

The Right Bridge The Right Time The Right Fix The Right Funding

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Asset Management Plan

- *“We need a fundamental shift in policy to ensure that we take care of our existing infrastructure. States should be required to develop asset management plans that prioritize the repair and maintenance of aging roads and bridges, We need clear priorities to ensure the money set aside for repair can’t be spent on other things, and is directed to the most pressing needs.”*

The Fix We’re In: The State of Our Nations Busiest Bridges
Transportation For America // October 2011

Washington DOT

- 37.5 cent gas tax, Must be used for highway purposes.
- 23 cents shared with Cities and Counties
- 14.5 cents for new construction, tied to specific projects. May not be used for preservation or maintenance. Sunsets when bonds are paid.

Communications and Cooperation

- An Asset Management Plan requires close coordination and cooperation between the Bridge Designers, Inspectors, Constructors, Program Managers and Maintenance to work effectively.

Bridge Asset Management Goals

- Ensure lowest life cycle cost
- Employ a science based approach
- Use current data and methods with demonstrable, repeatable, and reproducible results
- Present coordinated budget requests to ensure overall bridge repair and preservation needs are addressed

Preventive Maintenance Objectives

- Select preventive maintenance treatments
- Build a preventive maintenance program
- Develop and test treatments
- Prioritize
- Deliver the Preventive Maintenance program
- Review Results
- Make changes to improve the program

Design For Maintenance

- Bridges constructed of easy to maintain materials.
 - Elastomeric bearings
 - Concrete
- Bridges designed with easy to maintain details.
 - Drainage off the bridge
 - No or limited joints
 - Use simple joints that can be maintained
 - Eliminate piers in the water
 - Urban design to discourage homeless condos
 - Rails that are not valuable when metal prices rise.
 - Details that discourage bird nesting
 - Eliminate large flat surfaces attractive to urban artists
 - Standard components that do not require keeping a large inventory of parts
 - Bridges with sufficient clearance to prevent over height load hits
- Eliminate or at least minimize skew angles in bridges
- Design with protective measures where corrosive salts are used for winter maintenance

Build the Bridges to Last

- Build the bridge as designed
- Ensure minimum 2 ½ inches of rebar cover
- Minimize cracking in concrete
- Ensure all formwork is removed.
- Leave construction access in place
- Maintenance inspection prior to completion

Design with Maintenance in Mind



What is Measured Gets Funded

- Percent of Bridges in Good and Fair Condition
- Number and Deck area of S/D and F/O Bridges
- Percent of Priority 1 Repairs completed within a year
- Deck Condition
- Bridge Cleanliness

Funding Increased

- Due to Low MAP Scores funding in 2009 - 2011 biennium was increased \$1.5 Million for Structural bridge repairs. This was to increase MAP scores from an F to a C.
- For the 2011 to 2013 biennium funding was increased for Deck repairs by \$530,000 to increase the MAP score.

New Measurements

- Bridge Cleaning to change to Percent of Steel Truss bridges cleaned annually.
- Percent of Bridge Maintenance Inspections Completed

	Maintenance Funded Repair	Maintenance Funded Preventive Maintenance	Preservation Funded
Structural Repair (1942)	All structural bridge repairs within the resources of the region bridge crews. This also includes repairs to the deck that are through the deck.		Major rehabilitation, repair, or replacement.
Decks (1936)	Patch deck spalls and potholes. Deck repairs within a foot of an expansion joint should be charged to expansion joint maintenance.	Tighten timber bridge bolts on a ten year cycle. Future could do deck seals, crack sealing on smaller bridges.	Deck overlays, deck seals, and deck replacements
Expansion Joints Repair (1953) PM (1954)	Repair headers, patch joint seals, replace entire joints for openings less than 4 inches.	Clean expansion joints at least every 5 years, check for watertightness of joint and reseal as needed. Clean abutments caps and beam ends after sealing joints. Fill in wheel ruts ramping up to joint.	Replacement of Expansion joints of all sizes.

Inspection Routine (1930) Emergent (1931)		Routine maintenance inspection of all bridges annually. Emergent inspection for natural disasters such as flooding, also charge inspection of Construction projects to 1931..	Inspect structures on a 1 to 5 year cycle.
Scour (1932)	Repair of rip-rap and other scour counter measures.	Remove large woody debris that collects on bridge piers.	Constructs new scour counter measures.
Bridge Cleaning 1922)		Clean all bridge decks annually including cleaning out drains and clean and flush all steel structures. Clean out troughs under open joints annually.	N/A

Bridge Brushing(19??)		Brushing around bridges for inspection purposes or because the trees are growing into the bridge or into the roadway. This also includes removing ivy that is growing on a bridge.	
Earthquake retrofits (1942 or 1922)		Keep the earthquake restraints cleaned and maintain the appropriate gap.	Retrofit existing bridges to withstand earthquakes.
Bridge Appurtenance Maintenance. (lights, hatches etc.) (1941)		Replace lightbulbs or LED's as needed or on a regular basis, Clean nav/aviation light lenses, check wiring. Replace lights if needed. Exercise and oil doors, hatches and locks.	Initial construction. Replacement of whole bridge lighting.
Repair Bridge Drains (1928)	Repair of bridge drains or drainage	Clean out drains (1922)	N/A
Sign Bridge (1952)	Replace U bolts, remove grout pads, etc	Tighten Nuts. Clean signs	Replace sign bridges

BRIDGE ASSET MANAGEMENT BACKLOG

Preservation Asset activity	Preservation Biennial Funding	Preservation Backlog	Maintenance Biennial Funding	Backlog Units	Maintenance Backlog
Structural Repair			\$ 9,498,998	47	\$ 568,700
Expansion Joints	\$ 15,000,000	\$ 75,000,000	\$ 1,200,000	36,438	\$ 10,202,640
Scour	\$ 4,000,000	\$ 20,000,000	\$ -		
Painting	\$ 55,000,000	\$ 346,000,000	\$ 845,878		\$ 500,000
Bridge Cleaning			\$ 1,127,122	135	\$ 2,550,000
Decks	\$ 15,000,000	\$ 75,000,000	\$ 2,124,011	22,384	\$ 6,330,282
Misc struct incl Sign Bridges	\$ 3,000,000	\$ 15,000,000	\$ -	1202	\$ 2,163,600
Movable Bridges			\$ 7,440,335		
Bird Exclusion			\$ 50,000	100	1,000,000.00
Urban Tunnels			\$ 3,657,088		
Bridge Inspection	\$ 19,000,000			2306	\$ 1,844,800
	\$ 111,000,000	\$ 531,000,000	\$ 27,403,982		\$ 25,160,022

Ongoing Preservation Initiatives

- Bridge washing pilot. Annually flush bridges without first hand cleaning. Results show little water quality change.
- Annual maintenance inspection of bridges. Saved a half a million dollars in cost by finding an undercut wing wall of a bridge.



Challenges

- Submitted a request for funding for bridge washing which included Under Bridge Inspection Trucks for use by maintenance and additional personnel. Did not get out of the Department. Did receive funding for a study on the cost effectiveness of bridge washing.





15 Bridges – 740,000 square feet

ADDITIONS: Port of Tacoma to King County Line.				
	Units	unit cost	freq	bien cost
One lane in each direction for 3.78 miles or 7.56 lane miles				
1A1 - pavement repair				
6A2 - Raised recessed pavement markers				
6A2 - Pavement Markings				
6A1 - Striping	7.56 mi	\$601/mi	1.2	\$ 5,452.00
1A4 - Sweeping, median barrier increases need to 4 x/ yr from 1	7.56 mi	\$300/mi	8	\$ 18,144.00
5B1 - Snow and Ice	7.56 mi	\$2434/mi	1	\$ 18,401.00
Drainage				
2A2 - Culverts Existing hooked up to grate inlets and catch basins.	7	\$50.00	4	\$ 1,400.00
2A4 - 4 acres of flood mitigation site.	1	\$11,050	0.4	\$ 4,420.00
2A3 - Grate inlets & Catch basins	188	\$75.00	2	\$ 28,200.00
2A4 - Media filter strips, 11470 feet added	11.4	\$1,422	1	\$ 16,210.80
Landscape				
3A5 - landscaped 5 acres, 465 trees, 1169 wet mix plants, 7200 upland plants, 2 irrigation systems.	7	\$1,500.00	2	\$ 21,000.00
3.78 miles of 48 ft wide median removed				
3A3 mowing	-20	\$594.00	1	\$ (11,880.00)
3A2 Noxious weed control	-20	\$154.00	1	\$ (3,080.00)
Bridges 23,000 sq ft added.				
4A1 Bridge Decks	23,000	0.05	1	\$ 1,150.00
4A2 Structural Bridge	23,000	0.31	1	\$ 7,130.00
4A3 Bridge Cleaning	23,000	0.1	1	\$ 2,300.00
Sign bridges: 5 sign bridges, 3 cantilever, 7 bridge mounted (4 removed)	11	600	0.5	\$ 3,300.00
Walls	730	0.5	1	\$ 365.00
Guardrail				
6A7 - Concrete barrier, 17,055 added, 2571 removed	14,484	4.37	0.25	\$ 15,823.77
6A7 - Beam Guardrail, 8932 added, 5650 removed	3,282	0.49	1	\$ 1,608.18
6A7 Cable Barrier, 11,510 removed	-11,510	1.28	0.5	\$ (7,366.40)
- Impact Attenuators	3	1200	1	\$ 3,600.00
6B3 Intelligent Transportation System Operations				
Cameras	3	3930	1	\$ 11,790.00
Variable Message Signs, (1 bridge mount removed, 3 added)	2	2387	1	\$ 4,774.00
Data stations	8	1615	1	\$ 12,920.00
Highway Advisory radio system	1	1615	1	\$ 1,615.00
Ramp Meters	4	1614	1	\$ 6,456.00
9B1 3rd party Damage				
Unknown or unrecoverable damage	8	896	1	\$ 6,773.76
Increase in biennium cost				\$ 170,507.11



QUESTIONS?

