\). The 353 known fish passage barriers in Thurston County – road culverts, dams, dikes, and other obstructions – reduce the habitat available to fish, including salmon and steelhead. The inability of fish to access upstream spawning and rearing areas results in decreased production, and in some cases, eliminates fish populations altogether.

FISH PASSAGE BARRIERS IN THURSTON COUNTY

Over the last 20 years, at least 86 barriers were corrected in the County. Around 49 percent were on local roadways. This works out to about four corrections per year, and includes installing better-designed culverts, replacing culverts with bridges, abandoning crossings and removing culverts, and eliminating dams.

Local governments are responsible for around 161 of the total fish passage barriers identified in Thurston County. When local jurisdictions work on a culvert, they consult with the Washington State Department of Fish and Wildlife (WDFW) to determine whether their culvert work impacts a fish-bearing or potential fish-bearing stream. A broader effort is also underway to update stream typing. As partners learn more about the fish-bearing status of streams, the list of fish passage barriers will continue to grow.

While the region has not developed costs for all the identified barriers, the Fish Barrier Removal Board's list of similar projects range from $200,000 to $5 million, with an $860,000 average. Based on those estimates, the cost to local Thurston County governments could be around $138 million, and may grow substantially as more culverts are added to the inventory.

\(^1\) RCW 77.57.030

60-80 YEARS
TO ADDRESS ALL LOCALLY OWNED BARRIERS

FISH BARRIERS IN THURSTON COUNTY
353

LOCAL GOV'T RESPONSIBILITY
161

AVG. COST PER CORRECTION
$860K

$138 MILLION
LOCAL GOV'T COST

Federal Court Injunction Related to Fish Passage

In 2013, a U.S. District Court injunction required that the state correct hundreds of state-owned culverts in much of Western Washington by 2030. The court found that the fish passage barriers violate the treaties of more than 20 Western Washington Indian nations. Although the ruling only applies to state culverts, it implicates local and private fish passage barriers downstream of state barrier culverts.
While much progress has been made to identify and map fish passage barriers, funding for barrier correction remains a challenge – and often comes in the form of competitive grants.

Recognizing this, Thurston County’s 2017-2018 budget includes $4 million in Real Estate Excise Tax (REET) funding for a Fish Passage Enhancement Program. To implement the program, Thurston County Public Works identified and prioritized county-owned fish passage barrier culverts, and developed an action plan. Prioritization factors included:

- Corridor priority, including relationship and proximity to Washington State Department of Transportation (WSDOT) fish passage barrier culverts, and estimated habitat gain
- Barrier type, including partial or complete barrier
- Culvert condition
- Effect on community
- Other funding already secured
- Professional judgment

The County has identified 10-15 culverts for replacement based on: prioritization, ability to correct the barrier within the 2-year funding timeframe, and cost.
WHAT THE FUTURE HOLDS
If the State intends to correct all identified fish passage barriers by 2030, funding will need to be increased – for state-owned, private, and local barriers. Many of the state-owned fish passage barriers are upstream of locally owned barriers – making a coordinated state-local fish passage barrier removal effort essential to meeting the court’s injunction.

Washington State estimates the need for approximately $2.4 billion to correct hundreds of state-owned culverts by 2030 – or around $310 million per biennium. In the 2015-2017 Biennium, WSDOT spent $87.5 million on stand-alone fish passage projects. While a substantial increase over the previous biennium’s funding level of $27 million, it still falls far short of the funds needed to meet the court’s intent.

The County’s recently developed prioritization process and project list will help in pursuing additional funding over coming years. However, with around 160 local fish passage barrier culverts remaining, under current funding, and with a similar level of effort, it would take more than 60 - 80 years to address all the barriers – a conservative estimate given the list of barriers continues to grow.

SOURCES OF FUNDING
In addition to WSDOT’s efforts, Washington’s Legislature created the Fish Passage Barrier Removal Board in 2014 to foster coordinated and strategic removal of barriers to fish passage. The Board made its first capital budget ask of $51.4 million for the 2017-19 state biennium to correct fish passage barriers throughout the state. The Governor, House, and Senate proposed capital budgets included only $19.7 million for the upcoming biennium, with no Thurston County projects on the funded list.

Since 2003, the state has provided an average of $5 million per biennium to fund the Family Forest Fish Passage Program (FFFPP), a capital program focused on fish passage barrier correction on small forest landowners’ property. This program covers 75-100 percent of the project costs for small forest landowners.

While not necessarily the primary purpose, other state and federal programs can fund fish passage barrier projects, including state programs such as Floodplains by Design WWRP, Puget Sound Acquisition and Restoration, and the Estuary and Salmon Recovery Program.

NEXT STEPS
County and city public works should:

- Ensure they have the most current state fish passage barrier inventory.
- Create or maintain their own prioritized list of fish passage barriers, and address the barriers as stand-alone projects as local funding allows.
- Coordinate with the appropriate Salmon Recovery Lead entity to develop multi-benefit projects that could incorporate fish passage barrier correction with other public interests such as flood control and transportation improvement.
- Consult the barrier inventory when developing transportation projects to incorporate fish passage barrier correction into safety and mobility projects whenever practicable.
WHY IT MATTERS
Thurston County contains 235 bridges; more than half on local roadways and forty percent on or over major state routes, including Interstate 5. Many are over 60 years old, functionally obsolete, and some are in poor or serious condition. These bridges provide vital links in our transportation network, but cost much more per mile to maintain and repair than roadways. Since there is no dedicated source of funding for locally owned bridges, local jurisdictions rely predominantly on competitive state and federal grant funds for bridge preservation, rehabilitation, or replacement.

AGE
The age of Thurston County’s bridges is a primary concern for both local agencies and the state. Interstate 5 and many of its original bridges were built in the 1950s and 60s, so numerous large bridges are likely to need rehabilitation in coming years.

Vehicle Bridges in Poor Condition in Thurston County
Local Bridges:
- One with very low traffic volumes

State Bridges:
- 93rd Avenue Bridge over Interstate 5 (recently struck by a vehicle, currently being rehabilitated)
- Plum Street ramp over Eastside Street - prioritized for bridge rehabilitation

The 93rd Avenue Bridge over I-5 in Tumwater was struck by an over-height load in 2015 and underwent repairs in 2017. Such low I-5 overpasses are considered functionally obsolete.
FUNCTIONALLY OBSOLETE
Older bridges are more likely to be functionally obsolete – and not meet current standards. They may be:
- Too low and subjected to repeated damage from over-height trucks
- Not wide enough to accommodate the appropriate modes of travel like truck, bicyclists, or pedestrians
- Not wide enough to allow the roadway underneath to accommodate the appropriate modes of travel
- At risk of flooding

Fifty-three bridges in Thurston County and 38% of the 21 I-5 overpasses in Thurston County are functionally obsolete.

CONDITION
A strong multimodal network relies on safe and functional bridges for all modes. The Federal Highway Administration requires all public bridge owners to inspect and report on bridge condition once every two years. 97% of Thurston County bridges are in Fair or better condition.

Vehicle Bridges
Forty-five percent of Thurston County’s locally-owned bridges that carry vehicles are in Fair Condition. The most cost-effective time to rehabilitate a bridge is before the underlying structure is damaged, so these “Fair” bridges are ripe for rehabilitation.

“Poor” condition vehicle bridges are considered structurally deficient. While still safe for general travel, weight restrictions may apply. These bridges are prioritized for replacement or rehabilitation. The state is currently meeting its statewide performance goal: 90 percent of bridges on the National Highway System (Interstate and major state highways) in Fair or Good condition.

VEHICLE BRIDGE CONDITION IN THURSTON COUNTY

GOOD
FAIR
POOR

A range from no problems to some minor deterioration of structural elements.

All primary structural elements are sound but may have deficiencies such as minor section loss, deterioration, cracking, spalling, or scour.

Advanced deficiencies such as section loss, deterioration, cracking, spalling, scour, or seriously affected primary structural components. Bridges rated in poor condition may be posted with truck weight restrictions, but are still safe to travel.
Pedestrian/Bicycle Bridges
Thurston County is home to 12 pedestrian/bicycle only bridges:

- Eight locally owned – mainly on the Chehalis Western or Yelm-Tenino trail systems
- Three state owned bridges (one connecting Capitol Campus over Capitol Way, and the other two over I-5)
- One owned by the Nisqually Tribe

Of the local bridges, four are in poor condition, including three on the Chehalis Western Trail (former railroad bridges) and one over Percival Creek.

Available Funding
Federal funding for bridge maintenance, preservation, and rehabilitation is distributed to both the State and local governments. The National Highway Performance Program (NHPP) supplies around $354 million annually to the State to support the condition and performance of the National Highway System. Washington State's 2015 Connecting Washington transportation package includes $87.5 million a year (for the next 16 years) in funding for state highway maintenance, operations, and preservation, which can be used for state bridges. WSDOT has a local bridge program that is around $45 million a year – funded with $23 million in NHPP and $22 million from a Surface Transportation Program set-aside.

Approach to Bridge Preservation
The current bridge inspection program intends that bridges open to the public are safe.

State Owned Bridges: The state maintains the majority of bridges on the National Highway System. The state's Bridge Asset Management Plan lays out priorities and various strategies including regular maintenance to extend the service life of bridges and reduce life cycle costs, and preservation to ensure that bridge assets do not deteriorate to a condition that is beyond repair. Funding levels for this program fall short of preservation needs.

Locally Owned Bridges: Local jurisdictions assess bridge condition, and apply for competitive funding as opportunities allow. Funding for local bridge preservation and rehabilitation is a critical need – including funding for short-span bridges, but adequate funding is not available for a proactive approach.

Other Needs
Other critical needs for local bridges, aside from increased funding, include:

- A statewide study to determine seismic vulnerability of local bridges
- Improving weight restricted and load posted bridges, so that heavy vehicles are not diverted to local roads and bridges
- Addressing identified bridge “bottlenecks”
- Partnership funding for regionally significant bridges

What the Future Holds
Forty-two percent of Thurston County's bridges are in Fair Condition – or the condition where it is most cost effective to rehabilitate a bridge, however funding for preservation and rehabilitation of state bridges is insufficient to meet current needs. Funding for maintaining and extending the service life of locally owned bridges is even more limited. With bridges providing critical links in our transportation network, if adequate funding is not secured in coming years, travelers can expect greater restrictions on travel over bridges – especially on the locally owned bridge network.

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